Academic Affairs Committee

New Program Proposals: AAS Machining Tech, CC1 CNC Machine Op

Name: Vickery Viles **Date**: 10/28/2020

Department: Curriculum and Assessment

COCC Contact Information: vviles@cocc.edu

Use the instructions for this document to complete your presentation checklist; then e-mail your completed presentation checklist (*not* the instructions) to the Academic Affairs chair by his or her specified deadline. **Please note:** If an item listed is not relevant to your specific presentation to Academic Affairs, please mark as **N/A**. Use as many pages as necessary.

PROPOSAL OVERVIEW

Attached please find the new program proposals for and AAS in Machining Technician and a CC1 in CNC Machine Operator. These programs have completed a design workshop and the full proposal is ready for committee review. The purpose of the Academic Affairs Committee review is: to present the developed program proposal to internal COCC approvers with a focus on the purpose, need, and COCC capacity to support the programs.

TYPE OF AGENDA ITEM

☐ Information Item (requires approval of AA Chair)

☒ Action Item

- ☐ Information and committee feedback
- ☐ Procedure—revision (Attach current procedure with proposed changes illustrated with track changes)
- ☐ Procedure—new
  Identify suggested location in *GPM*: _____
- ☐ Policy—revision (Attach current policy with proposed changes illustrated with track changes)
- ☐ Policy—new
  Identify suggested location in *GPM*:_____
- ☒ New academic program (Complete only items #1 and #2 on this form and attach stage 2 document.)
- ☐ Other:_____

BUDGET

See proposals.

INSTRUCTIONAL REQUIREMENTS

See proposals.

OPERATIONAL NEEDS, CURRENT AND FUTURE

See proposals.

STUDENT IMPACT

See proposals.

ANTICIPATED IMPLEMENTATION TIMELINE

Fall 2021

COCC NEW PROGRAM PROPOSAL: MACHINING TECHNICIAN (AAS)

(Refer to Instructions for New Program Process)

Name of lead proposer: Joseph Huddleston
Date of Submission to Curriculum Office: 10/13/2020

NEW PROGRAM PROPOSAL APPROVAL

Each approver needs to enter their initials and the date, save, and forward to the next approver (and copy the Curriculum and Assessment Office).

Curriculum Office:
☒ Form is complete and incorporates feedback from the concept worksheet.
☒ Program proposal meets state and NWCCU requirements.
Notes from Curriculum Office: *Please note, I have discussed the wage issue with Joe (he has listed the same wage for both the AAS and the CC1, which is derived from the occupational profile but he feels doesn't represent starting wages for jobs associated with each program). He is bringing this issue to his advisor board meeting on 10/30/20 to get better wage information for each program.*
CO Approved by and Date forwarded to dean: VViles 10/20/2020

Dean:
☒ Confirming the resource and impact descriptions are accurate.
☒ Confirming the need description is accurate and the demand is sufficient.
☒ Confirming the department and discipline have the capacity to development the program.
Notes from the dean: I made some minor edits and removed the reference to moving some of the machining shop into RTEC. Also removed the reference to a budget amount regarding the ODE grant proposal.
Dean approved by and date forwarded to VPI: Michael Fisher 10/27/20

VPI:
☒ Confirming COCC capacity and alignment of program to COCC mission and strategic direction.
Notes from the VPI:
VPI Approved by and date forwarded to Academic Affairs: Betsy Julian 10/27/20

Academic Affairs (Chair):
☐ Confirming complete proposal meets COCC, state, and NWCCU standards.
☐ Confirming that COCC has the capacity to offer the program.
☐ Confirming that the evidence of need is substantial and aligns with the purpose of transfer or CTE programs.
Notes from AA Chair:
Academic Affairs approved by and date forwarded:

PROGRAM OVERVIEW

1. List the program title, award (1.), and outcomes (3.D.1.)).
   Machining Technician Associate of Applied Science.Outcomes below are for year two of the AAS.
   1. Apply knowledge of Fixture design in production environment.
   2. Analyze machine operation for optimization opportunities.
   3. Develop part holding options for both CNC Lathe and Mill.
   4. Effectively communicate with others using methods appropriate to the situation.

2. Identify the type of new program (2.)

- Substantial revision of current program such that a new program is required. Revised program is: Manufacturing Technology Associate of Applied Science

EVIDENCE OF NEED

Evidence of Need Detail

1. Identify the purpose of the program (3.D.1.).
   Advisory board is requesting we get deeper into the CNC portion of machining. Currently we only have 12 credit hours of CNC training, this would move to 75-80 credits CNC. Over 95 percent of the jobs are in CNC Machining.
2. List either job titles for a CTE program or transfer universities if you propose a transfer program. (3.D.1.)
   Machinist, CNC Machinist, Machine Operator, CNC Mill Setup, CNC Swiss Machinist, CNC CMM Operator, Tool Crib Attendant, Shop Foreman, CNC Programmer, Estimator.

3. Who is your target population?* (3.A.1.)
   The target audience for this program would be existing community college students, current high school students and community members or machining industry employees interested in machining as a career choice.

Evidence of Need Summary:

i. What is the average hourly or annual wage for these occupations in the Central Oregon region?
   $25.38-$30.23 ($30 for CNC Programmer, Foreman, or Estimator.)
ii. What is the number of total annual job openings in Central Oregon?
   20-30 based on our advisory board members, many of our students move or are willing to move to Portland where there are a lot more jobs.
iii. Provide 3-5 points representing the strongest evidence of need, citing your source and including specific employers who have requested the program (if any).
   1. Currently 95% of jobs in the machining industry are CNC. Our current program has less than 10% CNC content. We need to be at least 50% CNC to get students ready for this trade.
   2. At the Advisory Board meeting on October 10, 2019, advisory board members have asked for more CNC content. Keith Manufacturing (Mike Feigner), Radian Weapons (Josh Underwood), LSX Innovations (Justin Clark), CV International (Dale Riggs), Carlson Sign (Peter

Carlson), ISCO Machine (Don Griffiths), Outback Manufacturing (Sam Shaw), Nosler (Mike Lake).

3. Our advisory board would like us to be NIMS (National Institute for Metalworking Skills, accrediting body) certified at the program level, currently we do not fit the requirements due to lack of CNC content.

COLLABORATION

Collaboration Detail

1. If transfer program, list regional stakeholders who have participated in this program development and attach letters of support.

   If CTE program, include Advisory Board Support

   a. All CTE programs must have an advisory board
      Keith Manufacturing (Mike Feigner), Radian Weapons (Josh Underwood), LSX Innovations (Justin Clark), CV International (Dale Riggs), Carlson Sign (Peter Carlson), ISCO Machine (Don Griffiths), Outback Manufacturing (Sam Shaw), Nosler (Mike Lake), HDESD (Brook Rich).

   i. If the discipline does not have a current advisory board, identify regional stakeholders (and potential future advisor board members) who have participated in this program development.

Collaboration Summary * (3.B.1.)

This program is developed in collaboration and with the support of the manufacturing technology advisory board. The advisory board represents regional employers in the fields of manufacturing (machining, welding, etc.)

ALIGNMENT

Alignment Detail

1. Strategic Alignment

   a. Identify the alignment of this program to COCC's mission, and Strategic Plan:
      This program aligns with the COCC strategic planning goal on community enrichment by providing students the opportunity to focus on machining rather than having to have a combined education experience of a welding and machining focus when the employer only requires the machining skills.

      This program aligns with COCC strategic planning goal of student success by offering an up to date machining curriculum with course hours and delivery method more in line with industry standards.

   b. Identify any other alignments (such as HECC/CCWD priorities, state or national workforce investment initiatives, Pre-K-12 projects.)
      - Industry Standards: National Institute of Metalworking Skills Machining Standards (National Standard)

2. Specialized Accreditation

   a. Is there an accreditation association that aligns with this program? If yes,
      - Accreditation: National Institute of Metalworking Skills (NIMS) credentials

i. Will you pursue initial accreditation with an agency?
   1. Yes, we will start with individual Credentials for specific classes through NIMS Credentials. They do individual Credentials (by class) and Program Level Accreditation
   2. If yes, what is the projected cost (budget and time) to participate in the accreditation process? Cost is $2000 (accreditation is for 5 years). We need 2 advisory board members to review and submit approval letters, time is approximately 30 days once we apply.

Alignment Summary* (3.C.)

This program is developed in alignment with the COCC mission of providing quality, accessible education programs. In addition, it supports two strategic planning goals: student success and community enrichment. The program is designed in alignment with NIMS (National Standard).

DESIGN

Design Detail

1. If you are proposing a CTE program,
   1. List the student learning outcomes (3.D.1.).

      1. Apply knowledge of Fixture design in production environment.
      2. Analyze machine operation for optimization opportunities.
      3. Develop part holding options for both CNC Lathe and Mill.
      4. Effectively communicate with others using methods appropriate to the situation.

   5. Provide the program assessment plan and schedule. For each program outcome, identify the course that represents the highest level of achievement of the outcome, the measurement that will be used to collect student evidence of achievement, and the term/year each outcome assessment will be reported.

      1. To meet outcome 1, students need to create models and components of tooling required to hold odd shaped parts in the CNC mill and lathe. Some will be 3D printed and others machined. Students will demonstrate this in a project in MFG [new course] CNC Project 2; this will be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).
      2. To meet outcome 2, students need to review new parts after First Article is complete. The goal being to improve efficiency on the CNC Mill and lathe by different tool options, feed rates, tool locations in turret, and fixturing. Students will demonstrate this in a project in MFG [new course] CNC Project 2; this will be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).
      3. To meet outcome 3, students will create options for holding parts in CNC mill and lathe. This is for a production environment and will need to handle higher volume of parts. These will be currently available clamping alternatives (purchased). Students will demonstrate this in a project in MFG [new course] CNC Project 2; this will be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).
      4. To meet outcome 4 students are required to give a presentation to the instructor on how they achieved their outcomes: 1, 2, and 3. This will

be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).

2. Course requirements (subject, course number, title, credits presented in a sample plan format followed by program credit total; identify any new courses in yellow highlight.) (3.D.2.)
   Term 1: MFG 100 Orientation (1Cr.), MFG 101 Blueprint (3 Cr.), MTH 102 Applied Technical Math (4 Cr.), MFG 110 Manufacturing I (4 Cr.), MFG 119 Design Techniques (4 Cr.) (Total Term 16 Cr.)

   Term 2: MFG 256 CNC Mill Programming (4 Cr.), MFG 257 CNC Mill Setup & Operation (4 Cr.), MFG 133 Quality Assurance (3 Cr.), MFG 250 Additive Manufacturing (3 Cr.), Human Relations (BA 178, BA 285, COMM 115, COMM 218, or COMM 219, 3-4cr.) (Total Term 17-18 Cr.)

   Term 3: MFG 259 CNC Lathe Programming (4 Cr.), MFG 260 CNC Lathe Setup & Operation (4 Cr.), MFG [new course] CNC Project 1 (4 Cr.) WR 121 Academic Composition (4 Cr.). (Total Term 16 Cr.)

   Term 4: MFG 258 Mastercam Mill (4 Cr.), MFG [new course] Production CNC Ops Mill (3 Cr.), MFG [new course] CNC Fixture Design Mill (3 Cr.), CIS 120 Computer Concepts (4 CR.). (Total Term 14 Cr.)

   Term 5: MFG 261 Mastercam Lathe (4 Cr.), MFG [new course] Production CNC Ops Lathe (3 Cr.), MFG xxx CNC Fixture Design Lathe (3 Cr.), Elective from current offerings (3 Cr.), HHP 252A Fitness/First Aid (3 Cr.). (Total Term 16 Cr.)

   Term 6: MFG [new course] CNC Project (4 Cr.), MFG 280 Cooperative Work Experience (3 Cr.), Electives from current offerings (6 Cr.) (Total Term 13 Cr.)

   Certificate total Credits: 92-93

3. Primary delivery method* (3.D.3.)
   All classes will be offered at the Redmond Campus and will be a mixture of Lecture, lec/lab, and lab with lec/lab, and lab portion being self-paced.

4. Entrance and enrollment options (3.D.4. and 3.D.5.)
   - Recommended preparation into first term
   - Rolling entry students can begin all terms but summer
   - Part-time and full-time attendance options
   - Program orientation course required in first term

Design Summary* (3.D.)

This is a 92-93 credit two year Associate Degree which will be offered on the Redmond campus of COCC. Students can enter any term (except summer) with recommended preparation, and can attend either part or full time. There is a program orientation offered every term required for students in their first term and in support of retention and success.

CAPACITY

Capacity Detail (3.E.)

1. Target audience

The target audience for this program would be existing community college students, current high school students and community members or machining industry employees interested in machining as a career choice.

a. Primarily new or existing students (from Evidence of Need, 3. Above)?
   i. What is the average hourly or annual wage for these occupations in the Central Oregon region?
      $25.38
   ii. What is the number of total annual job openings in Central Oregon?
      20-30 based on our advisory board members
   iii. Provide 3-5 points representing the strongest evidence of need, citing your source and including specific employers who have requested the program (if any).
      1. Currently 95% of jobs in the machining industry are CNC. Our current program has less than 10% CNC content. We need to be at least 50% CNC to get students ready for this trade.
      2. At the Advisory Board meeting on October 10, 2019, advisory board members have asked for more CNC content. Keith Manufacturing (Mike Feigner), Radian Weapons (Josh Underwood), LSX Innovations (Justin Clark), CV International (Dale Riggs), Carlson Sign (Peter Carlson), ISCO Machine (Don Griffiths), Outback Manufacturing (Sam Shaw), Nosler (Mike Lake).
      3. Our advisory board would like us to be NIMS certified at the program level, currently we do not fit the requirements due to lack of CNC content.

2. Enrollment projection
   b. Projected enrollment in first 1-3 years
      First year: 30 (reflect estimate of current enrollment)
      Second year: 40 (estimates 10 new students)
      Projected enrollment of mature program* (identified as a number, not a range): 45 (estimates 15 new students)

3. Impact on faculty resource.
   a. Identify program director, if applicable. Joe Huddleston
   b. Identify new or reallocated section assignments. Not required

4. Impact to load
   c. Identify one-time load impacts associated with implementation
      Joe Huddleston is creating curriculum during 2020-2021 School year which equates to approximately ½ time release to write curriculum.

   d. Identify on-going load impacts (program director, reassignment, etc.)
      Several courses are going to a lec/lab format vs lab. This will require lectures that can be recorded and attached to Blackboard.

5. Impact to facilities, technology, and/or equipment
   Current facilities are adequate for this program. A proposal is being compiled that would allow for easier move-in of new equipment into the CNC lab and expansion of the welding program to include fabrication.

6. Impact to discipline/department and administrative assistant
   Due to having pre-reqs for the new program, impact on staff should be lowered as they currently register each student manually. With pre-requisites in place, students should be able to register themselves.

7. Budget (*certain types of changes must submit a formal budget to NWCCU)
   e. Expenses
      i. Use the table below to identify 1) all current resource and budget requirements that will be **redirected** to this program (R in the table below) and 2) all **new** resource and budget expenses needed for this program (N in the table below.) If an expense is ongoing, reflect it in each year so you are displaying the cumulative expense.

	$ needed Year 1		**$ needed Year 2**		**$ needed Year 3**	
	R	**N**	**R**	**N**	**R**	**N**
Personnel	NONE	NONE	NONE	NONE	NONE	NONE
Equipment	NONE	Note 2	NONE	NONE	NONE	NONE
Technology- Hardware	NONE	$3500	NONE	NONE	NONE	NONE
Technology- Software	NONE	NONE	NONE	NONE	NONE	NONE
Materials/Supplies	NONE	NONE	NONE	NONE	NONE	NONE
Curriculum or Online Development	Note 1	NONE	NONE	NONE	NONE	NONE
Other Capital Expenditures	NONE	NONE	NONE	Note 3	NONE	NONE
External accreditation for program	NONE	$2000	NONE	NONE	NONE	NONE
TOTALS						

Note 1: Joe Huddleston given ½ release time to create new curriculum
Note 2: Working on grant for new 5-axis CNC Mill
Note 3: Working on grant for expansion of weld department

8. Revenue
   i. Identify any new course or program fees proposed in conjunction with this program. Fees should go down, going from a third-party training software to a book. The selected textbooks can be used for multiple classes.

   ii. Identify any other resources (grants, outside funding) that the College will be able to dedicate to expenses related to this program. Currently seeking an ODE grant to offset half the wages of additional instructor (Joe Huddleston) to create curriculum. Applying for grant with Michael Fisher as a joint venture with Mt Hood community college. Also applying for grant through AWS (welding society) to pay for move of machine shop to increase capacity in the weld area.

9. Program cost and scholarships
   a. Identify any special aid, scholarship, or resources available to students*
      1. Gene HAAS Grant foundation
      2. NIMS Scholarships
      3. National Tooling and Machining Foundation Scholarship
      4. Manufacturing's Next Generation Scholarship
      5. Skills USA Scholarship

10. Other impacts: Identify impacts to the following areas:

Area or department	Identify impact
Policy impacts (new or changes to policies required as a result of this program)	NONE
Admissions and Records	NONE
Advising	NONE
Bookstore	PROGRAM WILL REQUIRE MORE BOOKS
Campus Services	NONE
College Now	NONE
College Relations	NONE
Financial Aid	NONE
Information Technology Services	NONE
Library	NONE
Risk Management (contracts, new field-based experiences)	NONE
Tutoring and Testing	NONE

Capacity Summary*

This proposal is essentially a restructuring of current programs to offer a more coherent and rigorous training in machining, as requested by employers. We anticipate modest growth and as a result, current facilities, services, and capacity are sufficient to meet the expected growth.

IMPLEMENTATION TIMELINE AND TARGETED EFFECTIVE TERM

1. Identify the desired effective term (new programs align with the academic year which begins in fall.) New program will start fall term of 2021

2. Proposal timeline:

Step	Date
Chair submits proposal to Curriculum Office	10/1/2020
(Dean approval)	10/1/2020
(VPI approval)	10/28/2020
Submit to AA	10/1/2020
Academic Affairs	11/5/2020
Submit to Courseleaf	11/20/2020
Curriculum Committee Approval	2/20/2021
Board of Directors Approval	3/2020
State Approval	5/2021
NWCCU approval	5/2021
Effective Term (students can declare)	9/20/2021
DOE approval for financial aid eligibility	3/20/2021

State of Oregon Employment Department **Occupation Profiles**

The **Occupation Profiles** tool is located on **QualityInfo.org**, a website of the **Oregon Employment Department**

Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic (514012)

Central Oregon (Crook, Deschutes, Jefferson)

Description

Develop programs to control machining or processing of metal or plastic parts by automatic machine tools, equipment, or systems.

State of Oregon Licenses and Certifications

for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

No statewide license is required for this occupation.

Wage Range

for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

Area	10th Percentile	25th Percentile	50th Percentile (Median)	75th Percentile	90th Percentile	Average Hourly	Average Annual
Oregon	$18.54	$22.52	$28.22	$34.29	$41.20	$29.40	$61,150
Central Oregon	16.45	18.12	25.91	30.77	36.03	25.16	52,326

Employment Outlook

for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

Statewide Employment Analysis	Employment in this occupation in 2017 was similar to most occupations across the state. The total number of job openings is projected to be similar to job openings for most occupations in Oregon through 2027. This occupation is expected to grow at a much faster rate than the statewide average growth rate for all occupations through 2027. Reasonable employment opportunities exist.
Area Employment Analysis	Employment in this occupation in 2017 was similar to most occupations in the region. The total number of job openings is projected to be similar to job openings for most occupations in the region through 2027. This occupation is expected to grow at a much faster rate than the regional average growth rate for all occupations through 2027.

Area Employment Projections

for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

Replacement openings are caused by existing workers permanently leaving their occupation. Many additional job openings occur due to job changes within occupations.

Area	2017 Employment	2027 Employment	Percent Change	Annual Change Openings	Annual Replacement Openings	Total Annual Openings
Oregon	688	894	29.9%	21	78	99
Central Oregon	19	26	36.8%	1	3	4

Industries of Employment

for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

Industry	Ownership	2017 Employment
Total All Industries	All	19
Manufacturing	Private	19

Educational Requirements

for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

The typical entry level education for this occupation is a postsecondary training (non-degree).

COCC NEW PROGRAM PROPOSAL: CNC MACHINE OPERATOR (CC1)

(Refer to Instructions for New Program Process)

Name of lead proposer: Joseph Huddleston
Date of Submission to Curriculum Office: 10/13/2020

NEW PROGRAM PROPOSAL APPROVAL

Each approver needs to enter their initials and the date, save, and forward to the next approver (and copy the Curriculum and Assessment Office).

Curriculum Office:
☒ Form is complete and incorporates feedback from the concept worksheet.
☒ Program proposal meets state and NWCCU requirements.
Notes from Curriculum Office: *Please note, I have discussed the wage issue with Joe (he has listed the same wage for both the AAS and the CC1, which is derived from the occupational profile but he feels doesn't represent starting wages for jobs associated with each program). He is bringing this issue to his advisor board meeting on 10/30/20 to get better wage information for each program.*
CO Approved by and Date forwarded to dean: VViles on 10/20/2020

Dean:
☒ Confirming the resource and impact descriptions are accurate.
☒ Confirming the need description is accurate and the demand is sufficient.
☒ Confirming the department and discipline have the capacity to development the program.
Notes from the dean: Made some minor grammatical corrections. Adjusted the amount of credits comparison between this 1-year certification and the prior credential. Adjusted language on capacity and opportunity for growth.
Dean approved by and date forwarded to VPI: Michael Fisher 10/27/20

VPI:
☒ Confirming COCC capacity and alignment of program to COCC mission and strategic direction.
Notes from the VPI:
VPI Approved by and date forwarded to Academic Affairs: Betsy Julian 10/27/20

Academic Affairs (Chair):
☐ Confirming complete proposal meets COCC, state, and NWCCU standards.
☐ Confirming that COCC has the capacity to offer the program.
☐ Confirming that the evidence of need is substantial and aligns with the purpose of transfer or CTE programs.
Notes from AA Chair:
Academic Affairs approved by and date forwarded:

PROGRAM OVERVIEW

1. List the program title, award (1.), and outcomes (3.D.1.)).
   CNC Machine Operator 1-year certificate (CC1). This is a related certificate. It is a subset of another CTE program: Machining Technician AAS.
   1. Interpret part drawings and their tolerances.
   2. Apply knowledge of CAD/CAM and use of measurement tools.
   3. Demonstrate a working knowledge of CNC Mill and Lathe.

2. Identify the type of new program (2.)
   Substantial revision of current program such that a new program is required. Revised program is: Manufacturing Technology I

EVIDENCE OF NEED

Evidence of Need Detail

1. Identify the purpose of the program (3.D.1.).
   Advisory board is requesting we get deeper into the CNC portion of machining. There is currently no CNC content in the 1-year certification. This proposal would move to 20 credit hours CNC. Over 95 percent of the jobs are in CNC Machining.
2. List either job titles for a CTE program or transfer universities if you propose a transfer program. (3.D.1.)
   Machinist, CNC Machinist, Machine Operator, CNC Mill Setup, CNC Swiss Machinist, Entry level Machinist, CNC CMM Operator, Tool Crib Attendant

3. Who is your target population?* (3.A.1.)
   The target audience for this program would be existing community college students, current high school students and community members or machining industry employees interested in machining as a career choice.

Evidence of Need Summary:

i. What is the average hourly or annual wage for these occupations in the Central Oregon region?
   $25.38
ii. What is the number of total annual job openings in Central Oregon?
   20-30 based on our advisory board members, many or our students move or are willing to move to Portland where there are a lot more jobs.
iii. Provide 3-5 points representing the strongest evidence of need, citing your source and including specific employers who have requested the program (if any).
   - Currently 95% of jobs in the machining industry are CNC. Our current program has less than 10% CNC content. We need to be at least 50% CNC to get students ready for this trade.
   - At the Advisory Board meeting on October 10, 2019, advisory board members have asked for more CNC content. Keith Manufacturing (Mike Feigner), Radian Weapons (Josh Underwood), LSX Innovations (Justin Clark), CV International (Dale Riggs), Carlson Sign (Peter Carlson), ISCO Machine (Don Griffiths), Outback Manufacturing (Sam Shaw), Nosler (Mike Lake).

- Our advisory board would like us to be National Institute of Metalworking Skills (NIMS) certified at the program level, currently we do not fit the requirements due to lack of CNC content.

COLLABORATION

Collaboration Detail

1. If transfer program, list regional stakeholders who have participated in this program development and attach letters of support.

   If CTE program, include Advisory Board Support
   a. All CTE programs must have an advisory board
      Keith Manufacturing (Mike Feigner), Radian Weapons (Josh Underwood), LSX Innovations (Justin Clark), CV International (Dale Riggs), Carlson Sign (Peter Carlson), ISCO Machine (Don Griffiths), Outback Manufacturing (Sam Shaw), Nosler (Mike Lake), HDESD (Brook Rich).
   i. If the discipline does not have a current advisory board, identify regional stakeholders (and potential future advisor board members) who have participated in this program development.

Collaboration Summary * (3.B.1.)

This program is developed in collaboration and with the support of the manufacturing technology advisory board. The advisory board represents regional employers in the fields of manufacturing (machining, welding, etc.)

ALIGNMENT

Alignment Detail

1. Strategic Alignment
   a. Identify the alignment of this program to COCC's mission, and Strategic Plan:
      This program aligns with the COCC strategic planning goal on community enrichment by providing students the opportunity to focus on machining rather than having to have a combined education experience of a welding and machining focus when the employer only requires the machining skills.

      This program aligns with the COCC strategic planning goal of student success by offering an up to date machining curriculum with course hours and delivery method more in line with industry standards.

   b. Identify any other alignments (such as HECC/CCWD priorities, state or national workforce investment initiatives, Pre-K-12 projects.)
      - Industry Standards: NIMS machining standards (National Standard)

2. Specialized Accreditation
   a. Is there an accreditation association that aligns with this program? If yes,
      - Accreditation: NIMS credentials

      i. Will you pursue initial accreditation with an agency?

1. Yes, we will start with individual Credentials for specific classes through NIMS Credentials. They do individual Credentials (by class) and Program Level Accreditation
2. If yes, what is the projected cost (budget and time) to participate in the accreditation process? Cost is $2000 (accreditation is for 5 year). We need 2 advisory board members to review and submit approval letters. Time is approximately 30 days once we apply.

Alignment Summary* (3.C.)

This program is developed in alignment with the COCC mission of providing quality, accessible education programs. In addition, it supports two strategic planning goals: student success and community enrichment. The programs are designed in alignment with the NIMS machining standards (National Standard).

DESIGN

Design Detail

2. If you are proposing a CTE program,
   1. List the student learning outcomes (3.D.1.).

      1. Interpret part drawings and their tolerances.
      2. Apply knowledge of CAD/CAM and use of measurement tools.
      3. Demonstrate a working knowledge of CNC Mill and Lathe.

   4. Provide the program assessment plan and schedule. For each program outcome, identify the course that represents the highest level of achievement of the outcome, the measurement that will be used to collect student evidence of achievement, and the term/year each outcome assessment will be reported.

      1. To meet outcome 1, students need to review drawings, material call outs, and tolerances of the prints required to make the specific project and generate a setup sheet for the CNC machines. Students will demonstrate this in a project in MFG [new course] CNC Project 1; this will be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).
      2. To meet outcome 2, students need to review CNC programs used to create the parts, fix mistakes intentionally put into programs, and create an inspection report and present to instructor of the parts required to complete their project. Students will demonstrate this in a project in MFG [new course] CNC Project 1; this will be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).
      3. To meet outcome 3, students need to manufacture the components of their project on the CNC Lathe and CNC Mill. The inspection report from outcome 2 will be the assessment tool used to see if they made the parts to print. Students will demonstrate this in a project in MFG [new course] CNC Project 1; this will be done annually but reported as an assessment project in Fall 2021 (for the course offered in spring 2022).

3. Course requirements (subject, course number, title, credits presented in a sample plan format followed by program credit total; identify any new courses in yellow highlight.) (3.D.2.)

Term 1: MFG 100 Orientation (1Cr.), MFG 101 Blueprint (3 Cr.), MTH 102 Applied Technical Math (4 Cr.), MFG 110 Manufacturing I (4 Cr.), MFG 119 Design Techniques (4 Cr.) (Total Term 16 Cr.)

Term 2: MFG 256 CNC Mill Programming (4 Cr.), MFG 257 CNC Mill Setup & Operation (4 Cr.), MFG 133 Quality Assurance (3 Cr.), MFG 250 Additive Manufacturing (3 Cr.), Human Relations (BA 178, BA 285, COMM 115, COMM 218, or COMM 219, 3-4cr.) (Total Term 17-18 Cr.)

Term 3: MFG 259 CNC Lathe Programming (4 Cr.), MFG 260 CNC Lathe Setup & Operation (4 Cr.), MFG [new course] CNC Project 1 (4 Cr.) WR 121 Academic Composition (4 Cr.). (Total Term 16 Cr.)

Certificate total Credits: 49-50

4. Primary delivery method* (3.D.3.)
   All classes will be offered at the Redmond Campus and will be a mixture of Lecture, lec/lab, and lab with lec/lab, and lab portion being self-paced.

5. Entrance and enrollment options (3.D.4. and 3.D.5.)
   - Recommended preparation into first term
   - Rolling entry students can begin all terms but summer
   - Part-time and full-time attendance options
   - Program orientation course required in first term

Design Summary* (3.D.)

This is a 49-50 credit one year certificate of completion which will be offered on the Redmond campus of COCC. Students can enter any term (except summer) with recommended preparation, and can attend either part or full time. There is a program orientation offered every term required for students in their first term and in support of retention and success.

CAPACITY

Capacity Detail (3.E.)

1. Target audience
   The target audience for this program would be existing community college students, current high school students and community members or machining industry employees interested in machining as a career choice.

   a. Primarily new or existing students (from Evidence of Need, 3. Above)?
      i. What is the average hourly or annual wage for these occupations in the Central Oregon region?
         $25.38
      ii. What is the number of total annual job openings in Central Oregon?
         20-30 based on our advisory board members
      iii. Provide 3-5 points representing the strongest evidence of need, citing your source and including specific employers who have requested the program (if any).
         - Currently 95% of jobs in the machining industry are CNC. Our current program has less than 10% CNC content. We need to be at least 30% CNC to get students ready for this trade.

- Our advisory board members have asked for more CNC content. Keith Manufacturing, Radian Weapons, LSX Innovations, CV International, Carlson Sign, ISCO Machine, Outback Manufacturing, Nosler.
- Our advisory board would like us to be NIMS certified at the program level, currently we do not fit the requirements due to lack of CNC content.

2. Enrollment projection
   b. Projected enrollment in first 1-3 years
      First year: 30 (reflect estimate of current enrollment)
      Second year: 40 (estimates 10 new students)
      Projected enrollment of mature program* (identified as a number, not a range): 45 (estimates 15 new students)

3. Impact on faculty resource.
   a. Identify program director, if applicable. Joe Huddleston
   b. Identify new or reallocated section assignments. Not required

4. Impact to load
   c. Identify one-time load impacts associated with implementation
      Joe Huddleston is creating curriculum during 2020-2021 School year which equates to ½ time release to write curriculum.

   d. Identify on-going load impacts (program director, reassignment, etc.)
      Several courses are going to a lec/lab format vs lab. This will require lectures that can be recorded and attached to Blackboard.

5. Impact to facilities, technology, and/or equipment
   Current facilities are adequate for this program. A proposal is being compiled that would allow for easier move-in of new equipment into the CNC lab and expansion of the welding program to include fabrication.

6. Impact to discipline/department and administrative assistant
   Due to having pre-reqs for the new program, impact on admin should be lowered as they currently register each student manually. Students should be able to register themselves.

7. Budget (*certain types of changes must submit a formal budget to NWCCU)
   e. Expenses
      i. Use the table below to identify 1) all current resource and budget requirements that will be **redirected** to this program (R in the table below) and 2) all **new** resource and budget expenses needed for this program (N in the table below.) If an expense is ongoing, reflect it in each year so you are displaying the cumulative expense.

	$ needed Year 1		**$ needed Year 2**		**$ needed Year 3**	
	R	**N**	**R**	**N**	**R**	**N**
Personnel	NONE	NONE	NONE	NONE	NONE	NONE
Equipment	NONE	Note 2	NONE	NONE	NONE	NONE
Technology- Hardware	NONE	$3500	NONE	NONE	NONE	NONE

Technology- Software	NONE	NONE	NONE	NONE	NONE	NONE
Materials/Supplies	NONE	NONE	NONE	NONE	NONE	NONE
Curriculum or Online Development	Note 1	NONE	NONE	NONE	NONE	NONE
Other Capital Expenditures	NONE	NONE	NONE	Note 3	NONE	NONE
External accreditation for program	NONE	$2000	NONE	NONE	NONE	NONE
TOTALS						

Note 1: Joe Huddleston given ½ release time to create new curriculum
Note 2: Working on grant for new 5-axis CNC Mill
Note 3: Working on grant for expansion of weld department and move of Machine shop lab to RTEC

8. Revenue
   i. Identify any new course or program fees proposed in conjunction with this program. Fees should go down, going from a third-party training software to a book, books can be used for multiple classes.

   ii. Identify any other resources (grants, outside funding) that the College will be able to dedicate to expenses related to this program. Currently using an ODE grant to pay for half the wages of additional instructor (Joe Huddleston) to create curriculum. Applying for grant with Michael Fisher as a joint venture with Mt Hood community college. Also applying for grant through AWS (welding society) to pay for move of machine shop to increase capacity in the weld area.

9. Program cost and scholarships
   a. Identify any special aid, scholarship, or resources available to students*
      1. Gene HAAS Grant foundation
      2. NIMS Scholarships
      3. National Tooling and Machining Foundation Scholarship
      4. Manufacturing's Next Generation Scholarship
      5. Skills USA Scholarship

10. Other impacts: Identify impacts to the following areas:

Area or department	Identify impact
Policy impacts (new or changes to policies required as a result of this program)	NONE
Admissions and Records	NONE
Advising	NONE
Bookstore	PROGRAM WILL REQUIRE MORE BOOKS
Campus Services	NONE
College Now	NONE
College Relations	NONE
Financial Aid	NONE
Information Technology Services	NONE
Library	NONE
Risk Management (contracts, new field-based experiences)	NONE
Tutoring and Testing	NONE

Capacity Summary*

This proposal is essentially a restructuring of current programs to offer a more coherent and rigorous training in machining, as needed by employers. We anticipate modest growth and as a result, current facilities, services, and capacity are sufficient to meet the expected growth.

IMPLEMENTATION TIMELINE AND TARGETED EFFECTIVE TERM

1. Identify the desired effective term (new programs align with the academic year which begins in fall.) New program will start fall term of 2021

2. Proposal timeline:

Step	Date
Chair submits proposal to Curriculum Office	10/1/2020
(Dean approval)	10/1/2020
(VPI approval)	10/2/2020
Submit to AA	10/1/2020
Academic Affairs	11/5/2020
Submit to Courseleaf	11/20/2020
Curriculum Committee Approval	2/20/2021
Board of Directors Approval	3/1/2020
State Approval	5/1/2021
NWCCU approval	5/1/2021
Effective Term (students can declare)	9/20/2021
DOE approval for financial aid eligibility	3/20/2021

State of Oregon Employment Department **Occupation Profiles**

The **Occupation Profiles** tool is located on **QualityInfo.org**, a website of the **Oregon Employment Department**

Machinists (514041)

Central Oregon (Crook, Deschutes, Jefferson)

Description

Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.

State of Oregon Licenses and Certifications

for Machinists

No statewide license is required for this occupation.

Wage Range

for Machinists

Area	10th Percentile	25th Percentile	50th Percentile (Median)	75th Percentile	90th Percentile	Average Hourly	Average Annual
Oregon	$14.38	$18.09	$23.32	$29.32	$35.20	$24.08	$50,082
Central Oregon	16.48	19.87	23.51	29.19	38.45	25.38	52,790

Employment Outlook

for Machinists

Statewide Employment Analysis	Employment in this occupation in 2017 was somewhat larger than most occupations across the state. The total number of job openings is projected to be somewhat larger than most occupations in Oregon through 2027. This occupation is expected to grow at about the statewide average growth rate for all occupations through 2027. Reasonable employment opportunities exist.
Area Employment Analysis	Employment in this occupation in 2017 was similar to most occupations in the region. The total number of job openings is projected to be similar to job openings for most occupations in the region through 2027. This occupation is expected to grow at a somewhat slower rate than the regional average growth rate for all occupations through 2027.

Area Employment Projections

for Machinists

Replacement openings are caused by existing workers permanently leaving their occupation. Many additional job openings occur due to job changes within occupations.

Area	2017 Employment	2027 Employment	Percent Change	Annual Change Openings	Annual Replacement Openings	Total Annual Openings
Oregon	3,769	4,221	12.0%	45	399	444
Central Oregon	102	112	9.8%	1	11	12

Industries of Employment

for Machinists

Industry	Ownership	2017 Employment
Total All Industries	All	102
Manufacturing	Private	74
Fabricated Metal Product Manufacturing	Private	44