

Course Descriptions – Nuclear Technology Program

T&I Courses taught at NWTC

10-804-195 **COLLEGE ALGEBRA WITH APPLICATIONS** ...skills needed for success in Calculus and many application areas on a baccalaureate level. Topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities (linear and nonlinear), relations and functions, systems of equations and inequalities (linear and nonlinear), matrices, graphing, conic sections, sequences and series, combinatorics, and the binomial theorem. (Prerequisites: Recommendation: Accuplacer (College Level Math) = 63 OR Completion of 10-804-118, Intermediate Algebra w Apps or 10-804-131, Math-Algebra/Inter with grade "C" or better) 3 cr.

10-804-196 **TRIGONOMETRY WITH APPLICATIONS**
...topics include circular functions, graphing of trigonometry functions, identities, equations, trigonometric functions of angles, inverse functions, solutions of triangles complex numbers, DeMoivre's Theorem, polar coordinates, and vectors. (Prerequisites: Recommendation: Accuplacer (College Level Math) = 63 OR Completion of 10-804-118, Intermediate Algebra w Apps, 10-804-195, College Algebra with Apps or 10-804-131, Math-Algebra/Inter with grade "C" or better OR Concurrent enrollment in 10-804-195, College Algebra with Apps) 3 cr.

10-660-104 **DC 1: INTRODUCTION** ...introduction to the concepts of DC electricity and simple series circuits. Voltage, Current, Resistance, Ohm's Law, Power and Kirchoff's Voltage Law are defined.

10-660-105 **DC 2: CIRCUITS** ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Prerequisites: 10-804-118, Interm Algebra w Apps or equivalent; 10-660-104, DC 1: Intro)

10-660-106 **DC 3: CIRCUIT THEOREMS** ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and currents. (Prerequisite: 10-660-105, DC 2: Circuits)

10-660-109 **AC 3: RLC CIRCUITS** ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-620-101 **FLUIDS 2: BASIC HYDRAULICS** ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Prerequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-121 **MECHANICS 1: BASIC** ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 **MECHANICS 2: INTERMEDIATE** ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt Drives, synchronous belt drives, lubrication, and alignment. (Prerequisite: 10-620-121, Mechanics 1: Basic)

10-620-123 **MECHANICS 3: SYSTEMS** ...application of correct couplings to mechanical systems, Heavy-duty Chain Drives, Maintenance of Brakes and Clutches, selection of brake/clutch mechanisms, and specification of linear ball bushings and ball screw drives. (Prerequisite: 10-620-122, Mechanics 2: Intermediate)

10-620-165 **FLUIDS 3: INTERMEDIATE HYDRAULICS** ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-660-107 **AC 1: PROPERTIES** ...introduction to the properties of Capacitors and Inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisites: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps.)

10-660-108 **AC 2: REACTANCE** ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sine wave are derived. (Prerequisite: 10-660-107, AC 1: Properties)

(05/28/2008)