

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

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OFFICE OF INSTITUTIONAL EFFECTIVENESS AND STUDENT SUCCESS

The purpose of the Office of Institutional Effectiveness and Student Success 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.

When citing data from this report, the Northern Virginia
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Introduction

As part of the ongoing, nation-wide movement to increase accountability and transparency in higher education, Northern Virginia Community College (NOVA) has made the assessment of student learning outcomes (SLOs) a priority and has developed a college-wide culture of assessment. 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

The assessment process at NOVA follows best practice in higher education assessment as well as *Southern Association of Colleges and Schools Commission on Colleges (SACS-COC)* principles of accreditation. To begin the process of assessing student learning, programs must first determine the student learning outcomes for their curriculum. Student learning outcomes are defined by NOVA as observable and measurable knowledge, skills, and attitudes/values that students should achieve by the end of an educational program at NOVA. Thus, SLOs are educational outcomes at the program level that students achieve as a result of completing the program of study.

NOVA determined that all degree-awarding programs and select certificates must each designate one faculty member to oversee the program’s/certificate’s assessment efforts. In order to provide support to programs and their designated assessment lead faculty, the Office of Academic Assessment, a unit within the College’s Office of Institutional Effectiveness and Student Success (OIESS), regularly offers program-level meetings and college-wide workshops devoted to writing and assessing student learning outcomes as well as using results from SLO assessments to improve student learning. Since beginning these workshops in Spring 2009, each program has had at least one faculty member attend a session. Additionally, OIESS provides a variety of online resources to support the SLO assessment process, found on the Office of Academic Assessment website: <https://www.nvcc.edu/oieess/academic-assessment/>.

In Fall 2009, assessment lead faculty members submitted student learning outcomes for their respective programs/certificates. Programs are asked to review their SLOs annually and update them when necessary. The most recent student learning outcomes have been compiled into this report. As explained above, establishing student learning outcomes is only the first step in the ongoing cycle of assessment. Once student learning outcomes are established, programs develop methods to assess the student learning outcomes and gather data to make evidence-based decisions to improve student learning and the student experience at NOVA. Information from these assessments are detailed each year in the *Annual Planning and Evaluation Reports (APERs) for Instructional Programs*; these reports can be found online at <https://www.nvcc.edu/oieess/academic-assessment/slo-assessment/apers.html>.

¹ Linda Suskie, *Assessing Student Learning: A Common Sense Guide*. Anker Publishing, 2004.

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

Accounting, A.A.S.

Pathway: Business

1. Be able to apply generally accepted accounting principles (GAAP).
2. Perform all steps in the accounting process, including production of basic financial statements.
3. Be able to describe federal tax rules and apply them in preparing individual income tax returns.
4. Be able to describe and make distinctions between the various business entities (i.e., individuals, corporations and partnerships).
5. Be able to use budgeting and product costing techniques and methods to evaluate business operations.
6. Be able to identify generally accepted auditing standards (GAAS) and the additional requirements imposed by the Sarbanes-Oxley Act.
7. Know how to access the various technical and professional publications to use as reference sources.
8. Be able to write and speak in English well enough to communicate accounting procedures and concepts in a professional environment.
9. 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.

Pathway: Education and Public Service

1. Name and describe the steps in the criminal adjudication process that involve the police, the courts, and corrections.
2. Define the basic teachings of criminology, criminalistics, criminal justice, and forensic science.
3. 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.
4. Define generally, domestic and international terrorism, organized crime, classified information, and proprietary information.
5. Identify and explain the major perspectives concerning crime causation including the classical approach, biological approach, psychological approach, and the sociological approach.
6. Analyze an ethical dilemma or case study relating to a criminal justice issue.
7. 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.
8. Explain basic investigative concepts relating to crime.
9. Describe the elements of at least five (5) crimes.
10. Demonstrate a basic understanding of law enforcement, the courts and the corrections system.

Air Conditioning and Refrigeration, A.A.S.

Pathway: Engineering and Applied Technology

1. Technical knowledge and capabilities: Design, install, maintain, and repair a basic residential air conditioning and heating system.
2. 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.
3. Presentation, manners, reliability, and safety: 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, safely, and on time.
4. Positive attitude and works well with others: Demonstrate a positive attitude and have a good working relationship with peers.
5. 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.
6. Speech and written communication skills: Perform good communication skills, both oral and written.
7. 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.
8. 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.
9. Productive: Perform good work habits, focus on the task-at-hand, and complete assignments on time.
10. 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.

Pathway: English and Deaf Studies

1. Students will demonstrate the ability to interpret a 5-minute videotaped segment of American Sign Language into English with 80% accuracy.
2. Students will demonstrate the ability to interpret a 5-minute videotaped segment of English into American Sign Language with 80% accuracy.
3. Students will demonstrate the ability to transliterate a 5-minute videotaped segment of Contact Sign into English with 80% accuracy.
4. Students will demonstrate the ability to transliterate a 5-minute videotaped segment of English into Contact Sign with 80% accuracy.
5. Students will apply critical thinking to make ethical decisions regarding a variety of situations, guided by ethics standards of the profession.

Architecture Technology, A.A.S.

Pathway: Engineering and Applied Technology

1. Students will be able to communicate graphically the architectural aspects of a building for the purposes of presentation and construction using manual drawing.
2. Students will be able to describe how buildings are presently constructed.

3. Students will be able to describe and analyze the ethics of designing sustainable environments.
4. Students will be able to describe and analyze how buildings are structurally supported.
5. Students will be able to describe the systems of heating, cooling and electrical distribution in buildings.
6. Students will be able to describe how site characteristics influence the design and construction of buildings.
7. Students will be able to communicate graphically the architectural aspects of a building for the purpose of presentation and construction using computer graphics.
8. Students will be able to methodically design a building.

Automotive Technology, A.A.S.

Pathway: Engineering and Applied Technology

1. Use measuring tools to skillfully and accurately diagnose the internal combustion engine.
2. Diagnose transmission/transaxle gear reduction/multiplication concerns using driving, driven, and held member (power flow) principles using a range reference chart.
3. Measure drive pinion bearing preload and ring gear backlash and backlash variation to compare to specifications in order to determine necessary corrective actions.
4. Perform preliminary inspections and procedures needed to prepare a vehicle for a four-wheel alignment by checking and assessing vehicle ride height, tire condition, and inflation.
5. Inspect and measure a rotor with a dial indicator and micrometer to determine the serviceability of the rotor.
6. Apply electrical theory using wiring diagrams and schematics to diagnose and repair automotive electrical circuits.
7. Research applicable vehicle and service information, vehicle service history, service precautions, technical service bulletins, and components for automotive heating and ventilation systems.
8. Retrieve diagnostic trouble codes and monitor status using a scan tool. Using the scan tool data and wiring diagrams, determine the next logical step in the drivability diagnostic process.

Biotechnology, A.A.S.

Pathway: Life Sciences

1. Explain the fundamental scientific concepts in biotechnology.
2. Apply the scientific method including: planning an experiment, collecting data, and analyzing and interpreting data.
3. Demonstrate proficiency in standard lab procedures and in the use of basic lab equipment.
4. Effectively communicate scientific concepts, strategies, and opinions in written and oral formats.
5. Describe the ethical and regulatory aspects of the biotechnology industry.
6. Describe the business and legal aspects of the biotechnology industry.
7. Demonstrate professional communication and interpersonal skills necessary for working in a collaborative environment.
8. Demonstrate proficiency in standard lab calculations.

Business Administration, A.S.

Pathway: Business

1. 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.
2. Students will be able to calculate the basic impact of marginal cost for the production of goods in a capitalist system.
3. Students will be able to describe the various theories related to the development of leadership skills, motivation techniques, teamwork, and effective communication.
4. Students will be able to construct the basic elements of a balance sheet and income statement utilizing the appropriate accounting equations.
5. 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.
6. Students will apply the planning, organizing, leading, and control processes of management in identifying the various theories related to the development of leadership skills.
7. 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.
8. Students will be able to identify the factors of production in the creation of goods and services in an economic society.
9. Students will demonstrate skills important for successful transition into the workplace and pursuit of further education.
10. Students will be able to generate a summary report of sample data using graphs and descriptive measures.

Business Management, A.A.S.

Pathway: Business

1. 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.
2. Students will be able to identify parties in a legal dispute within the fundamental types of business organizations (sole proprietorship, franchise, partnership, corporation, Limited Liability Company, and limited liability partnership).
3. Students will be able describe the various theories related to the development of leadership skills, motivation techniques, teamwork, and effective communication.
4. Students will be able to construct the basic elements of a balance sheet and income statement utilizing the appropriate accounting equations.
5. Students will apply the planning, organizing, leading, and control processes of management in identifying the various theories related to the development of leadership skills.
6. Students will be able to identify the factors of production in the creation of goods and services in an economic society.
7. Students will be able to differentiate the ethical codes of compliance and integrity used by business organizations.
8. Students will be able to identify various challenges facing the management of human resources.
9. Students will be able to generate a summary report of sample data using graphs and descriptive measures.

10. Students will be able to describe the elements of the marketing mix (product, price, place and promotion) and their use to achieve customer satisfaction.

Cinema, A.F.A.

Pathway: Visual, Performing, and Media Arts

1. Evaluate the theories, principles, and/or practices of cinema.
2. Critically analyze film.
3. Critically evaluate film scholarship using basic research methods.
4. Apply pre-and post-production practices effectively.
5. Integrate knowledge of professional industry standards and practices.
6. Develop and produce original and time-based content.
7. Incorporate visual language into cinema projects.
8. Work effectively in groups.

Computer Science, A.S.

Pathway: Information Technology and Computer Science

1. Demonstrate techniques for problem analysis and algorithm design.
2. Write computer programs using fundamental software development skills.
3. Perform elementary file and directory-related activities using GUIs and command-line interfaces.
4. Demonstrate proficiency in mathematical modeling using a high or low level programming language.
5. Write computer programs using object-oriented programming features
6. Demonstrate critical thinking by applying appropriate data structures and Abstract Data Types (ADTs).
7. Show the ability to work in groups to design and execute programs to solve problems.
8. Design fundamental logic circuits.
9. Identify the functions of basic and advanced computer hardware architecture.

Construction Management Technology, A.A.S.

Pathway: Engineering and Applied Technology

1. Students will communicate effectively consistent with career requirements of the construction management industry (orally and written).
2. Students will accurately interpret construction documentation.
3. Students will identify characteristics of basic construction materials and explain their application in the construction industry.
4. Students will accurately estimate construction costs.
5. Students will accurately prepare construction plans and schedules utilizing industry standards.
6. Students will identify safe construction practices.
7. Students will be able to interpret construction related contractual and legal requirements.
8. Students will perform surveying calculations necessary for site layout.
9. Students will successfully identify and demonstrate skills necessary to manage human resources related to the construction industry.

Contract Management, A.A.S.

Pathway: Business

1. Students will be able to conduct market research in accordance with the Federal Acquisition Regulation (FAR).
2. Students will be able to apply sound strategic acquisition planning so that informed business decisions can be made on behalf of the government.
3. Students will be able to prepare project schedules for contract implementation.
4. Students will be able to apply fundamental contracting techniques by utilizing the basic Federal contracting processes: i.e., cost estimation procedures, requirement determinations, and characteristics of best value analysis.
5. Students will be able to independently apply contract administration programs in support of Federal contracts.
6. Students will be able to conduct cost and price analysis of request for proposal in order to establish negotiation positions.

Cybersecurity, A.A.S.

Pathway: Information Technology and Computer Science

1. Manipulate data into meaningful information.
2. Create simple scripts/programs to automate and perform simple operations, including how to perform basic security practices in developing scripts/programs (e.g. bounds checking, input validation).
3. Describe current threats and explain how to continuously monitor the threats that may be present in the cyber realm.
4. Identify the options available to mitigate threats within a system.
5. Apply basic security design fundamentals that help create systems that are trustworthy.
6. Describe the basic concepts of information assurance fundamentals.
7. Explain where and how cryptography is used.
8. Describe the basic components in an information technology system and their roles in system operation.
9. Identify network components and describe how they interact.
10. Explain basic operations involved in system administration
11. Be able to describe memory types and allocation methods.

Dental Assisting, Certificate

Pathway: Health Sciences

1. Students will be able to chart oral conditions.
2. Students will be able to perform chair side dental assisting duties.
3. Students will be able to perform dental assisting expanded duties.
4. Students will be able to perform dental laboratory procedures.
5. Students will be able to perform dental practice management procedures.
6. Students will be able to expose diagnostic dental radiographic surveys.
7. Students will be able to manage dental protocols for infection control practices and biohazard waste.
8. Students will be able to identify legal and ethical aspects of clinical practice.

Dental Hygiene, A.A.S.

Pathway: Health Sciences

1. Assess a patient's oral health status.
2. Plan and document a patient's treatment needs.
3. Evaluate the outcomes of treatment and determine subsequent treatment needs.
4. Expose radiographs.
5. Interpret radiographs.
6. Communicate the provision of oral health care services with diverse population groups.
7. Evaluate and apply scientific literature based on critical analysis of research, scientific theories, and standards of care as a basis for evidence-based practice.
8. Provide care to a diverse population who present with slight, moderate, and advanced periodontal disease and other oral conditions.
9. Recognize the importance for discerning and managing ethical issues consistent with professional code of ethics.

Diagnostic Medical Sonography, A.A.S.

Pathway: Health Sciences

1. Provide high-quality patient care in an ethical, legal, safe, and effective manner.
2. Integrate patient history, current medical condition, and sonographic findings to provide accurate diagnostic information.
3. Apply principles of ultrasound physics in the operation of medical sonographic equipment to recognize and perform image optimization techniques.
4. Identify relational anatomy, proper diagnostic imaging techniques, and sonographic appearances of anatomical structures.
5. Evaluate ultrasound images for diagnostic information and pertinent technical details.
6. Practice professional work habits and appropriate interpersonal relationships in a clinical setting when working with clinical staff, other healthcare providers, and/or physicians.

Driver Education Instructor, C.S.C.

Pathway: Education and Public Service

1. Students will distinguish VA driving rules and laws that are necessary to teach Drivers Education in Virginia using the VADETS final exam.
2. Students will be able to create a competent classroom lesson plan for Driver Education students under the age of 19.
3. Students will be able to create a competent behind the wheel lesson plan for Driver Education students under the age of 19.
4. Students will be able to create a skills worksheet/outline to be used for their lessons in behind the wheel.
5. Students will be able to design a proper behind the wheel driving route.
6. Students will demonstrate proficiency in their own driving skills as demonstrated on the range.

Early Childhood Development, A.A.S.

Pathway: Education and Public Service

1. Apply developmental knowledge to the creation and implementation of activities and programs to promote the development of all children.
2. Design strategies for building relationships and working with diverse families and communities.
3. Using observation techniques assess development and effective practices with children, families, and programs.
4. Applying developmental theories and early childhood program model components, select educational strategies appropriate for the learning environment.
5. Create curriculum that integrates content and developmental knowledge.
6. Using the basic tenets of professionalism, and best practices, demonstrate one's growth and development.

Emergency Medical Services, A.A.S.

Pathway: Health Sciences

1. Utilizing a simulation mannequin, students will be able to establish and maintain a patent airway and oxygenate and ventilate a patient utilizing basic airway maneuvers and adjuncts.
2. When presented with a patient experiencing a medical emergency, students will be able to perform a scene size-up, conduct a primary assessment, take a patient history appropriate to the patient's condition, obtain vital signs, and intervene in accordance with relevant, established standards of care.
3. When presented with a patient experiencing a traumatic injury, students will be able to perform a scene size-up, conduct a primary assessment, take a patient history appropriate to the patient's condition, obtain vital signs, and intervene in accordance with relevant, established standards of care utilizing multiple available basic and advanced intervention techniques.
4. When presented with a patient exhibiting signs & symptoms of a fracture, the student will be able to select the appropriate immobilization device, and properly immobilize the affected area.
5. The EMS Advanced Life Support Student will demonstrate competent affective behavior related to emergency medical care, as measured by the Northern Virginia Community College EMS Program Affective Behavior Assessment tool.
6. When presented with a 6-second static cardiac rhythm strip, the student will be able to correctly identify the rhythm, classify the patient's condition as "stable" or "unstable", select the appropriate treatment algorithm, and list the appropriate electrical and/or pharmacological therapy indicated in a timely manner.

Engineering, A.S.

Pathway: Engineering and Applied Technology

1. Students will apply and demonstrate engineering problem solving methodology.
2. Students will demonstrate their knowledge of engineers' professional responsibility and ethics.
3. Students will demonstrate the ability to design algorithm in solving engineering problems.
4. Students will be able to analyze the position of rigid bodies and their applied forces at rest and in motion.

5. Students will demonstrate knowledge of mechanics of deformable bodies.
6. Students will demonstrate the ability to work effectively as a team.

Engineering Technology, A.A.S.

Pathway: Engineering and Applied Technology

1. Interpret Occupational Safety and Health Administration (OSHA) standards and follow safety practices.
2. Use technical and/or non-technical language to communicate both in writing and verbally with colleagues and supervisors.
3. Demonstrate interpersonal/human relations skills to promote and complete prescribed project tasks and meet project goals and objectives.
4. Apply knowledge of digital electronics and electrical theory including Ohm's law, series and parallel circuits, single-phase and three-phase systems to troubleshoot and repair electromechanical equipment and systems.
5. Design, operate and troubleshoot automation processes and systems.
6. Interpret schematics and symbology used in electrical wiring and various types of automation systems drawings.
7. Use computational skills to analyze physical parameters within automated processes and systems and explain an effective strategy to solve a quantitative problem.
8. Install, program, wire and troubleshoot Programmable Logic Control (PLC) systems.
9. Describe the fundamentals of robotic systems as they apply to repetitive manufacturing systems.
10. Use programming knowledge to effectively communicate with industrial robots.
11. Demonstrate how Human Machine Interface (HMI)/ Supervisory Control and Data Acquisition (SCADA) systems integrate within a modern manufacturing environment.
12. Construct, test, and troubleshoot a fiber optic network using various types of connectors.

General Studies, A.S.

Pathway: General Studies and General Education

1. Critical Thinking: Students will locate, evaluate, interpret, and combine information to reach well-reasoned conclusions or solutions.
2. Civic Engagement: Students will demonstrate the knowledge and civic values necessary to become informed and contributing participants in a democratic society.
3. Written Communication: Students will develop, convey, and exchange ideas in writing, as appropriate to a given context and audience.
4. Professional Readiness: Students will demonstrate skills important for successful transition into the workplace and pursuit of further education.
5. Quantitative Literacy: Students will calculate, interpret, and use numerical and quantitative information in a variety of settings.
6. Scientific Literacy: Students will recognize and know how to use the scientific method, and to evaluate empirical information.

General Studies: Health Sciences Specialization, A.S.

Pathway: Health Sciences

1. Explain introductory concepts related to human anatomy and physiology.
2. Explain the general characteristics of microorganisms and their relationships to individual and community health.

3. Interpret medical terms and abbreviations.
4. Apply quantitative skills relevant to future practitioners in health science careers.
5. Demonstrate the ability to apply the scientific method and to evaluate empirical information.

Graphic Design, A.A.S.

Pathway: Visual, Performing, and Media Arts

1. To research, formulate visual and written concepts, and solve visual ideas.
2. To analyze and evaluate artwork from various perspectives and apply to projects.
3. 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.
4. To evaluate visual concepts.
5. To design visual concepts based on set criteria.
6. To produce visual concepts into completed projects.
7. To consider and apply technical and conceptual expertise in the creation of visual concepts.
8. To apply the principles of design and elements of composition.
9. To choose appropriate techniques and technical tools when expressing visual concepts.
10. To organize a group to produce solutions to design problems.

Health Information Management, A.A.S.

Pathway: Health Sciences

1. Apply diagnosis/procedure codes according to current guidelines (I.A).
2. Analyze the documentation in the health record to ensure it supports the diagnosis and reflects the patient's progress, clinical findings, and discharge status (I.B).
3. Apply policies and procedures to ensure the accuracy and integrity of health data (I.C).
4. Differentiate the roles and responsibilities of various providers and disciplines to support documentation requirements throughout the continuum of healthcare (I.B).
5. Apply healthcare legal terminology and identify the use of legal documents (II.A).
6. Apply policies and procedures surrounding issues of access and disclosure of protected health information (II.C).
7. Utilize software in the completion of HIM processes (III.A).
8. Apply report generation technologies to facilitate decision-making (III.C).
9. Analyze policies and procedures to ensure organization compliance with regulations and standards (V.A).
10. Assess how cultural issues affect health, healthcare quality, cost, and HIM (VI.H).

Horticulture Technology, A.A.S.

Pathway: Life Sciences

1. Diagnose plant problems and recommend proper controls.
2. Correctly identify plants by Family, Scientific name (Genus, specific epithet, variety and/or subspecies), Cultivar if appropriate, and common name.
3. Correctly identify parts of a plant under microscope or as a sample.
4. Use library, internet, and professional resources to prepare proper horticultural information to prepare and write an informational, research or opinion paper.

5. Calculate areas and volumes of landscape features and amounts of required materials.
6. Neatly draw and correctly label a landscape plan.
7. Prepare a one or two-point perspective drawing from a landscape plan view drawing.
8. Correctly draw an axonometric detail of a joinery of a landscape feature.

Hospitality Management, A.A.S.

Pathway: Business

1. Students will compare the various sectors of the hospitality industry and recognize the unique characteristics and attributes of each and their effect on quality of work life.
2. Students will describe and apply the four functions of management: plan, organize, lead, and control.
3. Students will prepare and evaluate a variety of different food products by following standardized recipes and using appropriate cooking techniques.
4. Students will scale, standardize, and cost out recipes.
5. Students will illustrate the proper use and care of commercial food production equipment.
6. Students will apply approved food handling/safety standards in the preparation, service, and storage of food.
7. Students will actively participate in the execution of different styles of catering functions.

Information Systems Technology, A.A.S.

Pathway: Information Technology and Computer Science

1. Be able to design problems using procedural and object oriented design, and implement, sequence, select, and loop structures within the design solution.
2. Be able to identify correct syntax and logic in a programming language.
3. Be able to identify terminology, correct syntax, and appropriate uses of graphics, animation, and XHTML for a successful multimedia website.
4. Be able to define normalization and define why it is necessary in the creation of a relational database.
5. Be able to describe memory types and allocation methods.
6. Be able to define the OSI reference model and layers.
7. Be able to provide instruction in the basics of network security in depth.
8. Be able to list the advantages and disadvantages of the UNIX operating system.

Information Technology, A.S.

Pathway: Information Technology and Computer Science

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2. Be able to identify correct syntax and logic in a programming language.
3. Be able to identify terminology, correct syntax, and appropriate uses of graphics, animation, and XHTML for a successful multimedia website.
4. Be able to define normalization and define why it is necessary in the creation of a relational database.
5. Be able to describe memory types and allocation methods.
6. Be able to define the OSI reference model and layers.

Interior Design, A.A.S.

Pathway: Visual, Performing, and Media Arts

1. Students will apply technical drawing skills to graphically illustrate design concepts.
2. Students will utilize basic building and accessibility codes related to the health, safety, and welfare of the public to develop interior floor plans.
3. Students will practice business management including estimating, marketing, business structures, and ethics as they relate to the field of interior design.
4. Students will recognize and evaluate appropriate interior finish materials and textiles particularly as they relate to issues of sustainability.
5. Students will apply critical, analytical, and strategic thinking skills in the interpretation of project requirements.
6. 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.
7. Students will demonstrate presentation skills including technical skills required to develop finish boards and oral skills to convey ideas.
8. 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.
9. Students will produce design projects utilizing basic color theory.
10. Students will illustrate how to light an interior space using a variety of sources of illumination.

Liberal Arts, A.A.

Pathway: Liberal Arts

1. Critical Thinking: Students will locate, evaluate, interpret, and combine information to reach well-reasoned conclusions or solutions.
2. Civic Engagement: Students will demonstrate the knowledge and civic values necessary to become informed and contributing participants in a democratic society.
3. Written Communication: Students will develop, convey, and exchange ideas in writing, as appropriate to a given context and audience.
4. Professional Readiness: Students will demonstrate skills important for successful transition into the workplace and pursuit of further education.
5. Quantitative Literacy: Students will calculate, interpret, and use numerical and quantitative information in a variety of settings.
6. Scientific Literacy: Students will recognize and know how to use the scientific method, and to evaluate empirical information.

Liberal Arts: Theater, C.S.C.

Pathway: Visual, Performing, and Media Arts

1. Students will be able to define theatre vocabulary.
2. Students will be able to analyze a script for performance and production.
3. Students will be able to present material to an audience.
4. Students will be able to illustrate the organization of a theatrical event.
5. Students will be able to apply appropriate technical elements of stagecraft such as costume designs, set designs, research, lighting, sound, and make-up to a performance.
6. Students will be able to discuss the impact of theatre on a variety of cultures and society.

Medical Laboratory Technology, A.A.S.

Pathway: Health Sciences

1. Communicate effectively to serve the needs of patients, the public, and members of the healthcare delivery team.
2. Comply with applications of safety, quality assurance and government regulations.
3. Collect, process, and analyze biological specimens and other substances.
4. Perform, discuss and demonstrate principles and methodologies of diagnostic assays, problem solving, and troubleshooting techniques.
5. Discuss significance of clinical procedure results and the principles and practices of quality assessment.
6. Practice and discuss principles of professional conduct and the significance of continuing professional development.

Medical Laboratory Technology: Phlebotomy, C.S.C.

Pathway: Health Sciences

1. Communicate effectively to serve the needs of patients, the public, and the health care delivery team.
2. Demonstrate laboratory safety and regulatory compliance.
3. Perform venipuncture and dermal puncture collection, handling, and processing.
4. Demonstrate ethical and professional conduct.
5. Develop problem-solving skills in the all phases of specimen collection.
6. Relate knowledge of body systems with the most common diagnostic laboratory testing for each system.

Music, A.A., A.A.A.

Pathway: Visual, Performing, and Media Arts

1. The student will be able to render a performance that is musically expressive and technically accurate.
2. The student will be able to analyze the musical structure of a composition.
3. The student will be able to aurally identify intervals within an octave.
4. The student will be able to perform effectively in a group.
5. The student will be able to provide an overview of the history of music/history of jazz and popular music.
6. The student will be able to effectively research and write on topics in the area of music/jazz and popular music.

Music Recording Technology, Certificate

Pathway: Visual, Performing, and Media Arts

1. Creatively use technical knowledge of microphones and/or microphone techniques in audio applications.
2. Appropriately use an equalizer, compressor, and/or time-based effects in audio applications.
3. Distinguish five frequency bands in audio aurally.
4. Explain current issues in copyright law.
5. Record a live band.
6. Calculate basic electrical circuit resistance, amperage, and voltage.

7. Use techniques to predict room reverberation time (RT_{60}) with regard to proper musical acoustic support for a traditional recording studio space exhibiting frequency-dependent exponential decay.
8. Define terms used in pro audio.
9. Seamlessly edit digital audio files.

Nursing, A.A.S.

Pathway: Nursing

1. Patient-Centered Care: Provide patient centered care promoting therapeutic relationships, caring behaviors, and self-determination across the lifespan for diverse populations.
2. Safety: Practice safe nursing care that minimizes risk of harm across systems and client populations.
3. Clinical Judgement: Demonstrate nursing judgment through the use of clinical reasoning, the nursing process, and evidence-based practice in the provision of safe, quality care.
4. Professional Behaviors: Practice professional behaviors that encompass the legal/ethical framework while incorporating self-reflection, leadership and a commitment to recognize the value of life-long learning.
5. Quality Improvement: Manage client care through quality improvement processes, information technology, and fiscal responsibility to meet client needs and support organizational outcomes.
6. Collaboration: Demonstrate principles of collaborative practice within the nursing and interdisciplinary teams, fostering mutual respect and shared decision-making to achieve stated outcomes of care.

Occupational Therapy Assistant, A.A.S.

Pathway: Health Sciences

1. Establish and maintain a therapeutic rapport with clients, families, colleagues, and other health care professionals through effective communication and appropriate professional behaviors during the screening and evaluation process.
2. Implement evidence-based practice skills when working with clientele across the lifespans and across cultures.
3. Apply reflective problem-solving skills and decision-making skills while providing OT intervention in a safe manner.
4. Provide meaningful and purposeful therapeutic interventions to clients in a safe, ethical, and legal manner under the direction and supervision of an occupational therapist.
5. Effectively document using electronic medical records and written documentation in order to best ensure effective communication with colleagues, other healthcare professionals, administration, and reimbursement agencies.
6. Utilize principles of occupational and activity analysis and synthesis used in occupational therapy intervention during laboratory activities and fieldwork opportunities.
7. Utilize the teaching and learning process in providing occupational therapy interventions.
8. Develop lifelong learning capabilities required for enhanced professional development.

Paralegal Studies, A.A.S.

Pathway: Education and Public Service

1. Distinguish between the roles of attorney and paralegal.
2. Research federal and state laws using manual and computer assisted methods such as Lexis or Westlaw.
3. Locate and prepare standard forms appropriate to specific legal problems.
4. Draft legal documents, including but not limited to pleadings, contracts, wills, and deeds.
5. Distinguish between personal and subject matter jurisdiction for federal and state courts.
6. Solve issues using proper legal citation form and writing style.
7. Identify and solve legal ethics and professional responsibility issues.
8. Demonstrate competency in the use of timekeeping and scheduling software applications.

Personal Training, C.S.C.

Pathway: Health Sciences

1. Students will be able to explain the scientific principles of fitness and demonstrate proper technique for flexibility, muscular strength, muscular endurance, and cardiovascular exercises.
2. Students will be able to identify and describe the muscular-skeletal structure as it relates to fitness.
3. Students will be able to identify the major nutrients and discuss their role in overall wellness.
4. Students will be able to identify and apply basic treatment and prevention of common fitness-related injuries.
5. Students will be able to apply their understanding of physical fitness concepts, physiological factors of training, and weight management strategies.
6. Students will be able to instruct individual/group exercise sessions.
7. Students will be able to demonstrate and interpret physical fitness assessments on muscular strength, muscular endurance, cardiovascular endurance, flexibility, and body composition.
8. Students will be able to identify modifiable risk factors contributing to cardiovascular disease.
9. Students will be able to demonstrate correct procedures for cardiopulmonary resuscitation and use of an automated external defibrillator (AED).
10. Students will be able to identify and describe the academic areas of study and professional opportunities in the fitness industry.
11. Students will consider the various factors that influence behaviors and behavior modification decisions and be able to create a lifestyle change plan.

Photography and Media, A.A.S.

Pathway: Visual, Performing, and Media Arts

1. Control the image capture process.
2. Control the image output process.
3. Manage image/media assets and workflow.
4. Solve technical and aesthetic problems independently and creatively.
5. Produce and present a coherent body of work in a chosen genre.

6. Discuss work in the medium with correct and appropriate vocabulary.
7. Discuss images in terms of the history and theory of the medium.
8. Identify career options in the field.
9. Make effective editing and postproduction decisions.

Physical Therapist Assistant, A.A.S.

Pathway: Health Sciences

1. Demonstrate competence in implementing interventions identified in the plan of care established by the physical therapist.
2. Demonstrate competence in performing data collection skills essential for carrying out the plan of care established by the physical therapist.
3. Present sound rationales for clinical problem solving within the plan of care established by the physical therapist.
4. Communicate verbally and nonverbally with the patient, the physical therapist, health care delivery personnel and others in an effective, appropriate, and capable manner.
5. Exhibit conduct that reflects practice standards that are legal, ethical and safe.
6. Identify career development and lifelong learning opportunities.
7. Identify basic concepts in professional literature including, but not limited to, validity, reliability and level of statistical significance.

Professional Writing, Certificate

Pathway: English and Deaf Studies

1. Compose and correctly format concisely written documents in a variety of genres including business letters (with or without attachments), documents, technical reports, and user documentation.
2. Write and research reports following the conventions and ethics of professional writing including design, writing, and testing (if applicable) of user documentation.
3. Compose and edit web pages with consistent tone, ethics, and style.
4. Employ correct fundamentals of English grammar, including punctuation, and basic logic of written communication.
5. Produce edited documents with application of copy and comprehensive editing.
6. Apply knowledge gained in entire program in Capstone Writing Portfolio.

Psychology, A.S.

Pathway: Social Sciences

1. Students will differentiate and/or apply the major concepts, theoretical perspectives, historical trends, and empirical findings in psychological science.
2. Students will differentiate elements of and/or apply the scientific method, types of research methodology, and skills and errors in critical thinking and problem-solving.
3. Students will identify and/or apply ethical standards in psychological science and practice.
4. Students will identify the diverse influences of culture on individuals and psychological phenomena.
5. Students will demonstrate written and/or oral communication skills on topics within the study of psychology.

Public History and Historic Preservation, C.S.C.

Pathway: Social Sciences

1. Students will synthesize knowledge of historical preservation / public history with practical experience in the field.
2. Students will analyze and assess museum exhibits and objects.
3. Students will explain the role and function of preservation in society.
4. Students will explain the historical development of preservation law and its applications in local, state, and national government.

Radiography, A.A.S.

Pathway: Health Sciences

1. Apply knowledge of radiation protections to minimize patient dose.
2. Communicate effectively to serve needs of community and other health care providers.
3. Provide patient care essentials to radiologic sciences.
4. Apply knowledge of anatomy, positioning, and radiographic techniques to accurately image anatomical structures.
5. Evaluate images for diagnostic information.
6. Determine proper exposure factors to achieve optimum images of anatomical structures.
7. Work in an ethical, legal, safe and effective manner in diagnostic imaging.
8. Develop lifelong learning habits that reflect professional development.

Respiratory Therapy, A.A.S.

Pathway: Health Sciences

1. Perform psychomotor and demonstrate the cognitive skills in all areas of adult critical care.
2. Demonstrate ethical and professional conduct in the classroom, laboratory and clinical settings.
3. Communicate effectively with respiratory care and other healthcare professionals.
4. Appropriately interpret graphic depictions of ventilator waveforms as it applies to the patient's clinical status.
5. Demonstrate proficient skills in written communication by creating a document that focuses on content, organization and style that will be evaluated using a rubric.
6. Achieve 85% or above (the national mean) on the new candidate summary for the Therapist Multiple Choice Exam (TMC) Sub scores for each content domain on the National Board exams.
7. Achieve 85% or above (the national mean) on the new candidate summary for the Clinical Simulation Exam (CSE) Sub scores for each content domain on the National Board exams.

Science, A.S.

Pathway: Physical Sciences

1. Students will be able to use quantitative reasoning coupled with scientific knowledge to draw logical conclusions and make well-reasoned decisions.

2. Students will apply the scientific method and identify methods of inquiry that lead to scientific knowledge.
3. Students will use graphical methods to organize and interpret data.
4. Students will explain the atomic structure of basic chemical elements.
5. Students will be able to explain the principles of chemical bonding in the formation and properties of molecules.
6. Students will be able to utilize mathematical calculation skills to resolve STEM-related problems.
7. Students will be able to use standard laboratory techniques.

Science: Mathematics Specialization, A.S.

Pathway: Mathematics

1. Choose an appropriate mathematical method to solve problems.
2. Solve applied problems.
3. Assess the reasonableness of solutions.
4. Interpret mathematical results.
5. Communicate mathematical concepts.
6. Construct graphs.
7. Analyze graphs.
8. Analyze functions.
9. Use technology to solve problems.

Social Sciences, A.S.

Pathway: Social Sciences

1. Critical Thinking: Students will locate, evaluate, interpret, and combine information to reach well-reasoned conclusions or solutions.
2. Civic Engagement: Students will demonstrate the knowledge and civic values necessary to become informed and contributing participants in a democratic society.
3. Communication: Students will develop, convey, and exchange ideas as appropriate to a given context and audience.
4. Scientific Literacy: Students will recognize and know how to apply social science research methods to evaluate empirical information.
5. Data Literacy: Students will access, interpret, and communicate social science data.
6. Technological Competency: Students will use technology to conduct social science research.

Social Sciences: Geospatial Specialization, A.S.

Pathway: Social Sciences

1. Students will define and employ geospatial vocabulary.
2. Students will plan and perform spatial analysis.
3. Students will prepare and present geo-spatial material to an end-user.
4. Students will plan, develop and maintain a Geographic Information System (GIS).
5. Students will manage diverse spatial data.

Social Sciences: Teacher Education Specialization, A.S.

Pathway: Education and Public Service

1. Students will identify and describe the licensure/certification requirements for teacher education (Pre K-12).
2. Students will summarize, reflect upon, and outline their field experiences in the public-school systems during their 40 field placement hours.
3. Students will analyze the educational court cases which have helped define and regulate the educational system in the U.S.
4. Students will critically evaluate information that describes the inter-relationship of teaching, learning, students, and/or society.
5. Students will illustrate and explain their understanding of assessment techniques in the public-school systems.
6. Students will create an action plan to provide culturally responsive instruction for diverse students and English Language Learners.
7. Students will apply knowledge of child development, culture and classroom design to develop a positive behavior management plan.
8. Students will analyze and describe various stages of child development and their influence on classroom instruction.
9. Students will plan differentiated lessons for diverse learners.

Substance Abuse Rehabilitation Counselor, Certificate

Pathway: Education and Public Service

1. Conduct a client screening assessment including a medical, legal, and family history.
2. Prepare information for use with a client that includes facts about the disease, potential for relapse, and codependency.
3. Design a comprehensive substance abuse treatment program appropriate for use with a client that meets state standards.
4. Identify and explain the developmental stages of group.
5. Attend several support group meetings, summarize the group experience, and present findings.
6. Conduct a site visit of an addiction treatment facility and make a presentation on the findings including levels of care, theoretical basis, modalities of treatment, and the requirements of staff.
7. Summarize journal articles related to various theoretical orientations and participate in small groups comparing the application of the approaches.

Veterinary Technology, A.A.S.

Pathway: Health Sciences

1. Safely and accurately prepare, dispense, administer, and explain the use of prescribed medications.
2. Perform surgical assistance.
3. Perform and assist with dental procedures including dental equipment preparation and maintenance.
4. Properly collect, accurately prepare, and analyze laboratory specimens.
5. Explain animal patient assessment, nursing procedures, and the implantation of prescribed diagnostics and treatments, including basic animal care or husbandry (excluding emergency and critical care).

6. Produce diagnostic images (excluding dental) following protocols for quality and demonstrate knowledge of proper operator and animal patient safety.
7. Safely and effectively administer and monitor animal patient anesthesia.
8. Assess need for analgesia and assist in the development and implementation of the pain management plan to optimize animal patient comfort and/or healing.
9. Explain how to perform and expedite triage, emergency, and critical care nursing procedures in the implementation of prescribed treatments.
10. Communicate effectively in an ethical, legal, and professional manner with veterinary clients and the veterinary health care team.

Visual Art, A.F.A.

Pathway: Visual, Performing, and Media Arts

1. Apply technical skills of craftsmanship to craft a two- or three-dimensional artwork.
2. Evaluate a work of art using critical thinking and an accurate vocabulary.
3. Create an artwork from direct observation.
4. Recognize the role of social, community, and global connections to understand historical and/or contemporary art.
5. Use the elements and principles of design to create an artwork.
6. Create a portfolio of artwork appropriate for the student's next academic and/or career endeavor.

Welding: Basic Techniques, C.S.C.

Pathway: Engineering and Applied Technology

1. Perform technical work related to welding applying OSHA safety and industry standards in a work environment.
2. Apply basic machine and technique adjustments to solve typical welding problems.
3. Select appropriate filler material for compatible admixing and dilution in the writing of welding procedure for various ferrous and non-ferrous metals.
4. Read and correctly interpret basic welding fabrication drawings, sketches, symbols, and/or welding specifications.

PATHWAY TO THE AMERICAN DREAM—NOVA’S STRATEGIC PLAN 2017-2023

THE NOVA COMMITMENT

As its primary contributions to meeting the needs of the Commonwealth of Virginia, Northern Virginia Community College pledges to advance the social and economic mobility of its students while producing an educated citizenry for the 21st Century.

THE STRATEGIC PLAN GOALS AND OBJECTIVES²

To deliver on this commitment, NOVA will focus its creativity and talent, its effort and energy, and its resources and persistence, on achieving three overarching goals—success, achievement, and prosperity. It will strive to enable **Every Student to Succeed, Every Program to Achieve, and Every Community to Prosper**. These strategic goals are grounded in our college’s commitment to equity, excellence, empathy, evidence, and economic and social mobility (NOVA’s 5Es).

GOAL 1: Every Student Succeeds

- **Objective 1:** Adopt a college-wide approach to advising
- **Objective 2:** Achieve equity in student outcomes

GOAL 2: Every Program Achieves

- **Objective 3:** Establish comprehensive, fully-integrated, Informed Pathways (high school to NOVA to four-year college/university) for every program
- **Objective 4:** Sustain and, where needed, establish effective, equity-minded NOVA collegewide processes, protocols, policies, and accountabilities for services and programs
- **Objective 5:** Align NOVA’s culture, structure, and talent management/development with its access and equity mission and commitment to inclusive excellence
- **Objective 6:** Stabilize, grow, and sustain resources required to support mission and innovation

GOAL 3: Every Community Prospers

- **Objective 7:** Elevate and empower NOVA as the region’s leading workforce provider across all essential and high demand industry sectors

² Strategic Plan Objectives were revised in Fall 2020.

NOVA

**Northern Virginia
Community College**

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