PROFESSIONAL-TECHNICAL PROGRAM APPROVAL REQUEST

College: Skagit Valley College
Program Title: Manufacturing Engineering Technician

CIP: 15.0613  EPC: 607

Total Credits: 106  Anticipated maximum enrollment: 20  Anticipated yearly completions: 10

Primary ✗ (if so, initial □ or final □ documentation)  Option □  Contract □

If option, to which primary program ______
If option, include curriculum guide for primary program.

Award at completion (type of degree or certificate): □ ATA and certificates

Brief program description:

This Engineering Technician degree is designed to focus on the technical and “pre-engineering” knowledge needed in a modern manufacturing facility. Upon completion, students will be equipped with the CAD, CNC and metrology skills necessary to enter the technician level in either a manufacturing lead or maintenance capacity. A broad general education base is included for those wishing to pursue further engineering studies at the university level.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Plan Description</th>
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</thead>
<tbody>
<tr>
<td>1. Potential career progression, including job titles and employment</td>
<td>This ATA degree prepares students to enter the workforce as:</td>
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<tr>
<td>opportunities including wage data. Need studies or indication of need</td>
<td>- Assemblers and fabricators</td>
</tr>
<tr>
<td>from employers should support new and emerging occupations not covered</td>
<td>o Average hourly wage: $18.99</td>
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<tr>
<td>by standard forecasts or data.</td>
<td>o Short-term/Long-term trend: Growth</td>
</tr>
<tr>
<td></td>
<td>o Average annual growth rate (2011 - 2021): 2.1%</td>
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<tr>
<td></td>
<td>- Computer Controlled Machine Tool Operators, Metal and Plastic</td>
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<tr>
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<td>o Average hourly wage: $18.30</td>
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<td></td>
<td>o Average annual growth rate (2011 - 2021): 5.1%</td>
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<td></td>
<td>- Inspectors, Testers, Sorters, Samplers, and Weighers</td>
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<td>o Average hourly wage: $22.02</td>
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<td></td>
<td>o Short-term/Long-term trend: Growth</td>
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<tr>
<td></td>
<td>o Average annual growth rate (2011 - 2021): 1.6%</td>
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<td></td>
<td>- Layout Workers, Metal and Plastic</td>
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<td>o Average hourly wage: $18.90</td>
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<tr>
<td></td>
<td>o Short-term/Long-term trend: Growth</td>
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<td>o Average annual growth rate (2011 - 2021): 3.5%</td>
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<td>Transfer to a four-year college is possible at the Washington Engineering</td>
<td>- Mechanical Engineering Degree (currently under State Board Review).</td>
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<td>Institute.</td>
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<td>Criteria</td>
<td>Plan Description</td>
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<tr>
<td>2. Initial assessment of opportunities for work-based learning/clinical sites (must be answered if applicable to program)</td>
<td><strong>The Current Manufacturing Technology program at Skagit Valley College has an active Advisory Committee that was instrumental in developing the criteria for the Engineering Technician ATA. These professionals are dedicated to student success which includes placing student in appropriate internships in the local community.</strong>&lt;br&gt;&lt;br&gt;&lt;strong&gt;Potential Work-Based Learning Opportunities:&lt;/strong&gt;&lt;br&gt;&lt;ul&gt;&lt;li&gt;Hexcel Corporation — Burlington, WA&lt;/li&gt;&lt;li&gt;PACCAR—Burlington, WA&lt;/li&gt;&lt;li&gt;Janicki Industries – Sedro Woolley, WA&lt;/li&gt;&lt;li&gt;EDCO, Inc — Mount Vernon, WA&lt;/li&gt;&lt;li&gt;Technical Services, Inc — Oak Harbor, WA&lt;/li&gt;&lt;li&gt;Idx Corporation — Oak Harbor, WA&lt;/li&gt;&lt;li&gt;Spry Company —Burlington, WA&lt;/li&gt;&lt;li&gt;Fibrex Corporation —Burlington, WA&lt;/li&gt;&lt;/ul&gt;</td>
</tr>
<tr>
<td>3. Collaboration with other colleges – Indicate which other colleges have similar programs and what potential conflicts may exist. Provide evidence of attempts to collaborate with other colleges.</td>
<td><strong>Degree intent has been communicated with the two neighboring colleges with similar programs (Everett Community College and Bellingham Technical College).</strong>&lt;br&gt;&lt;br&gt;Skagit Valley College is currently discussing the option of articulating this ATA degree to the BAS program at Everett Community College.&lt;br&gt;&lt;br&gt;Skagit Valley College is currently in discussion with Bellingham Technical College about the possible collaboration on the CNC portion of this curriculum.</td>
</tr>
<tr>
<td>4. Planning/advisory committee – Provide ADV form located at <a href="http://www.sbctc.ctc.edu/college/e-wkforceproftechprograms.aspx">http://www.sbctc.ctc.edu/college/e-wkforceproftechprograms.aspx</a> and minutes of the related meeting(s) showing evidence that the committee has determined there is a commitment in the geographic area to employ individuals who have been served by the program.</td>
<td>Please see the ADV form attached.</td>
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<td>5. Other supporting documentation</td>
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* If an active Joint Apprenticeship and Training Committee for the occupation exists in the region, at least one labor and one management member from that committee should be invited to serve on the advisory committee. The college shall contact the chairperson or secretary of the JATC and request representation for the specific occupation. In cases where representation is not provided by the JATC, a letter must be on file from the college to the JATC requesting representation for that occupation. JATCs may act as the advisory committee where it has been determined that both the college and the occupation could best be served. “Organized labor” representatives should be used whenever possible to ensure a balance of all points of view, and currency with issues relevant to the development of courses.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Plan Description</th>
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</thead>
<tbody>
<tr>
<td>1. Attach program description, goals, and learning objectives.</td>
<td>Please see attached.</td>
</tr>
<tr>
<td>2. Attach program/curriculum guide (list by course number, course title, credit and/or clock hours per course, and total credits). <strong>NOTE</strong>: May not be available for a new primary program at initial submission. Is required for final approval.</td>
<td>Please see attached.</td>
</tr>
<tr>
<td>3. Attach course descriptions, goals, and learning outcomes as they will appear in the catalog (do not include course syllabi). <strong>NOTE</strong>: May not be available for a new primary program at initial submission. Is required for final approval.</td>
<td>Please see attached.</td>
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<tr>
<td>4. Program goals are developed in conjunction with the planning/advisory committee. This joint development is reflected in the minutes of the committee.</td>
<td>Please see attached minutes.</td>
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</table>

**Assurances**

By the signatures below, we attest to the fact that the following actions have occurred:

1. The program has been integrated with the strategic planning and budgeting plan of the college.
2. The curriculum of this program has gone through the institution’s established approval process.
3. The college will maintain an advisory committee of industry representatives to help the institution keep the program current with employer needs.
4. A continuous improvement plan is in place for this program.

**Approvals:**

Chief Instructional Officer

Workforce Education Director

**Endorsements:**

Advisory Committee Representative

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Skagit Valley College – Engineering Technician PAR 4/9/2014
# PROFESSIONAL-TECHNICAL ADVISORY/PLANNING COMMITTEE

**Community/Technical College:** Skagit Valley College  
**Committee/Program Title:** Manufacturing Engineering Technician  
**Date Submitted:** 4/17/14

Please indicate which type of committee this is:

- [x] Program advisory committee
- [ ] General advisory committee
- [ ] Ad hoc/planning committee
- [ ] Other (specify)

Meeting dates for previous year:

- March 5, 2014
- October 29, 2013
- May 29, 2013

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[College Advisory Committee Procedures](http://sbctc.edu/general/policymanual/_a-policymanual-ch4Append.aspx#appendg)
SKAGIT VALLEY COLLEGE
Manufacturing Technology, Technical Design and
Welding Technology
October 29, 2013

ADVISORY MINUTES

Members Present: Leslie Smith, Karl Blom and Lou Daley
Staff Present: Michael Baker, Mary Kuebelbeck, Hunter Ware, Barry Hendrix, Bruce Poole, and Sean Howard

Welcome

Call to Order

Introduction of New Members and Guests
• The new, joint nature of the programs (Welding combined with Manufacturing) was introduced.
• Staff introductions came first: Michael Baker, Mary Kuebelbeck, Hunter Ware and Barry Hendrix.
• Next came industry representatives: Leslie Smith, Karl Blom and Lou Daley.
• Bruce Poole and Sean Howard were also introduced upon arrival after their class.

Election of Chairperson (first meeting): Karl Blom agreed to continue as committee chair for the Welding and Manufacturing Technology Advisory Committees.

Read/Approve Previous Minutes: Minutes were approved as read.

Review Purpose and Function of Advisory Committees. There was a review of the 3 major roles of the Advisory Committee:

1. The advising role. With a growing and changing department, the staff needs input from industry in order to keep the curriculum in line with the needs of the community.

2. In the assisting and the support roles, the staff will occasionally need a representative from the committee as an advocate in public events.

3. The industry representatives agreed to fulfill these roles.

Unfinished Business
• Barry developed a 2 course CNC curriculum.
  o Barry will submit to committee for final approval.

New Business
• College Strategic Plan/Operational Plan.
  o Barry introduced the tentative outlines of the ATA degrees described by Dr. Keegan.
  o A possible joint venture between the Composite and Manufacturing departments was discussed.
  o Mary and Mike gave an outline of the new online curriculum being used (Pearson).
  o Mary and Mike gave an overview of the accreditation process for the American Welding Society and the exploration of moving to Level II SENSE accreditation.
  o Hunter gave an outline of the NCTA Aerospace curriculum and discussed the possibility of a curriculum based around the production of an actual airplane.
• After hearing from the panelists this evening, please provide feedback to the following questions:

1. How can the college work with business and industry to meet the biggest challenge expected for economic growth?
   a. Karl discussed one major challenge: to make young people realize that manufacturing is a good career.
   b. Lou discussed the type of roles that are difficult to fill; Janicki places entry level and engineer level jobs with relative ease. The difficulty now is finding technicians to fill the “second tier” roles between entry and engineer.
   c. Barry mentioned that there were few “kids” in the programs currently.
   d. Beth Karl and Lou stated that age wasn’t an issue; the skills are the issue.
   e. Karl closed by stating that older students often appreciate the stability of the manufacturing jobs that younger students overlook.

2. What do you need from the college programs that you are not currently getting?
   a. The general consensus is that the college is filling one important role by introducing students to the prospects of manufacturing and engaging these students personally.
   b. Lou reiterated the need for digital skills (computers, CAD, CNC), safety training and quality assurance training.
   c. Karl added that there is still a need for elevated math skills, especially in the area of metrology.

• Catalog Changes:
  o Barry further discussed the new ATA degree offerings.
    ▪ Barry will submit the course list to the Advisory Committee after SVC administrative approval.
  o Hunter discussed future plans for the Aerospace curriculum.
    ▪ Hunter will submit a program framework for the Aerospace curriculum to the Advisory Committee after SVC administrative approval.

• Plan of Work – discussion and preparation of any additional work plan (found in Advisory Notebook under Program info.)
  o Barry requested that the committee be prepared to discuss a long range (one to two year) plan for direction of the new department. This discussion will on the agenda for the winter committee meeting.

Next Meeting Date:  Tentative meeting date: March 6, 4:30pm

Adjourn
SKAGIT VALLEY COLLEGE
Manufacturing Technology &
Technical Design
March 5, 2014

ADVISORY MINUTES

Members Present: Lou Daley, Mark Hagen, Haley Lowry, and Ryan Lundy
Staff Present: Hunter Ware (NCTA) and Barry Hendrix (SVC)

Meeting Called to Order at 4:00 p.m.

Welcome and Introduction of New Members and Guests
Contact forms and Ethics forms and Advisory binders were distributed and collected.

Read/Approve Previous Minutes
Minutes were approved with no changes.

Manufacturing/ Technical Design Overview
Barry supplied a brief overview of the program and the current offering.

New Business
• Approval of the Associates in Technical Arts degrees to be added to the Manufacturing Curriculum. Please see the attached documents for an outline of the degrees.
  o Engineering Technician:
    ▪ Lou: This is what is lacking in current applicants: an understanding of manufacturing with technical emphasis.
    ▪ Hunter: Asked for elaboration on the CAD component of the degree. Barry defined the program as a study of CAD software within the context of product development.
    ▪ Ryan: This would be a well-rounded program for educating his younger technicians. Quality inspection and elements of Lean manufacturing are important. Suggestion—troubleshooting/problem solving should be a focus.
    ▪ Mark: Setting the bar higher was a positive step.
    ▪ Leslie Smith (via email): The wage data is unrealistic for the area. This is a strong foundation for growth.
    ▪ Full consensus that these are skills needed currently in industry and will help students gain competitive wage jobs.
  o Operations Management:
    ▪ Mark: questioned the level of computer skill/Excel training. Barry elaborated on the departmental focus on complete computer integration.
    ▪ Ryan: Currently the computer skills are lacking in some of his technicians. He questioned the need for CAD skills at this level. The management and leadership elements were a definite positive. Team utilization was imperative.
    ▪ Lou: Concurred that leadership skills were an element needed for advancement.
    ▪ Haley: Questioned whether this led to more innovation and root cause analysis. Was entrepreneurship a focus? Barry discussed the desire to develop a Small Business/Entrepreneurship program in the future.
• Leslie Smith (via email): The wage data is unrealistic for the area. Asked for clarification on curriculum of several classes. Needed clarification on the scope of product development. Barry clarified that it was focused on customer driven “job shop” type product development.
• Full consensus that these skills are currently needed in industry and will help students gain competitive wage jobs.
  • Review of industry demands for CAD operators:
    o Barry gave an overview of department philosophy: CAD is now a secondary skill. CAD needs to be taught in context in order to be valuable. The focus of the program is teaching CAD software with the context of product development. It is more efficient to train good technicians to use specific software than train a novice with only CAD skills.
    o Mark: Suggested contacting EDCO and Hexcel for more data points.
    o Ryan: Agreed that contextualized CAD was more efficient. Having only CAD skills was a disadvantage.
    o Lou: Concurred that software flexibility was important, but technical skills applied to CAD was preferred.
  • Review of industry demand for Welders and requisite skills:
    o Haley: Has seen a steady demand for welders for the last few years (requalification).
    o Lou: Certifications or at least the requisite skills to achieve the certifications are required. Several accrediting bodies are used.
    o Mark: Sees a high demand for welders (especially in Moses Lake area).
  • Review of industry demand for Manufacturing Technicians and requisite skills:
    o While all agreed that the Engineering Tech ATA was a move in the right direction, the Operations Management ATA had higher and more immediate demand.
    o Ryan: Missing in current young staff are the people management skills.
  • Review CNC curriculum proposal. Review of industry demand for CNC operators and requisite skills:
    o Barry: Postponed the review of CNC curriculum in light of budget reviews. Discussed partnership with BTC and EvCC to provide CNC training. Reticent to purchase expensive equipment. Suggested partnering with local industry for CNC training on site.
    o Ryan: True demand at entry level is load, align and unload parts. Technicians do the program manipulation.
    o Lou: Entry level is machine operation. Feed and speed adjustment at the most.

• 2014-2015 Changes: What would industry like to see from the SVC Manufacturing, Welding and Technical Design departments over the next 2 years?
  o Lou: More interaction with the students. Plant tours and internships. Barry apologized for lack of student turn out (identification requirements were limiting access for some students).
  o Haley: Related viewing a Janicki presentation that was very inspiring.
  o Ryan: Spoke to the need to change the image of manufacturing. Hoped the college could relay the message of good careers and expand the appeal of the industry. The Operations Management ATA is a great path for advancement via the “Passport” system at IDEX.
  o Hunter: Appreciated the access given by Janicki and Hexcel for tours and job shadow. The tours speak to the fear of the unknown in entering the manufacturing workforce.
  o Mark: There is a need to get young people excited about the career opportunities. Agreed we need to reverse the current image.
• Introduction to the NWCTA Aerospace Manufacturing curriculum:
  o Hunter introduced the curriculum draft.
    ▪ Spoke to the challenges of alignment this far north (of Boeing).
    ▪ Plans to hand this document out at parents’ night.
    ▪ Outlined the curriculum goals.
    ▪ Discussed lab fees.
    ▪ Discussed articulation agreement with SVC. Only valid if student:
      • Maintains B average.
      • Has 95% attendance record.
      • Has instructor recommendation.
Document is available for all to view via website. Updated daily.

Discussed volunteer and student opportunity to build small personal aircraft in lab environment.

  - Ryan: Is AMT available? Hunter's response: not currently but he is networking to increase funding.
  - Barry: Discussed desire to create actual function manufacturing line for truly contextualized training. Need to explore competition conflicts with local industry.
  - Ryan: Discussed attempted partnership with Edmonds for similar project.

Unfinished Business

- Barry: Reiterated postponed review of CNC curriculum in light of budget reviews. Discussed partnership with BTC and EvCC to provide CNC training. Reticent to purchase expensive equipment. Suggested partnering with local industry for CNC training on site.

Next Meeting Date: Tentative date 10/28 2014

- Barry: Inquired about the desire to meet via conference call. All agreed that face to face twice a year was not a burden.
- Hunter: Four meetings are required by the high school. Suggested the other 2 via phone conference.

Adjourned at 6:00 p.m.

Notes taken by Barry Headrix
SKAGIT VALLEY COLLEGE
MANUFACTURING TECHNOLOGY/TECHNICAL DESIGN
ADVISORY COMMITTEE MEETING MINUTES

May 29, 2013; 4:00 p.m.

Members Present: Karl Blom, Union Representative from Boeing;
Lou Daley, Operations Manager for Janicki;
Mark Hagen, Owner - Express Employment;
Lynn Hill, HR Director of Hexcel;
Leslie Smith, Operations Manager for EDCO

Staff Present: Barry Hendrix, SVC – Instructor/Dept. Chair;
David Dean, NCTA Instructor – Engineering;
Candace Thomson, NCTA Supervisor;
Hunter Ware, NCTA Instructor – Marine and Aerospace

Introductions: Barry and Candace clarified the joint Advisory Committee and the relationship between the NCTA and Skagit Valley College.

New Business:

- **Departmental Overview**
  - Information was presented about the Manufacturing and Technical Design departments:
    - 2012-13 offering
    - 2013-14 offering
    - Future offerings
    - Ultimate goals
    - Partnership with industry
  - David presented an overview of the Engineering program at the Meridian school:
  - Hunter presented an overview of the programs at the Marine Center in Anacortes:
    - Marine offering
    - Aerospace offering
    - Summer program
    - Use of Boeing CORE curriculum

- **Advisory Committee information binders were distributed**
  - Brief review of the purpose of the Advisory Committee
    - Members were encouraged to review the content in detail
  - Ethics forms were distributed and signed

- **Discussion of employment questionnaire that was distributed in an earlier email**
  - General consensus of the poll showed a definite need for skilled CNC operators.
    - Barry asked for definition of the role.
    - Lynn remarked that it was a technician, not a programmer role. Knowledge of materials is an asset along with measurement skills.
    - Many commented on the “fear factor”—technicians were concerned about the responsibility for such expensive and dangerous equipment.
    - Karl commented that this fear is what stopped many from pursuing the higher education path.
- Catia was the agreed upon standard that many used—but all agreed that a general understanding of a 3-D modeling system translated across platforms.
- Lou stated that Unigraphics was also used for in-house programming.
- Lou agreed that operator/technicians were needed in both CNC and the laser tracking spatial analyzer. Currently, engineers with Bachelor degrees are used in these rolls, but these employees see the position as a stepping stone. There is a need for technicians who see their role as permanent role and an asset to the company.
- Lou, Lynn and Leslie agreed that the latitude given the operator technicians was limited to minor variation to accommodate tooling (feed and speed modifications mainly). The engineers do the majority of the programming before the operator gets the program. Very little work is done at the G-Code level.
- Leslie stated that MasterCAM was the post processor of choice at EDCO. EDCO is looking for machinists who can then become operators, but machinist first. They like hands-on operators that can be developed into programers.
- Karl mentioned the need for basic manufacturing skills of measurement and mathematics. In aerospace, quality is a huge concern and addition of the Quality Assurance Micro-Certificate was a positive.
- Karl mentioned the challenges of moving from a mechanical or construction career to an aerospace machinist career. The allowable tolerance and adherence to standards is a culture change.

- **Round table discussion of other employment topics:**
  - Barry brought up the subject of supply chain and logistics.
    - Lou agreed that this was an area of concern for Janicki.
    - Mark agreed that there is demand for these positions.
  - Leslie mentioned the need for qualified welders.
    - Especially welders who understand the ISO regulations.
  - Lynn addressed the need for safety training.
  - Karl and Hunter discussed the need to provide opportunities for the less advantaged youth population. Living wage jobs without a 4-year degree are available.
  - Mark reiterated the need for “Soft Skills.”
    - All were in agreement that general employee skills needed to be addressed.
    - Leslie mentioned that at EDCO, a little more “individuality” was tolerated.
  - Karl and Dave discussed the need to “drill the perfect hole” and what that means in terms of employer expectation and quality.

- **Election of the Advisory Committee Chair.**
  - Overview of position was read.
  - A call for volunteer was made.
  - Karl graciously volunteered, at least for the short term.

- **Recap.** Barry did a quick overview of the program changes and the schedule for the next meeting.
  - Action item. Barry will submit a CNC operator curriculum for the committee to review.

Barry collected the ethics forms.

The meeting was adjourned at 5:15 p.m.
# SKAGIT VALLEY COLLEGE
## MANUFACTURING ENGINEERING TECHNICIAN ATA
### TYPICAL STUDENT SCHEDULE

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<th>Course Number</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>MANF</td>
<td>103</td>
<td>Introduction to Quality Assurance</td>
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<tr>
<td>MANF</td>
<td>116</td>
<td>Intro to Computer Numeric Controlled (CNC) Operations</td>
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<td>TECED</td>
<td>103</td>
<td>Introduction to Computer-Aided Design</td>
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<td>CSS</td>
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<td>College Success Skills I</td>
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<td>114</td>
<td>General Physics I</td>
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### FIRST YEAR - WINTER
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<td>Quality Control Metrics and Applications</td>
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<td>MANF</td>
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<td>Introduction to Manufacturing</td>
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<td>MANF</td>
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<td>MANF</td>
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<td>Introduction to Robotics</td>
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<tr>
<td>MANF</td>
<td>125</td>
<td>Precision Measurement and Tools</td>
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<tr>
<td>MANF</td>
<td>140</td>
<td>Print Reading in Manufacturing</td>
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<tr>
<td>MANF</td>
<td>205</td>
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### SECOND YEAR - WINTER
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### SECOND YEAR - SPRING
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**TOTAL CREDITS:** 106