

LTC  
 Nuclear Technology Program  
 Cross-Reference of Courses which can be Substituted  
 to Obtain an AAS Degree with a Concentration  
 in Radiation Safety Technician

NT Required Course	Credits	RST Substituted Course	Credits
10 660-105 DC Fundamentals	3	10 449-104 Principles of Industrial Hygiene	3
10 660-110 AC Fundamentals	3	10 529-150 Hazardous Waste Site Worker	2
10 620-130 Introduction to Mechanical Mechanisms	3	10 624-145 Applied Health Physics 10 624-146 Applied Health Physics Lab	2 2
10 620-159 Hydraulics I	2	10 624-138 Radioactive Material and Management	2
10 660-130 Electronic Devices/Digital	4	10 624-140 Radiochemistry 10624-132 Radiological Emergencies	2 2
10 620-141 Industrial Controls and Motors	3	10 624-134 Radiation Shielding 10 624-135 Radiation Shielding Lab	2 1
	18		18

Required Course Descriptions for Nuclear Technology AAS Degree

***10 660-105 DC Fundamentals***

...prepares the student to follow safety procedures; maintain a safe and healthy work environment; convert values to scientific and engineering notations; calculate math quantities; describe basic atomic theory; identify basic electrical terms; use established symbols standards; describe DC voltage characteristics and current sources and electrical resistance; measure and analyze electrical quantities in series and parallel circuits; and desolder/solder single and multi-lead components.

### ***10 660-110 AC Fundamentals***

...prepares the student to analyze electrical circuits using phasers and AC math, analyze AC waveforms, measure and analyze AC power, analyze capacitors and inductors in DC and AC circuits, analyze AC circuits containing reactance and calculate resonance, apply the elements and properties of basic measuring circuits, and describe transformer characteristics.

*COREQUISITES: 10 660-105 DC Fundamentals or 10 660-105C1 DC Fundamentals (3 cr) or 10 605-105 DC Fundamentals or 10 605-105C1 DC Fundamentals (3 cr)*

### ***10 620-130 Mechanisms Mechanics, Introduction to***

...prepares the learner to use tools and fasteners safely; identify belt and chain drive components; install and adjust belt and chain drives; apply bearing and lubrication information; perform coupling alignment using straight edge, feeler gauge, and dial indicator methods; identify various gear drives; calculate gear ratios; and analyze first-, second-, and third-class levers.

### ***10 620-159 Hydraulics I***

...prepares the learner to identify hydraulic component symbols; adjust a pressure relief valve; analyze the operation of a pilot operated relief valve; analyze Pascal's law; evaluate flow, velocity, work and power in industrial hydraulic circuits; analyze meter-in, meter-out, and bypass flow control circuits; evaluate the characteristics of hydraulic pumps, motors; directional and control valves; identify basic hydraulic control valves; and assemble hydraulic circuits.

### ***10 660130 Electronic Devices/Digital***

...prepares the learner to: evaluate characteristics of solid-state electronics; troubleshoot solid-state diodes and power supply circuits; troubleshoot solid-state transistors and circuits; troubleshoot thyristor controlled circuits; troubleshoot operational amplifier circuits; convert among numbering systems used in digital electronics; analyze basic logic gates; analyze the operation of flip-flops; analyze the operation of registers and register circuits; and analyze the evaluate the operation of transducer devices.

*PREREQUISITES: 10 660-110 AC Fundamentals or 10 660-110C1 AC Fundamentals (3 cr) or 10 605-110 AC Fundamentals or 10 605-110C1 AC Fundamentals (3 cr)*

### ***10 620-141 Industrial Controls and Motors***

...prepares the learner to select control devices by function and operation; illustrate electrical circuits using symbols, diagrams, and abbreviations; explain the operation of magnetic solenoids; apply motor control techniques; select relay type for industrial application; apply the basic rules of line and wiring diagrams; compare the types of timers and timing circuits used in control and explain the coding systems used; explain each type of control device and how it is used in an electrical circuit. Also prepares the learner to verify DC motor operational theories; select DC and AC motor types for general applications; identify AC motor components and wiring applications; verify single phase operational theory; identify three phase motor components and wiring applications; verify three-phase motor operational theory; identify motor starting methods for industrial applications; verify electro-mechanical motor starting principals of operation; select the motor breaking method for industrial applications; verify the operational theory of speed and acceleration methods for motors used in industrial applications; design three-phase power motor circuits for industrial applications; design control circuits for three phase power motor circuits.

*COREQUISITES: 10 660-110 AC Fundamentals or 10 660-110C1 AC Fundamentals (3 cr) or 10 605-110 AC Fundamentals or 10 605-110C1 AC Fundamentals (3 cr)*

Substituted Course Descriptions for Radiation Safety Technician AAS Degree

***10 449-104 Principles of Industrial Hygiene***

...prepares the learner to anticipate, recognize, and control occupational exposure to hazardous chemicals and physical stresses; conduct exposure monitoring; research regulations, literature, and other documents on occupational illness and disease; and evaluate exposure control procedures and practices for basic toxicology, air quality, noise, vibration, blood-borne pathogens, temperature extremes, radiation and ergonomics.

***10 529-150 Hazardous Waste Site Worker***

...provides training to respond to a hazardous material incident both in an industrial setting and field setting. Student will receive hazardous waste site worker certificate upon successful completion of the class.

***10 624-145 Applied Health Physics***

...prepares the learner to issue dosimetry, calculate neutron dose, monitor personal exposure, calculate radioactive airborne activity concentration, estimate radioactive airborne concentration, issue respirators, determine contamination levels, recommend protective clothing, reduce the spread of contamination, conduct an ALARA audit, reduce the total radiation exposure, maintain records, and estimate exposure to internal organs.

*PREREQUISITE: 10 624-122 Radiation Physics*

***10 624-146 Applied Health Physics Lab***

...expands the learner's ability to perform applied health physics tasks as covered in Applied Health Physics, 10 624- 145. This course is associated with 10 624-145.

*COREQUISITE: 10 624-145 Applied Health Physics*

***10 624-138 Radioactive Material and Management***

...introduces the learner to the proper methods used to dispose of radioactive waste in liquid, solid, gaseous forms; determine waste classification, package/label requirements, proper type of transport container, shipment quantity classification, storage distance for people and film during shipments by rail/vessel/public roads, proper shipping name and UN number; completion of proper shipping papers; document materials inventory/shipments; evaluate methods used to process low level and high level waste.

***10 624-140 Radiochemistry***

...prepares the learner to separate dissolved, suspended, liquid, and ionic radioactive components; perform qualitative and quantitative analysis of samples; and prevent the production of radioactive material by using proper chemical control.

*PREREQUISITES: 10 624-122 Radiation Physics and 10 806-134 General Chemistry or 10 806-174 General Chemistry or High School Chemistry Equivalent*

***10 624-132 Radiological Emergencies***

...prepares the learner to plan and assist in emergencies involving radioactive material and radiation by calculating projected doses, collecting environmental samples, following emergency plans, and managing affected personnel.

*PREREQUISITES: 10 624-110 Nuclear Technology and Regulations and 10 624-105 Health Physics Calculations and Statistics and 10 624-114 Nuclear Systems and Sources*

***10 624-134 Radiation Shielding***

...provides the learner with the skills to calculate radiation attenuation from various geometric radioactive sources, determine the effect of neutron radiation on materials, and estimate the exposure rate from various sources.

*PREREQUISITE: 10 624-122 Radiation Physics*

***10 624-135 Radiation Shielding Lab***

...expands the learner's ability to perform shielding of ionizing radiation sources and to measure the penetration of alpha beta and gamma radiation.

*COREQUISITE: 10 624-134 Radiation Shielding*