

# Nuclear Technology

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## NT 101

### Introduction to Clean Energy [RE] • 5.0 Credits

This course provides an overview of the clean energy sector, particularly highlighting nuclear energy. Students will explore career pathways in diverse fields that connect to the clean energy sector, research local and national initiatives, and explore the foundational principles of clean energy production. The course covers key concepts in power and energy systems, analyzing the benefits and challenges of various clean energy sources, including emerging trends and their environmental impacts. By the end of the course, students will have a good understanding of clean energy, nuclear advancements, and regional and national career opportunities. This course is open to all students, regardless of major.

## NT 111

### Basic Nuclear Math & Physics [RE] • 5.0 Credits

Introduction to basic nuclear concepts using mathematics and physics; includes concepts of dimensional analysis, algebra, geometry, trigonometry, mechanical principles, simple machines, including definitions, and basic concepts. Industrial and science applications of nuclear processes, and risk/benefit analysis are included. **Prerequisite:** A grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.

## NT 114

### Introduction to Radiation Safety [RE] • 5.0 Credits

Topics include types of radiation, radioactive decay, activity, radioactive sources, and interaction of radiation with matter, radiation units, and basic fundamentals of exposure, dose, and personnel dose. The course includes an opportunity to practice basic radiation protection tasks. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 121

### Reactor Plant Operations [RE] • 4.0 Credits

Introduction to the basics of reactor plant operations. Topics include basic computer operations and knowledge of basic systems associated with a nuclear power plant. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 122

### Basic Nuclear Facilities [RE] • 4.0 Credits

Introduction to tank farms, vitrification, and decommissioning nuclear facilities. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 131

### Nuclear Facility Components [RE] • 4.0 Credits

Introduction to basic mechanical and electrical components used by nuclear power plants such as different types of piping, valves, pumps, ejectors, filters, turbines, heat exchangers, compressors, lubrication systems, valve actuators, breakers, transformers, relays, and other equipment. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 141

### Basic Reactor Safety, Theory, & Operations [RE] • 5.0 Credits

Introduction to the fission process, reactivity/criticality, basic reactor kinetics, heat removal, reactor types, nuclear power plant chemistry, and elementary thermodynamics. In addition, basic radiation worker training is provided in this course. **Prerequisite:** A grade of 0.7 or higher in either NT 121 or NT 122.

## NT 142

### Basic Nuclear Safety & Environmental Compliance [RE] • 5.0 Credits

An introduction to nuclear facility safety, accident analysis, and environmental regulations and compliance standards. **Prerequisite:** A grade of 0.7 or higher in either NT 121 or NT 122.

## NT 150

### Internship Seminar [RE] • 1.0 Credit

This class focuses on preparation for the internship. Topics include workplace expectations, safety, and communication skills. Evaluation methods for the internship are explained and discussed. Grade is pass/no credit. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 152

### Internship [RE] • 1.0–5.0 Credits

Designed to provide students with major-related, supervised, evaluated practical training work experiences with a company that uses nuclear technicians in radiation protection, nuclear reactor operations, or nuclear reactor maintenance which may be paid or voluntary. Students are graded on the basis of documented learning acquired through hands-on new experiences in an actual work setting.

## NT 154

### Industry Project [RE] • 5.0 Credits

This course is designed for students who have yet to obtain an internship in the nuclear industry. As part of the course, students will undertake an industry project in the nuclear field, applying their learned skills and training to become effective employees in the sector. The project will build upon their nuclear technology studies and deepen their understanding of working in the nuclear industry, enhancing their knowledge and experience. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 160

### Nuclear Chemistry [RE] • 3.0 Credits

Designed to give students a broad understanding of nuclear chemistry. Focuses on basic reactor water chemistry fundamentals, basic material properties, brittle fracture characteristics/mechanisms, and plant material problems. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 170

### Mechanical & Fluid Power Transmission [RE] • 4.0 Credits

Formerly MEC 111, NT 170

Introduction to the concepts of mechanical and fluid power transmission including principles of heat, steam, heat transfer, and fluid flow. **Prerequisite:** Completion of NT 111 with a 0.7 or higher.

## NT 200

### Nuclear Industry Exam Preparation [RE] • 3.0 Credits

This course prepares nuclear technology students for taking multiple industry exams, which may include DOE Core Exam, POSS, or other exams as may be required by industry employers. \$25 NT exam course printing fee. **Prerequisite:** Students must be accepted into CBC's Nuclear Technology program prior to enrollment.

## NT 261

### Nuclear Facilities Management [RE] • 5.0 Credits

This course provides students with background in managing work functions in nuclear facilities, including compliance with federal and state regulations, quality assurances, and maintenance forms and records. This class should be taken during or after the second year of study in

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the Nuclear Technology program. Instructor permission is required for enrollment.