CAREER LAUNCH ENDORSEMENT REVIEW (CLER) APPLICATION

INSTITUTION: Columbia Basin College

PROPOSED PROGRAMS: AAS in Nuclear Technology - Instrumentation and Control Technician
CIP 15.1401 EPC 771 NAICS Code 334519

AAS in Nuclear Technology – Non-Licensed Nuclear Operator
CIP 15.1401 EPC 771 NAICS Code 221113

AAS in Nuclear Technology – Radiation Protection Technician
CIP 51.0916 EPC 330 NAICS Code 541380

BAS in Health Physics
CIP 51.0916 EPC 3AB NAICS Code 541380

Please note: Registered Apprenticeship programs become automatically endorsed for Career Launch. You need not submit an application. You will be contacted with information this fall.

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Applications are reviewed monthly and are due the first business day of the month.

Electronic submissions only to scopeland@sbctc.edu

PROGRAM CHECKLIST

P1. Program description including length of program in years and total hours (including split between classroom and worksite).

CBC is a federally recognized Hispanic-Serving Institution (HSI) currently offering one-year certificates and Associate of Applied Science (AAS) degrees in Nuclear Technology in three areas of study:

- Non-Licensed Nuclear Operator
- Instrumentation and Control Technician
- Radiation Protection Technician (RPT)

Beginning in Fall 2020, CBC will offer a new Bachelor of Applied Science (BAS) degree in Health Physics. The AAS in Radiation Protection Technician will function as a feeder for this new BAS program. A summary of program length/hours is shown in Table 1.

TABLE 1 - Program Description

Area of Study	Length of Program	Hours	Classroom Hours	Work-Based Learning Hours
Non-Licensed Nuclear Operator	2 years	1,386	1,221	165
Instrumentation and Control Technician	2 years	1,562	1,397	165
RPT	2 years	1,353	1,188	165
BAS in Health Physics	4 years	2,321	2,156	165*

** Completed during AAS in RPT Program*

The AAS degrees in Nuclear Technology prepare students for positions in areas such as nuclear power plant operating and processing facilities, disposal of nuclear waste, laboratories, and other nuclear applications. Operators and Instrumentation and Control Technicians have transferable skills that allow them to also work in industries such as energy generation (wind, hydro, gas, and oil), process operations, and manufacturing. Due to an aging workforce and resurgence of interest in nuclear power generation, nuclear technicians are in high demand across Washington State and in CBC's service area, which includes the Hanford Nuclear Site. Students in all three AAS Nuclear Technology degree programs receive hands-on, work-based training through experiential activities on campus and mandatory internships.[1]

RPT students who wish to continue with their postsecondary nuclear education can enroll in CBC's BAS in Health Physics program. This program will prepare students for positions such as environmental engineers, environmental health physicists, health physics educators and regulators, industrial and applied health physicists, and radiation safety officers. While this degree does not have a work-based component as part of the curriculum, it is intended to serve either graduates of CBC's AAS in Radiation Protection Technician program (who have already completed a work-based learning component), or current nuclear industry employees looking to advance their education and progress in their career path. Courses will be offered via a combination of online and evening classes so that students can continue employment while earning their degree.

P2. Estimated number of hours per week at worksite and in classroom.

Nuclear Technology AAS students complete seven quarters of their degree in classroom and lab training. The typical schedule has students attending school full-time their first school year, full-time during summer quarter,

[1] Note: The AAS in Nuclear Technology Degree Requirements include an option to complete an Industry Project course instead of the Internship and Internship Seminar courses. This option is included only in the rare case that there are not enough internships available for all students. In the last 10 years, only one student has completed the Industry Project course in lieu of the internship.

and full-time during their second school year. Students typically apply for internship opportunities in January – March each year. Internships at Hanford contractors are competitive and students must go through the regular hiring process with all contractors. Depending upon the agency or company, internships are scheduled during spring quarter from April to June, or summer quarter from June to August. During the quarter of the scheduled internship, students are required to spend 7-10 hours per week in the classroom and a minimum of 165 hours at the worksite. However, students are often hired for full-time (40 hours per week) positions.

BAS students are anticipated to be employed full-time, working 40 hours per week at the jobsite and 15 hours per week in the classroom (10 credits in face-to-face instruction and 5 credis online).

P3. Demonstration of labor market demand for specified skills/career in local region.

CBC's service area of Benton and Franklin counties is the home of the Hanford Nuclear Site, a decommissioned nuclear production complex with cleanup activities managed by the U.S. Department of Energy (DOE) anticipated to span the next 100+ years. According to multiple discussions with Hanford contractors (i.e., companies contracted with DOE to conduct work at Hanford) including Washington River Protection Solutions (WRPS), CH2MHill, Pacific Northwest National Laboratory (PNNL), and Energy Northwest, the nuclear industry is plagued by an aging workforce, and retirement is the number one reason for employee attrition. This is consistent with the results of a March 2019 survey of six Hanford contractors, as well as Bureau of Labor statistics, which indicate that nearly one third of nuclear industry employees in our region are 55 years of age and older (EMSI, 2020).

As the only college in Washington State and one of only 20 colleges in the nation offering AAS degrees in Nuclear Technology, CBC graduates help meet labor market demands far beyond our local region. A summary of the current positions, as well as the projected openings for the next seven years throughout Benton and Franklin Counties and Washington State is shown in Table 2.

TABLE 2 - Labor Market Demand Summary*

SOC Code	Occupation	Benton-Franklin		Washington State	
		Total Jobs (2020)	Projected Average Annual Openings (2022-2027)	Total Jobs (2020)	Projected Average Annual Openings (2022-2027)
AAS					
17-3023	Electronics & Instrumentation & Control Techs	115	33	2,461	687
19-4051	Nuclear & Radiation Control Techs	30	9	36	9
51-8011	Nuclear Power Reactor Operators	Insf. Data	Insf. Data	38	7
51-8013	Power Plant Operators	56	8	494	70
51-8099	Plant & System Operators (Other)	Insf. Data	Insf. Data	291	59
	AAS Subtotal	**201**	**50**	**3,320**	**832**
BAS					
17-211	Health and Safety Engineers	131	50	715	275
17-2081	Environmental Engineers	478	124	2,067	523
	BAS Subtotal	**609**	**174**	**2,782**	**798**
	TOTAL	**724**	**206**	**3,592**	**1,036**

** Source: Washington State Employment Security Department (2019). Short-Term and Long-Term Occupational Projections. Retrieved April 1, 2020 from https://esd.wa.gov/labormarketinfo/projections*

With only 13 AAS Nuclear Technology completions in 2019, the College cannot even keep up with the local workforce demand, much less the demand across Washington State.

P4. Projected count of student enrollment, student completion, and anticipated employer participation for 5 years, post-pilot.

A summary of projected enrollment, completions, and employer participation for all three of CBC's AAS in Nuclear Technology degrees and the BAS in Health Physics degree is summarized in Table 3.

TABLE 3 - Projected Enrollment, Completions, and Employer Participation

Measurement	Baseline (2019-20)	Year 1 (2020-21)	Year 2 (2021-22)	Year 3 (2022-23)	Year 4 (2023-24)	Year 5 (2024-25)
AAS in Nuclear Technology Degrees (totals for all three)						
Student headcount	116	121	128	133	138	145
Completion	19	25	36	39	43	45
Employers	7	7	8	8	9	9
BAS in Health Physics						
Student headcount	0	15	20	20	20	20
Completion	0	0	0	4	6	12
Employers	7	7	8	8	9	9

Enrollment

We anticipate increasing enrollment in the AAS in Nuclear Technology program by between 5-7 students per year for the next five years. Over the last two years, recruitment has been a key focus for Nuclear Technology program staff. The Career and Technical Education (CTE) Completion Coaches and CTE Director developed information sessions for prospective students interested in the Nuclear Technology program. These sessions are marketed to both existing CBC students and the community, and provide general information about the program, career opportunities, and scholarship applications. The sessions conclude with a tour of the CTE building, which includes the Nuclear Technology classrooms and labs.

The CTE Completion Coaches are also working to increase outreach for Nuclear Technology programs at existing community events such as those sponsored locally by the Hanford Nuclear Site and nationally by the Center for Energy Workforce Development and the National Safety Council. Upcoming events include the 2020 Hanford Health and Safety Exposition, National Safety Month, National Nuclear Science Week, and Careers in Energy Week.

Finally, CBC has secured significant financial support for scholarships for Nuclear Technology AAS students. Grants and donations from the U.S. Nuclear Regulatory Commission, National Registry of Radiation Protection Technologists, Framatome, and Washington River Protection Solutions amounted to over $100,000 in scholarships for students in 2019-2020. Many students have emphasized that without these scholarships they would have been unable to enroll and/or remain in their degree program. CBC will continue to pursue federal, private, and corporate funding to support Nuclear Technology student scholarships. These increased outreach and fundraising efforts, including Career Launch funding to purchase equipment necessary to meet industry standards, are anticipated to increase AAS enrollments over the next five years.

For the BAS program, we anticipate reaching the maximum enrollment of 20 students by Year 2 of offering the program. In September 2018, a general interest survey of the Hanford workforce revealed that 90 current employees are interested in pursuing a higher degree to become a Health Physicist. To date, 12 employees have already expressed interest in enrolling in the program in Fall 2020.

Completion
Completion numbers for AAS students are estimated based on 50% of students being full-time and completing in two years and 50% being part-time and completing in four years. Relatively conservative completion rates of 40% for full-time students and 30% for part-time students are anticipated based on historical rates for CBC's Nuclear Technology AAS students (see Table 4).

TABLE 4 - Nuclear Technology AAS Degree Completion Rates

Degree	2-Year Completion Rate			4-Year Completion Rate		
	2015 cohort	2016 cohort	2017 cohort	2014 cohort	2015 cohort	2016 cohort*
Instrumentation and Control Technician and Non-Licensed Nuclear Operator	27%	17%	29%	42%	33%	40%
Radiation Protection Technician	24%	22%	28%	52%	55%	50%
Average	**26%**	**20%**	**29%**	**47%**	**44%**	**45%**

** Projected*

These historically low completion rates are primarily due to the fact that many students are offered employment prior to finishing their degree. CBC is working with industry partners, faculty, and staff to better communicate the significance of completing the AAS degree, particularly now that the four-year degree option will be available. Additionally, as part of our Guided Pathways efforts, CBC has recently adopted the case management advising model. Two full-time Completion Coaches are assigned to the CTE division, and these positions are specifically geared toward increasing student interest, retention, and completion in CTE programs. Completion Coaches, along with the CTE Program Director, meet with Nuclear Technology students on at least a quarterly basis to review students' progress and discuss their academic plans for successfully completing the program.

BAS completion numbers are estimated based on 40% of students being full-time with an existing AAS degree or some post-secondary education and completing in two years and 60% of students being part-time with an existing AAS degree or some post-secondary education and completing in four years. Completion rates for this program are estimated at 75% for full-time students and 65% for part-time students, based on CBC's historically higher completion rates for BAS programs.

Employer Participation
CBC's Nuclear Technology program is deeply connected to the workforce through its Advisory Board and currently partners with 7 different employers (Table 5, Section IR-1) to place students in a variety of work place settings.

The current program excels at placing students in internships and ultimately employment in the nuclear industry. Currently, there are more employers requesting student placements than students available. Increasing the number of program participants available to begin working will directly address regional and state workforce needs and continue to ensure students have engaging and productive work experiences as they transition to the workplace.

P5. Concise description of development process to create the Career Launch program (e.g. who was involved, when, how was the program piloted, etc.)

AAS Degrees
In Fall 2020, the 12th cohort of students will begin their studies to pursue an Associate in Applied Science in Nuclear Technology programs at CBC. This program was historically offered at CBC, but was inactivated prior to the 2000-2001 academic year. Work to restart the program began in 2008 at the prompting of Washington River Protection Services (WRPS) and other Hanford contractors, and classes for the AAS degrees in Instrumentation and Control and RPT were once again offered in 2009. WRPS helped jump start the program by recruiting highly qualified instructors as well as providing funding through the CBC Foundation for student scholarships. The Non-

Licensed Nuclear Operator AAS degree was added in 2011, and the 1-Year Certificate for all three options were added in 2015.

Today the program operates in partnership with Energy Northwest, the college's sponsor to the Institute of Nuclear Power Operations (INPO). INPO oversees and monitors the Nuclear Uniform Curriculum Program (NUCP), which allows students to earn the National Academy for Nuclear Training (NANT) Certificate. Students earning this industry-recognized certificate have consistently performed at a high academic level (3.0 GPA minimum). CBC was the third institution in the country to offer this certificate.

BAS Degree

In September 2018, a general interest survey from the Hanford workforce revealed that 90 current employees were interested in pursuing a higher degree to become a health physicist. However, many indicated their interest was contingent upon a local program offering because: 1) several courses require laboratory hours and hands-on skills training that are not feasible through an online degree platform, and 2) relocation and quitting the current job were not desired.

As a result of this survey and direct communication from six Hanford contractors (WRPS, CH2M HILL Plateau Remediation Company, Hanford Tank Waste Treatment and Immobilization Plant, Pacific Northwest National Laboratory, Energy Northwest, and Mission Support Alliance), CBC conducted the research to submit a Statement of Need for the BAS in Health Physics program to the SBCTC in July 2019. This program was approved by the State Board in 2020, and the first cohort will begin in Fall 2020.

P6. Signed letter of endorsement from all relevant partners, stakeholders and regional networks (including employers, labor organizations, academic institutions, community based organizations, individuals, and other relevant stakeholders in support of the proposed Career Launch program). Regional network endorsement preferred.

Letters of endorsement are included in Attachment A.

P7. Description of resources, supports, or other processes to recruit and support students from underserved backgrounds (e.g. including students of color, students from low income families, English language learners, students with disabilities, foster students, students experiencing homelessness, students from single parent homes, and other populations that face barriers to employment); or create an implementation plan to do so.

As a federally designated HSI serving one of Washington State's only Hispanic-majority counties (Franklin County, 52.8% Hispanic), CBC is dedicated to providing educational opportunities to students of color from diverse and underserved backgrounds. Additionally, Nuclear Technology is typically a male-dominated career, and CBC is committed to promoting the program among potential female students. Outreach efforts are targeted at schools with high minority populations, and promotional materials include photos/videos of females and students of color to help potential students see themselves as viable candidates for Nuclear Technology careers. For the multiple Nuclear Technology scholarships opportunities, awards are based on academic merit, while giving special consideration to low-income, first-generation, and underrepresented minority students, including individuals with disabilities and females.

Once on campus, CBC has a tremendous amount of resources to support low-income and underrepresented students, including CBC Foundation scholarships, a food pantry; child care assistance; an emergency assistance fund to assist with short-term housing, transportation, or health care needs; and a holiday adopt-a-family program. CBC's Disability Support Services Center provides accommodations for students with disabilities, including adaptive technology to support a broad range of disabilities.

On-campus support programs are also available for specific types of students, including:

- Basic Food, Employment, & Training (BFET) – provides financial, advising, enrollment, and ongoing support services for low-income students enrolled in workforce education programs
- College Assistance Migrant Program (CAMP) – provides academic, career, financial, and support services for first-year students from migrant/seasonal farmworker backgrounds
- Student Support Services (SSS) – provides academic advising, financial literacy, educational counseling, tutoring, and career/transfer planning services for low-income, first generation students and students with disabilities
- Mathematics, Engineering, Science Achievement (MESA) – provides educational support services, cultural events, and campus visits for underrepresented students preparing for university-level studies in STEM fields
- Veterans Education and Transition Services (V.E.T.S.) Center – supports military connected students through customized academic advising, education benefits certification, workshops tailed to veteran student success, and access to the Veterans Integration to Academic Leadership (VITAL).

INDUSTRY-RELATED CHECKLIST

I-R1. Address of worksite(s) where Career Launch students will complete supervised training.

Employers who currently partner with CBC's Nuclear Technology program to provide internships and hire AAS graduates are listed in Table 5.

TABLE 5 - Work-Based Learning Employer Partners

No.	Employer	Address
1.	Battelle/Pacific Northwest National Laboratory (PNNL)	902 Battelle Blvd, Richland, WA 99354
2.	CH2MHill Plateau Remediation Company	PO Box 1600 H7-30, Richland, WA 99352
3.	Energy Northwest	76 N Power Plant Loop, Richland, WA 99354
4.	Framatome	2101 Horn Rapids Rd, Richland, WA 99354
5.	NV5	1835 Terminal Dr #200, Richland, WA 99354
6.	Washington River Protection Solutions	2425 Stevens Center Pl, Richland, WA 99352
7.	City of Richland	625 Swift Blvd., Richland, WA 99352

I-R2. Hourly wage for Career Launch participants.

AAS interns start at a wage ranging from $14 to $16 per hour with regular pay increases as skills advance. BAS students who are currently employed are paid at prevailing wages for full-time Nuclear Technicians and Radiation Control Technicians (see Table 8 for detailed salary information).

I-R3. List of entry-level positions and associated job descriptions for which a Career Launch student would be eligible for upon completion.

Positions available to AAS and BAS graduates and links to respective job descriptions are included in Table 6.

TABLE 6 - Career Launch Positions and Job Descriptions

Employer	Position and Link to Job Description
AAS in Nuclear Technology Degrees (all three)	
AREVA/Washington River Protection Solutions	Health Physics Tech
Battelle/Pacific Northwest National Laboratory (PNNL)	Senior Radiation Protection Technologist
BNL Tech	Radiological Control Technician
U.S. Army Corps of Engineers	Senior Power Plant Operator
BAS in Health Physics	
AECOM	Health Physicist
CH2M HILL Plateau Remediation Company	Health Physicist
State of Washington	Radiation Health Physicist

I-R4. List of specific skills and competencies required for completion of the Career Launch program, with demonstrated alignment to entry-level positions, job descriptions, and average local salary ranges.

Program learning outcomes and how these align to the job descriptions provided above are shown in Table 7.

TABLE 7 - Program Learning Outcomes and Alignment to Current Job Descriptions

Program Outcomes	Alignment to Job Descriptions
AAS in Nuclear Technology (all three degrees)	
Applying relevant theory and techniques from mathematics, physics and chemistry to effectively understand, communicate and/or operate nuclear systems, structures and components promoting excellence and safety	‣ Provides required training in operating techniques and procedures, applicable safety rules, to operators, maintenance journeymen and trainees ‣ In emergency or trouble cases, operates the station in accordance with standing orders and in accordance with own best judgment in the interest of protection of personnel and equipment and to restore normal operations
Effectively and accurately applying, understanding and communicating basic knowledge of nuclear facilities operations	‣ Controls and coordinates the operation of the power stations, project equipment, and flood control structures which may be remotely operated in some cases ‣ Prepare and maintain records and documentation as appropriate; and provide assistance in the preparation of radiation control documents such as Radiological Work Permits (RWPs), ALARA Management Worksheets (AMWs), etc.
Applying skills pertinent to each discipline, minimizing personnel exposure to radiation and/or hazardous materials	‣ Provide contamination and radiation exposure control ‣ Perform radiological surveys in accordance with established procedures ‣ Work with routine and/or special detection equipment and may require use of respiratory protection
Applying, understanding and communicating radiological protection theory and techniques promoting excellence and safety	‣ Routine radiological surveillances in lab spaces ‣ Radiological surveys in support of work with radioactive materials ‣ Contamination and radiation exposure control ‣ Air sampling in accordance with laboratory procedures
Understanding and communicating nuclear facilities, design, theory and/or operations	‣ Prepare and maintain records and documentation as appropriate ‣ Provide assistance in the preparation of radiation control documents such as Radiation Work Permits (RWP), survey sheets, procedural documentation, etc.

BAS in Health Physics	
Apply knowledge of mathematics, science, and engineering	‣ Providing radiological control expertise and coordination for major project activities in support of accomplishing critical milestones
Design and conduct experiments, as well as to analyze and interpret data	‣ Supporting the implementation of 10 CFR 835
Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	‣ Supporting the implementation of 10 CFR 835
Ability to function on multi-disciplinary teams	‣ Providing technical support, procedure and technical basis document development, and implementation oversight of one or more program functional areas (ALARA, contamination control, work planning, assessments, instrumentation, emergency preparedness, etc.) ‣ Providing radiological control expertise and coordination for major project activities in support of accomplishing critical milestones.
Ability to identify, formulate, and solve engineering problems	‣ Providing radiological control expertise and coordination for major project activities in support of accomplishing critical milestones
Use the techniques, skills, and modern engineering tools necessary for engineering practice	‣ Providing radiological control expertise and coordination for major project activities in support of accomplishing critical milestones
Apply knowledge of atomic and nuclear physics to nuclear and radiological systems and processes	‣ Providing technical support, procedure and technical basis document development, and implementation oversight of one or more program functional areas (ALARA, contamination control, work planning, assessments, instrumentation, emergency preparedness, etc.).
Apply knowledge of transport and interaction of radiation with matter to nuclear and radiation processes	‣ Supporting the implementation of 10 CFR 835.
Measure nuclear and radiation processes	‣ Ensuring assigned policies, procedures, and technical documents effectively implement conduct of operations principles, safety management program components, and radiological control requirements
Identify professional and ethical responsibility	‣ Performing work in a safe, compliant, and cost-effective manner.
Explain the impact of engineering solutions in a global, economic, environmental and societal context	‣ Providing radiological control expertise and coordination for major project activities in support of accomplishing critical milestones
Discuss contemporary issues	‣ Providing radiological control expertise and coordination for major project activities in support of accomplishing critical milestones

Average salaries for the primary nuclear technology positions are outlined in Table 8.

TABLE 8 - Labor Market Demand Summary*

SOC Code	Occupation	Average Annual Salaries		
		Benton-Franklin	Washington State	United States
AAS in Nuclear Technology (all three degrees)				
17-3023	Electronics & Instrumentation & Control Techs	$86,529	$71,640	$64,056
19-4051	Nuclear and Radiation Control Techs	Insf. Data	$85,071	$79,144
51-8011	Nuclear Power Reactor Operators	Insf. Data	$211,536	$94,349
51-8013	Power Plant Operators	$101,622	$93,330	$79,602
51-8099	Plant and System Operators (Other)	Insf. Data	$69,222	$57,096
BAS in Health Physics				
17-211	Health and Safety Engineers	$110,814	$95,043	$89,215
17-2081	Environmental Engineers	$107,960	$99,299	$87,630

** Source: Economic Modeling Specialists Intl. (EMSI) (2020.2) Occupation Overview – Bureau of Labor Statistics QCEW Employees.*

I-R5. Employer attests that Career Launch program is in compliance with required federal, state, and local regulations.

See letters of endorsement in Attachment A.

I-R6. Employers will outline a student supervision and mentorship model.

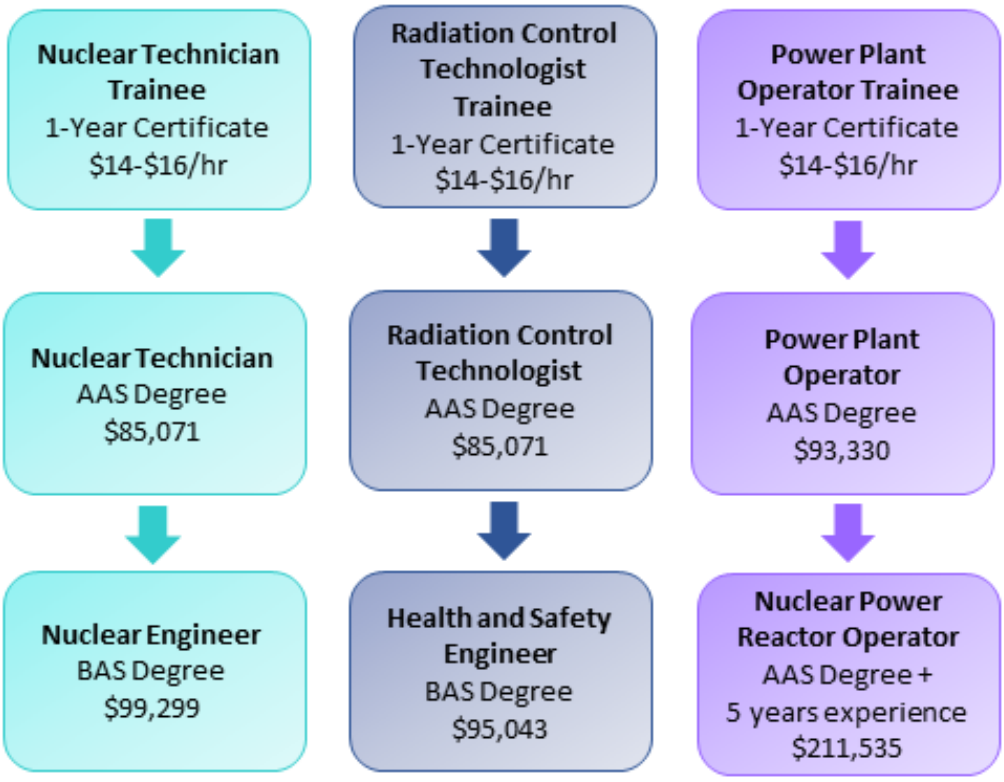
AAS students participate in paid internships offered by the local nuclear industry contractors. Student interns are typically offered an internship that is equivalents to working full-time (40 hours per week) for the duration of one academic quarter, or 8-11 weeks. Students can apply for a variety of internships based on their chosen degree option. Once accepted, they must comply with and fulfill all the hiring processes and regulations dictated by the nuclear industry and federal government contractors.

At the worksite, students complete assigned tasks, which may include radiation monitoring, clean-up procedures, report writing, monitoring reactors, adjusting cooling controls, programing robotic devices or industrial computers, attending meetings, and completing industry required safety training. Students will work with their worksite supervisor and a college faculty member to complete the NT 154 Internship class requirements. These include daily and weekly work reports, bi-weekly conferences to review work performance, continuous improvement processes, personal mentoring/coaching, and a final report on their workplace experience and how the internship experience will benefit their future employment.

I-R7. Description of common career pathway(s) beginning with entry-level position specified with demonstration of likely salary growth over specified time period.

Three different nuclear industry career pathways are shown in Figure 1.

FIGURE 1 - Nuclear Technology Career Pathways



I-R8. Demonstrated competency alignment with relevant professional standards for specified entry-level positions when applicable.

The Nuclear Technology program is nationally accredited by the Institute of Nuclear Training Operations (INPO). Through this accreditation, graduates may earn the National Academy for Nuclear Training (NANT) certificate – a certification that affirms a graduate's skills and knowledge for the respective ACAD 08-006 curriculum and training position for two years after the issue date. Per the accreditation agreement, a third-party evaluator observes and assesses at least two Nuclear Technology classes and/or faculty each academic quarter. Students must maintain a minimum 2.7 GPA in all ACAD coursework to qualify for this certificate. The students and their transcripts are reviewed by a third-party evaluator to ensure academic integrity prior to the certificate being awarded. This is all done to ensure the program, the classes and topics taught, and the student learning align with the tightly regulated industry standards and expectations from applicants and employees.

I-R9. Signed letter from employers partners attesting that Career Launch completers will be ready for specified entry-level jobs, including an optional, non-binding commitment estimating number of Career Launch completers they plan to interview/hire over the first three years of the program.

See employer letters in Attachment A.

ACADEMIC-RELATED CHECKLIST

A-R1. List of academic institution(s) providing career-aligned instruction for Career Launch program.

Columbia Basin College

A-R2. Curriculum scope and sequence aligned to skills and competencies provided in employment checklist.

AAS Degrees

Each fall the incoming cohort of Nuclear Technology students begins classes as a single group no matter which of the three degree options they are seeking. This is an effort to streamline instruction so that all students are afforded the same introductory materials and allowed time to explore the three degree options. Sequences of courses for all three Nuclear Technology AAS degrees are included in Attachment B.

The curriculum is rigidly dictated by INPO and the ACAD 08-006 curriculum guidelines. There are only three classes outside the scope of those guidelines: NT 150 Internship Seminar, NT 152 Internship, and NT 154 Industry Project. All three classes are designed to assist students in their endeavor to be employable. NT 150 helps prepare students with soft skills, resume and cover letter development, and job search/interview skills. Students enroll in NT 152 concurrently while working at an internship to learn alongside their workplace experience. This class includes reflections on their workdays, things they learned that were outside the scope of classes offered, as well as supervisor and self-evaluations. NT 154 was implemented for students who do not have an internship opportunity. This class requires students to complete an industry project, under the supervision of a faculty member. Students are allowed to explore an area of interest in the industry, and they conduct a quarter-long research project that must include interviewing an active nuclear industry employee as well as an evaluation of the topic and its impact to the nuclear industry.

BAS in Health Physics

The BAS in Health Physics prepares a highly skilled workforce that applies a scientific understanding of physical interaction of radiation with the body and environment to maintain protection from the potential hazards of radiation. The curriculum is aligned with Accreditation Board of Engineering and Technology, Inc. (ABET) standards. The ABET requires baccalaureate-level health physics programs to demonstrate that graduates possess the necessary knowledge, skills, and attitudes to competently and ethically implement and practice applicable scientific, technical, and regulatory aspects of Health Physics. Sequences of courses for the BAS in Health Physics degree is included in Attachment B.

A-R3. Demonstration of student supports (e.g. mentoring, advising, financial aid, tutoring) available for Career Launch students enrolled in the course.

In addition to the population-specific support programs and services listed in P7, CBC offers a wide variety of support services for all enrolled students.

- The Counseling/Advising Center assists students in their personal, educational, and professional growth and planning. AAS and BAS Agriculture Technician Programs students receive academic advising specified to the degree completion directly from the School of Math, Science and Engineering Completion Coaches. To ensure cohort scheduling and graduation progress, all students will be required to meet with the Completion Coaches prior to each quarter for course registration. In coordination with the Completion Coaches, counselors will plan career, job search, and personal/professional development workshops throughout the year to sustain the agriculture students' interest in the field. Counselors will also help the students gain broader knowledge about the industry through career focused workshops and career demonstration activities annually. Counselors are registered by the state of Washington to provide personal counseling and assist students with issues that may affect their academic performance or progress in meeting their educational goals. Counselors will provide short-term personal counseling and refer students to community mental professionals if needed.
- The Academic Success Center provides student's free drop-in and online tutoring in writing, math, accounting, biology, chemistry, physics, and Spanish. The Center is equipped with computers and printers for student use, as well as whiteboards and group study areas.
- The Library has 220 laptops available for student checkout, so students who lack computers are able to complete homework, conduct research, and check email off campus. Additionally, the Library and online

library databases provide articles necessary for both lower and upper level courses. The School of Math, Science, and Engineering will regularly communicate with the library to ensure that all AAS and BAS Agricultural Technician course materials including textbooks and reading lists are up-to-date and available.

- The Financial Aid department provides workshops and assistance applying for federal and state financial aid. Once students have submitted their applications, Financial Aid staff work with students to build a financial aid package that is an optimum combination of grants, scholarships. Student employment, and loans based on the students eligibility and program rules.
- CBC Foundation offers a variety of student scholarships based on factors including academic achievement, field of study, and financial need. In 2018-19, the Foundation awarded over $1.1 million in scholarships.

The CTE Programs Director, completion coaches, faculty, and staff will be responsible for directing students to the appropriate services and resources for successful completion of their degree.

A-R4. Number of postsecondary credits provided and/or credential earned upon completion of program.

The number of credits students in the AAS Nuclear Technology program will earn upon completion is as follows:

- Non-Licensed Nuclear Operator Option = 105-106 credits
- Instrumentation and Control Technician Option = 111-112 credits
- Radiation Protection Technician Option = 101-107 credits

Upon completion of the BAS in Health Physics program, students will complete a total of 193-194 credits.

A-R5. Demonstrated curricular alignment with relevant professional and/or academic standards associated with coursework and credential, when applicable.

Upon completion of an AAS in Nuclear Technology degree, students will have completed 30-41 credits of General Education Requirements, as required by accreditation through the Northwest Commission on Colleges and Universities (NWCCU) with identified outcomes in the areas of communication and computation that align with and support program goals or intended outcomes. The AAS in Nuclear Technology Non-Licensed Operator Option requires 75 credits in nuclear and power plant operations specific courses. The AAS in Nuclear Technology Instrumentation and Control Technician Option requires 81 credits in nuclear, electronics, and instrumentation specific coursework. Students earning a degree in either of these options are also required to successfully complete 30-31 credits in general education classes. Students seeking an AAS in Radiation Protection Technician Option complete 66 credits of nuclear and radiation specific coursework and 35-41 credits of general education classes. The wider range of general education requirements is to accommodate the math requirements for those students intending to complete the BAS in Health Physics.

Upon completion of the BAS in Health Physics program, students will have completed 123 credits of nuclear and radiation specific coursework and 70 credits of General Education Requirements for a total of 193-194 credits. Sixty seven of the credits are from 300 & 400 level courses.

A-R6. Details of potential for current or future partnerships and/or scalability of the program within and across sectors and/or geographic locations (e.g. articulation, degree pathways), when applicable.

Due to the INPO accreditation, students earning the NANT certificate are employable at nearly every nuclear installation and/or federal clean-up site in the United States. Over the past academic year, CBC's Nuclear Technology program has entertained hiring specialists and recruiters from Idaho National Lab and Los Alamos National Lab. During the coming academic year, we hope to explore partnerships in the energy sector other than nuclear, including hydro, wind, and solar, as well as expanding the scope of the Instrumentation and Control option to other industries, including food processing, manufacturing, logistics, and the growing data center industry in the Columbia Basin.

ATTACHMENT A-1

CITY OF RICHLAND
ENERGY SERVICES DEPARTMENT
625 Swift Boulevard, MS-23
Richland, WA 99352
Telephone (509) 942-7403
Fax (509) 942-7405
CI.RICHLAND.WA.US · 509-942-7390

Sent electronically to: kholestine@columbiabasin.edu

June 15, 2020

Dr. Rebekah Woods, President
Columbia Basin College
2600 North 20th Avenue
Pasco, WA 99301

RE: CBC Career Launch – Letter of Support

Dear Dr. Woods,

The City of Richland's Energy Services Department fully supports Columbia Basin College's (CBC) Career Launch grant application to the State Board for Community and Technical Colleges for the Nuclear Technology program. The Instrumentation & Controls (I&C) certification program, within the Nuclear Technology program, would be very beneficial to providing a skilled workforce the City will continue to need. The City has six employees working with job descriptions requiring entry level academic skills based upon I&C.

Several years ago I was introduced to "The Balanced Scorecard-Measures that Drive Performance" by Kaplan and Norton. The balanced scorecard recognizes an interconnection between innovation and learning, internal business, customer perspectives, and a financial perspective. Investing in training creates opportunities for business process improvements, which save costs and ultimately increases value for customers. The City recognizes the value of a skilled workforce and a continual investment in lifetime training.

Students who complete a Nuclear Technology program at CBC, particularly with certificates in I&C, will be academically prepared with the relevant skills for entry level jobs at the City of Richland. It appears the Career Launch program is in compliance with required federal, state, and local regulations. Within the past three years, the City has hired two employees with similar I&C skilled backgrounds and I anticipate there will be a need for one or two more employees with I&C skills in the next three years. I believe the students completing the Career Launch program will be ready for the entry- level jobs and include an optional, non-binding commitment, to interview/hire one or two over the first three years of the program.

I look forward to the success CBC will have with the grant application and the skilled workforce who will be developed through the Nuclear Technology program. If you have any questions, please contact me at (509) 942-7403 or cwhitney@ci.richland.wa.us.

Sincerely,

Clinton R. Whitney

Clint Whitney, PE, MBA Energy Services Director City of Richland

ATTACHMENT A2

ENERGY NORTHWEST

William G. Hettel
Columbia Generating Station
P.O. Box 968, PE08
Richland, WA 99352-0968
Ph. 509.377.831 C: 509.623.237.0612
wghettel@energy-northwest.com

May 18, 2020

Dr. Rebekah Woods, President
Columbia Basin College
2600 North 20th Avenue
Pasco, WA 99301

Subject: SUPPORT FOR GRANT - STATE OF WASHINGTON - NUCLEAR TECHNOLOGY PROGRAM

Dear Dr. Woods

Energy Northwest operates Columbia Generating Station which is the only operating nuclear plant in the northwest. Energy Northwest is pleased to be a partner with Columbia Basin College (CBC) and the Nuclear Technology Program. We fully support CBC's application for the Career Launch grant with the State Board for Community and Technical Colleges because the Career Launch program complies with the required federal, state, and local regulations ensuring it meets our training and staffing needs. This grant will support the programs for Instrument and Control Technician, Radiation Protection Technician, and Non-Licensed Operator which also allows a student to obtain a certificate in the Nuclear Technology Program. The Nuclear Technology Program is one of 25 in the nation.

CBC is critical for providing a sustainable pipeline of qualified workers to the Tri-Cities. One of our biggest challenges at Columbia Generating Station is the shortage of qualified and trained personnel to mitigate the impending retirement of our aging workforce. Those individuals completing the Career Launch Program will be ready for the Instrument and Control Technician, Radiation Protection Technician, and Non-Licensed Operator entry-level jobs which we will need to interview and potentially hire around 25 to 30 over the next 3 years due to our aging workforce. We have benefited from the Nuclear Technology Program through employing several of the graduates from the program in previous years. I know other industries around the Tri-Cities, the State of Washington and around the United States have benefited as well. We believe CBC's program is critical in providing a sustainable pipeline of qualified skilled, technicians, radiation protection technicians, and non-licensed operators. This program will also help the state electrical generation industry support the recent approved WA SB5116 Clean Energy Bill by helping supply the resources to operate the needed generating capacity.

Thank you for CBC's valuable role in providing qualified and trained labor to our industry. I look forward to continuing working with you in the future. If you have any questions, please feel free to contact me.

Respectfully,

W. G. Hettel
Chief Nuclear Officer/VP of Nuclear Generation

ATTACHMENT A3

Pacific Northwest
NATIONAL LABORATORY

June 17, 2020

Dr. Rebekah Woods, President
Columbia Basin College
2600 N 20th Ave
Pasco, WA 99301

Subject: Career Launch Grant - Letter of Support

On behalf of Pacific Northwest National Laboratory (PNNL), we are pleased to support CBC's application for the Career Launch grant with the State Board for Community and Technical Colleges which complies with the required federal, state, and local regulations ensuring it meets our training and staffing needs. This grant will support the programs for Instrument and Control Technician, Radiation Protection Technician, and Non-Licensed Operator which also allows a student to obtain a certificate in the Nuclear Technology Program. I believe that our mission and purpose align with the goals of this grant which aims to provide a sustainable pathway for these critical positions within the STEM ecosystem.

PNNL's mission is to transform the world through courageous discovery and innovation. It is our vision that PNNL science and technology inspires and enables the world to live prosperously, safely, and securely. It's no easy task, and with our values of integrity, creativity, collaboration, impact, and courage, our staff deliver time and time again. PNNL's leadership and efforts to advance STEM education are guided by three signature initiatives:

- Accelerate DOE workforce development
- Increase underrepresented minorities in STEM fields
- Enhance STEM literacy and capability

Our organization anticipates between 6-10 open positions for entry-level Radiation Protection Technicians, Instrument and Control Technicians, and non-licensed Operators over the next 3 years due to the aging workforce and current attrition rates. We would encourage the program participants to apply for these positions upon completion of the programs as well as any available internships in these areas while their programs are in progress.

We look forward to providing our continued support and partnership with CBC. Please contact me if you have any questions.

Sincerely,

Evangelina Galvan Shreeve
Director, Office of STEM Education

U.S. DEPARTMENT OF ENERGY

ATTACHMENT A4

PORT OF BENTON

Sent electronically to kholestine@columbiabasin.edu

June 18, 2020

Dr. Rebekah Woods, President
Columbia Basin College
2600 N. 20th Ave.
Pasco, WA 99301

Re: Letter of Support for Columbia Basin College Career Launch

Dear Dr. Woods,

The Port of Benton fully supports the Columbia Basin College (CBC) Career Launch grant application for the Nuclear Technology program to the State Board for Community and Technical Colleges. The Instrumentation and Controls (I&C) certification program under Nuclear Technology also provides much needed support within this industry field. The Port is actively involved with supporting the expansion and recruitment of companies within this industry and with these skill sets. CBC providing these programs is extremely valuable to our national, state and regional economic development efforts.

CBC's Nuclear Technology program and I&C certification program ensures that we have academically prepared future workforce with relevant skills. Your programing complies with required federal, state and local regulations. Growing these educational and training capabilities is globally critical for the future of clean energy.

This grant will allow us to continue to promote CBC, its students and this program. Your efforts will ensure a sustainable pipeline of qualified workers in the nuclear and advanced manufacturing industries within our current economy as well as our region's future.

Therefore, we fully support CBC's grant application for the Nuclear Technology program.

Sincerely,

Diahann Howard

Diahann Howard, PPM®
Executive Director, Port of Benton

3250 Port of Benton Blvd • Richland, WA 99354 • (509) 375-3060 • Fax: (509) 375-5287

ATTACHMENT A5

Sent electronically to kholestine@columbiabasin.edu

June 18, 2020

Dr. Rebekah Woods, President
Columbia Basin College
2600 N. 20th Ave.
Pasco, WA 99301

Re: Letter of Support for Columbia Basin College Career Launch

Dear Dr. Woods,

The Tri-Cities Research District (TCRD) fully supports the Columbia Basin College (CBC) Career Launch grant application for the Nuclear Technology program to the State Board for Community and Technical Colleges. The Instrumentation and Controls (I&C) certification program under Nuclear Technology also provides much needed support within this industry field. The TCRD is actively involved with supporting the expansion and recruitment of companies within this industry and with these skill sets. CBC providing these programs is extremely valuable to our national, state and regional economic development efforts.

CBC's Nuclear Technology program and I&C certification program ensures that we have academically prepared future workforce with relevant skills. Your programing complies with required federal, state and local regulations. Growing these educational and training capabilities is globally critical for the future of clean energy.

This grant will allow us to continue to promote CBC, its students and this program. Your efforts will ensure a sustainable pipeline of qualified workers in the nuclear and advanced manufacturing industries within our current economy as well as our region's future.

Therefore, we fully support CBC's grant application for the Nuclear Technology program.

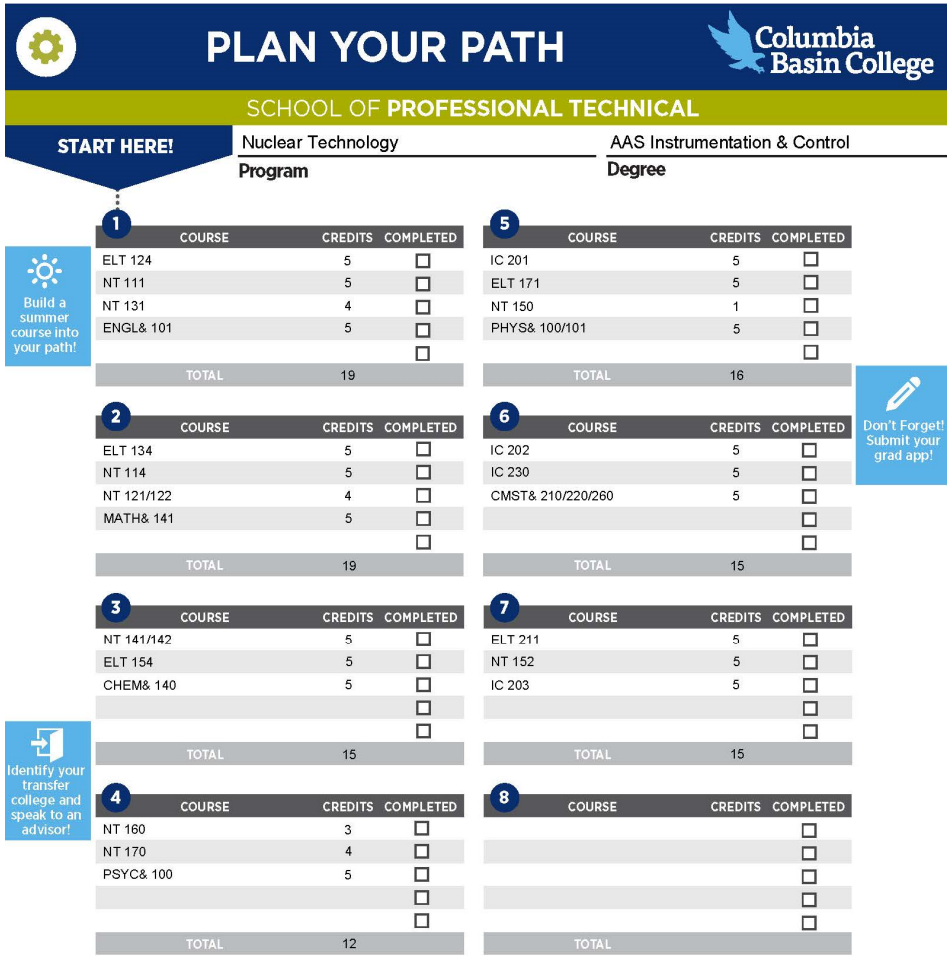
Sincerely,

Miles S. Thomas

Miles Thomas, AICP
Executive Director
Tri-Cities Research District

3250 Port of Benton Blvd., Richland, WA 99354
(509) 375-3060 • (509) 375-5287
info@tricitiesresearchdistrict.org • tricitiesrearchdistrict.org

ATTACHMENT B – COURSE SEQUENCES



PLAN YOUR PATH

Columbia Basin College

SCHOOL OF **PROFESSIONAL TECHNICAL**

START HERE!

Nuclear Technology — **Program**

AAS Instrumentation & Control — **Degree**

Build a summer course into your path!

1	COURSE	CREDITS	COMPLETED
	ELT 124	5	☐
	NT 111	5	☐
	NT 131	4	☐
	ENGL& 101	5	☐
			☐
	TOTAL	19	

2	COURSE	CREDITS	COMPLETED
	ELT 134	5	☐
	NT 114	5	☐
	NT 121/122	4	☐
	MATH& 141	5	☐
			☐
	TOTAL	19	

3	COURSE	CREDITS	COMPLETED
	NT 141/142	5	☐
	ELT 154	5	☐
	CHEM& 140	5	☐
			☐
			☐
	TOTAL	15	

4	COURSE	CREDITS	COMPLETED
	NT 160	3	☐
	NT 170	4	☐
	PSYC& 100	5	☐
			☐
			☐
	TOTAL	12	

5	COURSE	CREDITS	COMPLETED
	IC 201	5	☐
	ELT 171	5	☐
	NT 150	1	☐
	PHYS& 100/101	5	☐
			☐
	TOTAL	16	

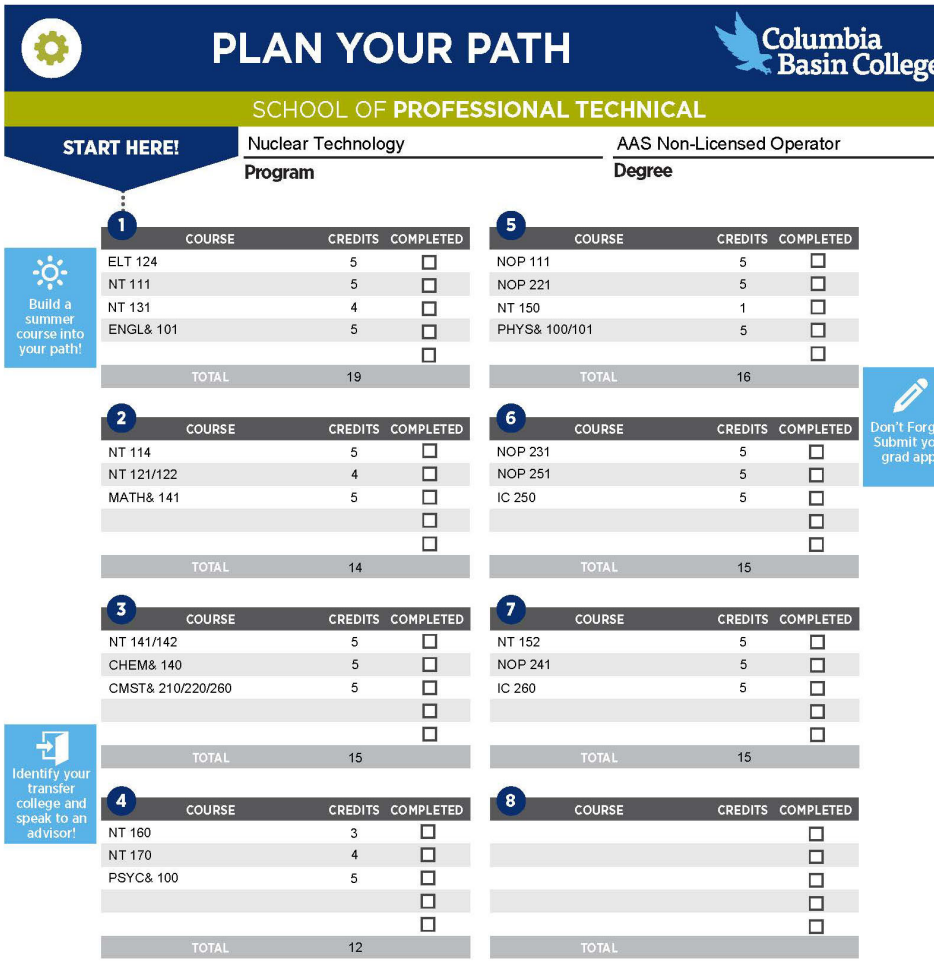
6	COURSE	CREDITS	COMPLETED
	IC 202	5	☐
	IC 230	5	☐
	CMST& 210/220/260	5	☐
			☐
			☐
	TOTAL	15	

7	COURSE	CREDITS	COMPLETED
	ELT 211	5	☐
	NT 152	5	☐
	IC 203	5	☐
			☐
			☐
	TOTAL	15	

8	COURSE	CREDITS	COMPLETED
			☐
			☐
			☐
			☐
			☐
	TOTAL		

Don't Forget! Submit your grad app!

Identify your transfer college and speak to an advisor!



PLAN YOUR PATH

Columbia Basin College

SCHOOL OF **PROFESSIONAL TECHNICAL**

START HERE!

Nuclear Technology — **Program**

AAS Non-Licensed Operator — **Degree**

Build a summer course into your path!

1	COURSE	CREDITS	COMPLETED
	ELT 124	5	☐
	NT 111	5	☐
	NT 131	4	☐
	ENGL& 101	5	☐
			☐
	TOTAL	19	

2	COURSE	CREDITS	COMPLETED
	NT 114	5	☐
	NT 121/122	4	☐
	MATH& 141	5	☐
			☐
			☐
	TOTAL	14	

3	COURSE	CREDITS	COMPLETED
	NT 141/142	5	☐
	CHEM& 140	5	☐
	CMST& 210/220/260	5	☐
			☐
			☐
	TOTAL	15	

4	COURSE	CREDITS	COMPLETED
	NT 160	3	☐
	NT 170	4	☐
	PSYC& 100	5	☐
			☐
			☐
	TOTAL	12	

5	COURSE	CREDITS	COMPLETED
	NOP 111	5	☐
	NOP 221	5	☐
	NT 150	1	☐
	PHYS& 100/101	5	☐
			☐
	TOTAL	16	

6	COURSE	CREDITS	COMPLETED
	NOP 231	5	☐
	NOP 251	5	☐
	IC 250	5	☐
			☐
			☐
	TOTAL	15	

7	COURSE	CREDITS	COMPLETED
	NT 152	5	☐
	NOP 241	5	☐
	IC 260	5	☐
			☐
			☐
	TOTAL	15	

8	COURSE	CREDITS	COMPLETED
			☐
			☐
			☐
			☐
			☐
	TOTAL		

Don't Forg Submit yo grad app

Identify your transfer college and speak to an advisor!

PLAN YOUR PATH

Columbia Basin College

SCHOOL OF PROFESSIONAL TECHNICAL

START HERE!

Nuclear Tech — Program

AAS Radiation Protection Technician — Degree

Build a summer course into your path!

1

COURSE	CREDITS	COMPLETED
ELT 124	5	☐
NT 111	5	☐
NT 131	4	☐
ENGL& 101	5	☐
		☐
TOTAL	19	

2

COURSE	CREDITS	COMPLETED
RPT 111	5	☐
NT 121/122	4	☐
MATH& 141	5	☐
		☐
		☐
TOTAL	14	

3

COURSE	CREDITS	COMPLETED
NT 141/142	5	☐
CHEM& 140	5	☐
CMST& 210/220/260	5	☐
		☐
		☐
TOTAL	15	

Identify your transfer college and speak to an advisor!

4

COURSE	CREDITS	COMPLETED
NT 160	3	☐
NT 170	4	☐
BIO& 175	5	☐
		☐
		☐
TOTAL	12	

5

COURSE	CREDITS	COMPLETED
NT 150	1	☐
PSYC& 100	5	☐
RPT 121	5	☐
RPT 131	5	☐
		☐
TOTAL	16	

6

COURSE	CREDITS	COMPLETED
RPT 141	5	☐
RPT 222	5	☐
MATH& 142	5	☐
		☐
		☐
TOTAL	15	

Don't Forget! Submit your grad app!

7

COURSE	CREDITS	COMPLETED
NT 152	5	☐
RPT 222	5	☐
		☐
		☐
		☐
TOTAL	10	

8

COURSE	CREDITS	COMPLETED
		☐
		☐
		☐
		☐
		☐
TOTAL		

PLAN YOUR PATH

Columbia Basin College

SCHOOL OF PROFESSIONAL TECHNICAL

START HERE!

Nuclear Technology — Program

BAS in Health Physics — Degree

Build a summer course into your path!

1

COURSE	CREDITS	COMPLETED
MATH&142	5	☐
		☐
		☐
		☐
		☐
TOTAL	5	

2

COURSE	CREDITS	COMPLETED
HPHYS 300	5	☐
HPHYS 420	5	☐
MATH& 151	5	☐
		☐
		☐
TOTAL	15	

3

COURSE	CREDITS	COMPLETED
HPHYS 305	5	☐
HPHYS 310	5	☐
MATH& 152	5	☐
		☐
		☐
TOTAL	15	

Identify your transfer college and speak to an advisor!

4

COURSE	CREDITS	COMPLETED
HPHYS 315	5	☐
HPHYS 410	5	☐
HPHYS 350	1	☐
Social & Behavioral Science Cours	5	☐
		☐
TOTAL	16	

5

COURSE	CREDITS	COMPLETED
HPHYS 400	5	☐
HPHYS 425	5	☐
PHIL 305	5	☐
		☐
		☐
TOTAL	15	

6

COURSE	CREDITS	COMPLETED
ENVS 310	5	☐
HPHYS 405	5	☐
HPHYS 320	5	☐
		☐
		☐
TOTAL	15	

Don't Forget! Submit your grad app!

7

COURSE	CREDITS	COMPLETED
HPHYS 415	5	☐
HPHYS 450	1	☐
Humanities Course	5	☐
		☐
		☐
TOTAL	11	

8

COURSE	CREDITS	COMPLETED
		☐
		☐
		☐
		☐
		☐
TOTAL		