



Stark State COLLEGE

AAS Fundamentals of Engineering Advanced Manufacturing Certificate course descriptions

SSC101 – Student Success Seminar

This course is designed to aid students in gaining the skills necessary for academic success at Stark State College (SSC). Topics include learning styles, critical thinking, time management, study and test-taking techniques, communication skills, and a variety of personal development strategies. Students will learn how to access and use SSC resources such as mystarkstate, the College's Learning Management System (LMS), Digital Library, Writing Center, Career Development, advising, tutoring, and other College support services. This course also fosters connections between students, their respective academic divisions, and their classmates. Upon completion of this course, students should be able to incorporate into their degrees or certificate programs the tools and skills necessary to be academically and professionally successful.

ENG124 – College Composition

This course emphasizes writing based on reading response with review of essay development, grammar, and punctuation. Emphasis is on the process of drafting, revising, and editing to achieve clarity. A research project requires APA or MLA documentation.

ENG221 – Technical Report Writing

This course stresses clarity, logic and appropriate organization in informal and formal technical reports. An oral presentation/proposal may be required.

PSY124 – Industrial/Organizational Psychology

Drawing from a wide range of psychological theories, principles and research, this course emphasizes personal and interpersonal skill-building beneficial to the prospective professional. Topics include learning and memory; perception; motivation and leadership; group dynamics and team-building; problem-solving and conflict resolution; communications; and stress management.

COM122 – Interpersonal Communications

This course examines the theory and application of interpersonal communication concepts and principles, emphasizing application toward becoming a more competent interpersonal communicator. Areas of study include perception, culture, listening, nonverbal communication, relationships, and conflict.

MTH107 – Industrial Math

This course will cover the topics of elementary mathematics needed for applications in the vocational and technical curriculum. The operation and use of the scientific calculator as a problem solving tool will be emphasized. Topics include: basic concepts, fractions, the metric system, measurements, polynomials, basic right angle trigonometry, ratios and proportions, geometry, oblique triangles, the law of sines and law of cosines.

PHY101 – Principles of Physics (lab)

Survey course that assumes no familiarity with physics. Space, time, matter, motion, force, momentum, mechanical energy, heat, electricity, magnetism, light, units of measure and other concepts are studied descriptively. Basic calculation and problem-solving techniques are introduced, including a brief review of elementary algebra. Laboratory work emphasizes how to read measuring instruments, proper use of measured data in calculations, and how measured data can be used to test theories of physics.

MST121 Blueprint Reading

This course provides the opportunity for students to develop the skills of reading and interpreting blueprints. Orthographic projection and concepts of visualization are discussed before the various types of blueprints are introduced. "The reading of," rather than the drawing of blueprints is emphasized throughout the course. Types of prints covered include but not limited to industrial, structural, civil, sheet metal, building, piping, hydraulic, welding, and electrical.

MET123 Material Science

This course provides the opportunity for students to develop the skills of reading and interpreting blueprints. Orthographic projection and concepts of visualization are discussed before the various types of blueprints are introduced. "The reading of," rather than the drawing of blueprints is emphasized throughout the course. Types of prints covered include but not limited to industrial, structural, civil, sheet metal, building, piping, hydraulic, welding, and electrical.

MET225 Manufacturing Processes

Students will investigate a variety of manufacturing techniques including casting, powder metallurgy, metal forming, hot and cold working, arc and gas flame welding, rapid prototyping, microelectronic manufacturing, and chip-type machining processes. Scheduled tours of local industry and/or guest speakers augment the material for the traditional format. The web 3 format will replace tours with DVD review and reflection assignments of all manufacturing processes.

AIT139 Introduction to Robotics

Basic terminology, theory and application of robotics, including: selection, construction, classification, operating characteristics and safety. Emphasis is given to industrial examples in stand-alone and work cell applications.

DET125 Basic AutoCAD

This course begins with basics and gives students hands-on experience using personal computers to create engineering drawings with AutoCAD software. Topics include: basic components of a CAD system, overview of [Windows] operations, input methods, drawing setup and display, editing, dimensioning, text, layers, hatching, blocks and plotting.

CET121 Building Materials and Construction Methods

This course familiarizes the student with the basic materials of construction according to their physical properties, durability and suitability for use under varying conditions. Use of materials in combination with one another and in the finished product will be examined both verbally and graphically. Emphasis is placed on material selection according to given criteria.

CET225 Sustainable Building and Construction Methods

This course examines sustainable storm water management, water supply and waste for buildings and how they can be designed to promote conservation, thermodynamics of buildings and how design of the envelope can reduce energy usage. HVAC system design for conservation and lighting design to maximize day-lighting and energy conservation.

CET237 Interpreting Construction Documents

This course focuses on interpreting the construction documents for the purposes of estimating, scheduling, and field-directing a construction project. It includes reading the designers' drawings for residential, light commercial, heavy commercial, and civil engineering projects. The specifications for the projects are studied with attention to the materials and installation requirements contained therein.

AIT134 Preventive and Predictive Maintenance

This course is designed to familiarize the student with preventive maintenance practices which includes the regular inspection, lubrication, testing, adjustment, and analysis of equipment. Included is the framework for all planned maintenance activity to correct potential problems identified by inspection resulting in optimized equipment performance and life. An introduction to predictive maintenance practices will be covered.

EST230 Electrical Circuits & Devices

This course is to provide a general understanding of electricity and the operation of electrical devices; to be able to make electrical measurements and basic calculations involving voltage, current, resistance, reactance, capacitance, and power; and to learn how to supply power to commercial equipment.

IET121 Industrial Management Concepts

This is an introductory course which examines the essential elements of contemporary management

in the industrial organization. Topics include, but are not limited to: the changing role of supervisors/managers; the decision-making process; supervisor/manager-employee relationships; team management and problem solving; planning and communication.

EST129 Switchgear, Transformers and Controls

The course covers low and high voltage circuit breakers and switchgear primarily from 4KV to 15KV. It shows how switchgear is basically constructed, how circuit breakers work, and general maintenance of such equipment. The basic theory of transformers and connection schemes of common types of transformers including dry and wet type distribution transformers, power transformers, and instrument transformers is explained. Control ladder and wiring diagrams with an introduction to input and output control devices, are presented and implemented in lab.

NAV101 Naval Ethics & Leadership

This course provides students with the foundational knowledge to assist them in understanding their role as a member of the United States military including their promise to “support and defend” the Constitution as well as be persons of exemplary character, worthy of moral praise. This course is centered around Moral Deliberation Road Map that includes three elements: moral deliberation, moral excellence, and the just war tradition which lends an understanding of how together we can fight and win with honor. It seeks to provide a deeper knowledge of the ethical demands of combat, and a basic understanding and contemporary thought in the theoretical complexities inherent in such service.

NAV102 Modern Naval History

This course will provide students with an overview of modern naval history, with an emphasis on understanding the roles that the Naval Services (Marine Corps, Navy, Coast Guard) have played and how they relate to the relevant period of history and conflicts therein. Students will examine the key events that marked the evolution of the Naval Services and exercise critical thinking skills to understand the political, environmental, and societal causes and impacts of those conflicts. There will likely be an emphasis on writing in this class.

NAV103 Naval Force Design

The purpose of this course is to provide USNCC students with an understanding of how the naval forces are organized and the fundamental concepts that underpin naval operations. For the Naval Service to be prepared for contingencies within the spectrum of armed conflict, it is essential to integrate different components of the naval force and optimize them for specific missions or threats. This involves a layered system of warfare that aligns local military action to national objectives. In turn, this course will prepare students to recognize how elements of naval power can be applied across strategic, operational, and tactical levels of warfare. The course will use historic examples to improve student’s understanding of how the current state of naval force design has been developed, lead into the structures that comprise the Naval Service’s force design and explain the fundamental missions of the naval services and how they contribute to the Joint Force. The course will cover topics including the philosophy and organization of our naval forces, functions of the naval forces, and the operational concepts of the Joint and naval forces.

As students begin to align with the naval doctrine of warfare, it is vital that they understand how and why the current state has developed and be able to objectively examine with a critical eye. This course will allow students to demonstrate critical thinking skills, ethical reasoning, and judgment in applying naval doctrinal concepts to operational problems.

NAV104 Civilian/Military Organization and Policies

The purpose of this course is to provide USNCC students with an overarching understanding of how the American political system is organized within the United States and the role that the Military has in that system. This course provides an introduction to American politics, along with an introduction to policies relevant to the Naval Services. The lessons taught in this course are developed to prepare service members to operate within the military construct of the American political system. This course also prepares students for further instruction on the concepts and theories of political science and public administration.

This course will cover the foundations of American politics, the history upon which it was built, the structures that comprise it, and how they interact with each other. Specific topics include the presidency, the U.S. Congress, the Supreme Court, the constitution, political parties, civil rights, elections, and military organization. Students will examine the range of factors, from historic and geographic issues to threats and risks from a multitude of sources, that have impacted the formation of our current day American political structure and military organization. Students will learn the roles and responsibilities that the military plays in the U.S. government, and the policies which govern the execution of military power.

NAV105 Introduction to the Geopolitical Environment

This course provides students with foundational knowledge to assist them in understanding the role of the United States in the international system, as well as the challenges it faces in the 21st Century. It seeks to address a series of critical questions: How did the modern international system develop? Who are the major actors? What are the major theories for understanding state behavior? What are the causes of war? What is the role of treaties, alliances, and international organizations? What specific challenges do our current adversaries (China, Russia, North Korea, Iran) pose to U.S. interests? What tools do the United States and its allies have in meeting these challenges? It concludes with a consideration of possible future directions and factors that will affect cooperative and competitive outcomes among states.