TENNESSEE HIGHER EDUCATION COMMISSION

REGULAR CALENDAR ITEM: V.

MEETING DATE: August 15, 2024

SUBJECT: New Academic Program
Roane State Community College
Nuclear Technology, Associate of Applied Science (AAS)

ITEM TYPE: Action

ACTION RECOMMENDATION: Approval

PROGRAM OVERVIEW

Title and Designation	Nuclear Technology, Associate of Applied Science (AAS)
Concentrations	None
Accreditation	The college will seek Association of Technology, Management, and Applied Engineering (ATMAE) accreditation in 2028.
CIP Code and Description	**15.1401 (Nuclear Engineering Technology/Technician)** A program that prepares individuals to apply basic engineering, knowledge and technical skills in support of engineer and other professionals operating nuclear facilities and engaged in nuclear applications and safety procedures. Includes instruction in physics, nuclear science, nuclear systems, nuclear plant and systems design, radiological safety, radiological applications, and applicable law and regulations.
SOC Code and Title	**17-3029 (Engineering Technologists and Technicians, Except Drafters, All Other)** All engineering technologists and technicians, except drafters, not listed separately.
Credit Hours	63
Implementation Date	August 21, 2024
Modality and Delivery Site	In-person at the Oak Ridge Campus
Department/College	Division of Mathematics and Science
Governing Board Approval Date	June 13, 2024

ALIGNMENT WITH STATE MASTER PLAN AND INSTITUTIONAL MISSION/STRATEGIC PLAN

The proposed AAS in Nuclear Technology at Roane State Community College (RSCC) aligns with the THEC State Master Plan by addressing the state's economic and workforce development by training skilled workers in a high-demand field. Second, the addition of the proposed program will increase degree completion to support higher education in the state.

The proposed program also aligns with TBR's Strategic Plan's commitment to improving the condition of individuals, families, and communities across the state through economic vitality and mobility. The proposed program aligns with the mission of Roane State Community College by broadening opportunities for residents of its service area to access an educational program that will enrich their lives and strengthen their communities (RSCC Strategic Planning Goal #1). Objective 1.3 specifically states that RSCC will increase students' access to market-driven courses and programs, with success defined as the development of new programs developed in collaboration with business and industry.

PROGRAM DUPLICATION

Chattanooga State Community College (ChSCC) offers an engineering technology program with concentrations in nuclear power and radiation protection. However, ChSCC's programs focus on prepping graduates for work with Tennessee Valley Authority's nuclear reactors while RSCC's proposed program will be broader and encompass the entire fuel cycle including technicians in nuclear fabrication (Y-12 National Security Complex), research (Oak Ridge National Laboratory), and decontamination and decommissioning fields (United Clean-up Oak Ridge). Each of these areas of nuclear technology is critical to local industry.

WORKFORCE ALIGNMENT

Roane State Community College has worked with Oak Ridge National Laboratory (ORNL), the Y-12 National Security Complex (Y-12), the University of Tennessee, Knoxville, United Clean-up Oak Ridge (UCOR), and other partners to develop a program designed to prepare a skilled workforce in nuclear technology areas. RSCC's Nuclear Technology program focuses on the entire nuclear fuel cycle as opposed to any one specific discipline (i.e., reactor operator or medical isotopes). Its wider scope serves a larger segment of the workforce, including defense and modular reactor operations, and has support from industry partners in the region that includes the use of laboratory space and equipment as needed. This program will prepare students with the education and skills needed to meet industry workforce demands in the nuclear area, including fuel manufacture, operations, and decommissioning and decontamination, among other necessary skills.

According to the US Bureau of Labor Statistics, projected growth from 2020-2030 for Engineering Technologists and Technicians in Tennessee is expected to be 13 percent, equivalent to 160 annual job openings. According to the Nuclear Energy Institute, an increased demand in nuclear energy is expected to remain high for years to come, and the nuclear industry is especially impacted by early retirements amid increasing demand for skilled workers to support alternative clean energy solutions as well as decommissioning and decontamination programs. The East Tennessee Economic Council has also identified nuclear technicians as one of the critical workforce needs for the region. Finally, Governor Lee's $50 million Nuclear Fund to "continue work to make Tennessee the number one state for nuclear energy companies to invest and thrive" influenced the development of the proposed program, which is designed to create a workforce to serve such companies.

CURRICULUM

The proposed program will consist of 63 credit hours of coursework offered on-ground. The coursework will include 26 credit hours of general education courses, 33 credit hours constituting the major field core in

nuclear technology, and four to six credit hours of college requirements, including RSCC's first-year course and an internship with variable hours. Four new courses will be developed for the proposed program.

The Tennessee Board of Regents is working with the University of Tennessee, Knoxville's Nuclear Engineering faculty on curriculum development, and an articulation agreement is expected between RSCC and the University of Tennessee, Knoxville in the near future.

PROJECTED ENROLLMENT AND GRADUATION

	2024-5	2025-6	2026-7
Enrollment	6	18	25
Graduates	--	5	10

STUDENT INTEREST AND COMMUNITY PARTNERSHIPS

RSCC anticipates significant student interest in the proposed program given enrollments in the existing and similar Chemical Engineering Technology program, which has grown from five new enrollees to 50 over several years. The college will advertise the new program through high school engagement, college advising and recruitment events, and plans to offer courses as dual enrollment, with the exception of the internship course due to federal age restrictions.

Oak Ridge National Laboratory (ORNL), the Y-12 National Security Complex (Y-12), the University of Tennessee, Knoxville, United Clean-up Oak Ridge (UCOR), Omega Technical Services, TRISO-X, MS Technologies, Energy Solutions, RBM Services, and Gem Technologies are all serving on the RSCC Nuclear Technology Advisory Board. These partners provide subject matter expertise for curriculum development and will host student interns. Finally, Y-12, UCOR, and ORNL have all agreed to provide laboratory space for instruction should it be required.

PROGRAM COSTS AND REVENUES

The proposed one-time and recurring expenditures for the Nuclear Technology, AAS program are listed in the Financial Projections Table below. Most of the program costs ($612,000) are associated with specialized equipment, including gloveboxes, radiation measuring equipment, simulated operations apparatuses, and other items. RSCC will convert the laboratory previously used by the recently terminated advanced pharmacy technician certificate program to a nuclear processing lab, and renovations should be complete by the time of hands-on instruction in the fall of 2025.

The program will be supported by grants, industry financial contributions, and college funds. RSCC has received a $100,000 contribution from UT-Battelle, LLC, a $50,000 United States Department of Labor grant, and a $462,000 award from Governor Bill Lee's Nuclear Energy Fund.

Table 1: Estimated Costs to Deliver the Proposed Program

Estimated Costs to Deliver the Proposed Program						
One-Time Expenditures						
Category	**Planning**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Faculty & Instructional Staff						
Non-Instructional Staff						
Graduate Assistants						
Accreditation						
Consultants						
Equipment	$367,200	$183,600	$30,600	$30,600		
Information Tech						
Library						
Marketing						
Facilities						
Travel						
Other						
Total One-Time Expenditures	*$367,200*	*$183,600*	*$30,600*	*$30,600*	*$0*	*$0*
Recurring Expenditures						
Category	**Planning**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Faculty & Instructional Staff	$90,489	$128,366	$130,933	$133,552	$136,223	$138,948
Non-Instructional Staff						
Graduate Assistants						
Accreditation						
Consultants						
Equipment						
Information Tech						
Library						
Marketing						
Facilities						
Travel		$1,500	$1,500	$1,500	$1,500	$1,500
Other:	$4,500	$4,500	$4,500	$4,500	$4,500	$4,500
Total Recurring Expenditures	*$94,989*	*$134,366*	*$136,933*	*$139,552*	*$142,223*	*$144,948*
Grand Total (One-Time and Recurring)	**$462,189**	**$317,966**	**$167,533**	**$170,152**	**$142,223**	**$144,948**

Projected Revenues						
Category	**Planning**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Tuition		$32,820	$96,667	$134,601	$154,055	$167,647
Grants/Gifts*****	$50,000					
Other******	$562,000					
Total Revenues	**$612,000**	**$32,820**	**$96,667**	**$134,601**	**$154,055**	**$167,647**

*****Department of Labor Grant

******State of Tennessee Nuclear Energy Fund and UT Battelle Gift