



APPLICATION for a NEW PROGRAM
CAREER TECHNICAL EDUCATION (CTE)

Department forms change periodically. It is the college's responsibility to use the most current forms available. Current forms, handouts and other useful resources are located at <http://www.ode.state.or.us/opportunities/grants/perkins/postsecondary/appsandwkshts.aspx>

Note: It is essential that the companion document, the Planning Guide & Application Worksheet, is used in representing your new program. The Application Worksheet must be kept on file at the college and made available upon request.

Section 1. College Contact Information

College	Clackamas Community College
----------------	-----------------------------

College Point Of Contact	Bill Waters
Title	Dean
Department, Division	Curriculum, Planning & Research
Mailing Address	19600 Molalla Avenue
City, State Zip Code	Oregon City, OR 97045
Phone	503-594-3390
Fax	503-650-6659
E-Mail	billw@clackamas.edu

Program Contact Person	Mike Mattson
Title	Department Chairperson
Department, Division	Manufacturing Technology
Mailing Address	19600 Molalla Ave
City, State Zip Code	Oregon City, OR 97045
Phone	503-594-3322
Fax	503-655-5153
E-Mail	mattsonm@clackamas.edu

Section 2. Program Award Information

Name of Proposed Program	Industrial Maintenance Technology
---------------------------------	-----------------------------------

✓	Type of Program (Check all that apply if the programs are related)	Total Credits
✓	Associate of Applied Science (AAS) Degree	95
	Associate of Applied Science Degree, Option (An option is a specialized area within a base AAS. Must maintain 70% of common credits with base AAS)	

Business and Industry-based Program (privately-contracted, closed enrollment)
--

✓	Career Area (please check the appropriate area)
	Agriculture, Food & Natural Resources Systems
	Arts, Information & Communications
	Business & Management

<input type="checkbox"/>	Health Services
<input type="checkbox"/>	Human Resources
<input checked="" type="checkbox"/>	Industrial & Engineering Systems

EII Education Specialist	
Name	
Phone	
E-Mail	

Proposed Program Implementation Date	Fall 2017
---	-----------

CIP Code	47.0303	CIP Title	Industrial Mechanics and Maintenance Technology
-----------------	---------	------------------	---

CIP Narrative Description
A program that prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline distribution systems

Program Summary
Industrial Maintenance Technology (IMT) is a program that prepares students to succeed as maintenance technicians in industry. IMT graduates perform mechanical and electrical maintenance of manufacturing equipment such as machine tools, automated process equipment and buildings systems to keep production operational. Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to industrial electronics to robotics. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

<input checked="" type="checkbox"/>	Financial Assistance Options Sought for and/or Approved for the Program	
	(Check all that apply)	
<input checked="" type="checkbox"/>	Federal Financial Aid Options	
<input checked="" type="checkbox"/>	Workforce Investment Act – Individual Training Account	
<input checked="" type="checkbox"/>	Veterans Benefits	
<input checked="" type="checkbox"/>	State of Oregon Financial Aid	Describe: Oregon Opportunity Grant
<input checked="" type="checkbox"/>	College Financial Aid	Describe: Scholarships, tuition waivers, internships
<input checked="" type="checkbox"/>	Private Business, Foundation Aid	Describe: Scholarships
<input checked="" type="checkbox"/>	Other:	Describe: Voc Rehab funds, Social Services funds, Tribal Educational funds

Section 3. Program Approval Standards

Standard A
Need: The community college provides clear evidence of the need for the program.
Program Highlights
The department has completed a market analysis of this discipline and determined that current and future need is much greater than average. The Department of Employment has also placed Industrial Maintenance on its list for prioritized instruction. Job postings in this field exceed that of Welding and Machining of which we have decades of first-hand knowledge of the actual (and very strong) job market.

Interviews with numerous hiring managers have led us to believe that this discipline is severely underserved in our region. An industrial advisory board, formed to explore the program, has given their enthusiastic support to move forward.

Standard B

Collaboration: The community college utilizes systemic methods for meaningful and ongoing involvement of the appropriate constituencies.

Program Highlights

An industrial advisory board was commissioned to determine a need for this program and to approve the draft of the program curriculum. They gave their approval and made suggestions for improving the final curriculum. Our advisory boards meet regularly as a matter of practice. The college also sought out industry input for the Tech Hire grant application (earmarked for this field) and received many letter of support.

Standard C

Alignment: The program is aligned with appropriate education, workforce development, and economic development activities.

Program Highlights

Industrial Machinery Mechanic was ranked state-wide as the number one, non-healthcare, high-wage, high-demand occupation in the *Training Oregonians for the Right Jobs* report of 2015. A leading factor to this ranking is the predicted 2298 openings by 2022.

Graduates of this field can expect excellent employment opportunities as well as the ability to move along a career path. That path can lead to management/supervisory positions, licensure as an industrial electrician, and continued education in a B.A.S program.

Standard D

Design: The program leads to student achievement of academic and technical knowledge, skills, and related proficiencies.

Program Highlights

The curriculum was planned and designed with the collaboration of numerous industrial practitioners of the trade, plant managers and maintenance/manufacturing engineers. The scope and sequence has been corroborated with multiple sources ranging from other community college programs to work-based programs at prominent, multi-national manufacturers. Many of the selected textbooks are custom editions from a leading technical training company that has allowed us to tailor learning to our regional industry.

This program was developed to incorporate contextual learning as the hallmark of the curriculum. Students are expected to spend approximately half of their class time working hands-on with industrial machinery and the related tools and technologies found in this field. We also have the resources to purchase a variety of industrial equipment and trainers that will enable this experience.

Standard E

Capacity: The community college identifies and has the resources to develop, implement, and sustain the program.

Program Highlights

This program will be initially funded through the Tech Hire grant. The three-year grant will allow for the development of six new courses and provide funding for instruction and tooling.

We currently offer 80% of this program as regular, open-to-the-public courses. These courses are used by many programs ranging from Microelectronics to Computer-aided Manufacturing. Instruction is currently provided by full-time and adjunct instructors and is funded through both general fund and fee resources.

We foresee a point, near the end of the grant period, when a faculty position will be desired to maintain this program. If that is not possible, then we will continue on with the PT faculty/fee model as we do with several other programs (i.e. GIS, EET & Microelectronics).

Section 4. Proposed Curriculum

PROPOSED CURRICULUM (List in a Defined Sequence of Courses Format, e.g., Quarter-to-quarter mapping)			
Course Number	Course Title	Clock Hours	Credits
Fall Term			
IMT 104	Reading Schematics and Symbols	22	2
MFG 103	Machining/Fab & Maint Trades	66	3
MFG 107	Industrial Safety & First Aid	33	3
MFG 109	Computer Literacy for Technicians	39	3
MFG 130	Basic Electricity I	33	3
MTH 050	Technical Mathematics I	44	3
Winter Term			
EET/IMT 139	Principles of Troubleshooting I	44	2
IMT 120	Industrial Machinery I	66	3
MFG 131	Basic Electricity II	33	3
MFG 140	Fluid Power	66	3
MTH 080	Technical Mathematics II	44	3
COMM 100	Basic Speech Communication	33	3
Spring Term			
IMT 110	Preventative Maintenance		2
MFG 132	Basic Electricity III	33	3
MFG 221	Materials Science	66	3
MFG 280	Cooperative Work Experience	72	2
WR 101	Communication Skills: Occupational Writing	33	3
	Technical Elective		3
Fall Term			
EET/IMT 239	Principles of Troubleshooting II	44	2
IMT 108	Rigging & Lifting	44	2
IMT 215/EET 215	Electromechanical Systems I	44	2
IMT 220	Industrial Machinery II	66	3
WLD 150	Welding Processes	88	4
	Technical Elective		3
Winter Term			
CDT 108A Or CDT 103	Introduction to SolidWorks Or AutoCAD	66	3 4
IMT 225/RET 213	Electromechanical Systems II	66	2
MFG 209	Programming and Automation	36	3
IMT 223	Instrumentation & Controls	66	3
IMT 233	Programmable Logic Controllers I	33	3
	Technical Elective		3
Spring Term			

MET 170	Introduction to Manufacturing Processes	33	3
MFG 219	Robotics	66	3
IMT 234	Programmable Logic Controllers II	33	3
MFG 280	Cooperative Work Experience	72	2
	Technical Elective		3
Technical Elective	Any course with a MFG, WLD, EET, GIS, SM, CDT, or MET prefix or other technical course with approval.		
TOTAL PROPOSED CREDITS:			95

Section 5. Assurances and Signature

College Authority Signature

(Applications must be signed by the chief academic officer or the president)


I have reviewed this application and supporting documents and attest to the accuracy, clarity, and completeness. The college will comply with the following assurances:

- Access.** The college and program will affirmatively provide access, accommodations, flexibility, and additional/supplemental services for special populations and protected classes of students.
- Continuous improvement.** The college has assessment, evaluation, feedback, and continuous improvement processes or systems in place. For the proposed program, there will be opportunities for input from and concerning the instructor(s), students, employers, and other partners/stakeholders. Program need and labor market information will be periodically re-evaluated and changes will be requested as needed.
- Adverse impact & detrimental duplication.** The college will follow all current laws, rules, and procedures and has made good faith efforts to avoid or resolve adverse *intersegmental* and *intra*segmental impact and detrimental duplication problems with other relevant programs or institutions.
- Program records maintenance & congruence.** The college acknowledges that the records concerning the program title, curriculum, CIP code, credit hours, and other identifying and descriptive information maintained by the Department are the official records and it is the college's responsibility to keep the college records aligned with those of the Department. The college will not make changes to the program without informing and/or receiving approval from the Department.

Our staff has worked closely with CCWD-EII staff in the development of the proposed program and completion of this application. The proposed program:

- Has been designed to meet the State Board of Education approval standards for Need,
- Collaboration, Alignment, Design and Capacity, as well as the elements identified that that are essential to a quality program;
- Our college board has approved the proposed program described in this application;
- All local campus procedures have been completed; and
- This program is ready to be reviewed by CCWD-EII staff on behalf of the State Board of Education.

It is understood that documentation or evidence may be requested by CCWD-EII staff if additional information is needed.

Signature	
Title	Dean Curriculum, Planning & Research
Name (Printed or typed)	Bill Waters
Date	12-01-16



Curriculum Committee

New Associate of Applied Science

Associate of Applied Science (AAS) degrees are intended to prepare graduates for direct entry into the workforce.

This form provides additional information required by the NWCCU for accreditation. Signed copies must be submitted two weeks prior to Curriculum Committee meetings

Program Presenter	Mike Mattson
Program Department/Division	Manufacturing Technology
Program Type	Associate of Applied Science
Complete Program Title	Industrial Maintenance Technology
Credit Total (91-108)	97-98

Catalog description of new program

Must match description from CCWD state application

Industrial Maintenance Technology (IMT) is a program that prepares students to succeed as maintenance technicians in industry. IMT graduates perform mechanical and electrical maintenance of manufacturing equipment such as machine tools, automated process equipment and buildings systems to keep production operational. Maintenance technicians study subjects from a wide variety of technical disciplines ranging from welding to industrial electronics to robotics. This is a high-wage, high-demand field that typically attracts talented people who are excellent problem solvers and enjoy challenging work.

Similar to an existing program?

No

Program-Level Student Learning Outcomes

Upon successful completion of this program, students should be able to:

- Work safely in an industrial environment around machinery, power equipment, heat, chemicals and electricity.
- Troubleshoot, install and repair complex electromechanical systems by using knowledge of electrical and mechanical fundamentals, diagnostic instruments, and hand and power tools.
- Use knowledge of manufacturing and welding processes to execute the repair and replacement of machine elements.
- Effectively apply computer technology to the automation and control of manufacturing and building systems
- Communicate effectively through graphical means including schematics, diagrams, engineering drawing and sketches to determine system functions to effect repairs and improve performance.

Program-Level Assessment Plan
In Progress

Courses in the Program
Use CCC Course Catalog format
Attached. See pages 5 & 6

Related Instruction Courses in the Program

Approved Course List

Communication – WR-101

Computation – MTH-050 & MTH-080

Human Relations – COMM-100 or COMM-100A, B C

Physical Education/Health/Safety/First Aid – MFG-107

Will there be revenues associated with the new program?

(i.e. bonds, grants, reallocation)

Yes No

Revenue Source	Amount (\$)	Year/Term
TechHire Grant		1 year prior to program
--	250,000	1 st year of program
--	250,000	2 nd year of program
--	250,000	3 rd year of program

New Courses needed?

Yes No

Course Title	Credit Hours	Term
Schematic Reading	22	Fall/16
Industrial Machinery I	66	Winter/17
Preventative Maintenance	44	Spring/17
Rigging & Lifting	44	Fall/17
Industrial Machinery II	66	Fall/17
PLCs II	66	Summer/17

New Sections needed?

Yes No

Additional faculty needed?

Yes No

	Number	Term
Full-time	0	
Part-time	2	Winter/17

New physical facilities and equipment needed?

Yes No

Facility/Equipment Description	Cost	1 st Term/Year
Tooling	35,000	W/17

New Student Services needed?

[Link to student services listed in the current catalog](#)

Yes No

For questions and assistance, contact Curriculum Office at curriculum@clackamas.edu

Please explain how the current Student Services will accommodate the needs of the new program

No extraordinary help required. Business as usual for students.

Other expenses?

Yes

No

Cynthia R. [unclear]

Dean Signature/Date

[Signature] 11/21/16

Department Chair Signature/Date

Faculty/Program Lead Signature/Date

(optional)

