**MFGT Program Proposal**

**MANUFACTURING TECHNOLOGY- ASSOCIATE OF SCIENCE DEGREE**

**PROGRAM DESCRIPTION**

The Manufacturing Technology program is designed to prepare the student for an entry level position in the manufacturing workforce and to provide continuing education. It focuses on fabrication of products based on industrial blueprints and/or product specifications in industrial and manufacturing technology. The program will provide students with a broad range of skills including industrial safety, fabrication, hydraulics and pneumatics, industrial electricity, basic machining, and blueprint reading. Students completing the program will have the manufacturing skills to solve technical challenges and work in the production trades.

**FOR MORE INFORMATION, CONTACT:** Albert Graham 831-755-6088, agraham@hartnell.edu, Alisal Campus B-123

**PROGRAM LEARNING OUTCOMES**

Upon successful completion of the Associate of Science in Manufacturing Technology Degree, a student will be able to:

* Demonstrate the ability to adhere to personal, industry, and OSHA safety standards in all projects.
* Analyze and solve manufacturing problems and applications using a variety of fabrication and basic machining processes.
* Explain, identify and troubleshoot applications of hydraulics, pneumatics, and industrial electricity as it pertains to manufacturing.
* Read, interpret, and compare industrial blueprints.
* Communicate effectively, both orally and in writing, using appropriate technical language.

A minimum of **60.0 semester** units with a grade of “C” or better must be maintained in all degree-applicable units. Only courses numbered 1-199 may apply toward the Associate Degree. Courses listed below may have prerequisites that must be completed prior to enrolling. Consult a schedule of classes, college catalog, or a counselor for further information.

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| **🗸** | **REQUIRED MAJOR COURSES:****Emphasis: Manufacturing Technology** | **Course No.** | **Course Title** | **Units** |
|  | Required Major Course | CMA-74 | Industrial Drawing and Print Reading  | 3.0 |
|  | Required Major Course | MFGT-70 | Introduction to Mechanized Agriculuture | 3.0 |
|  | Required Major Course | MFGT-130 | Introduction to Metal Fabrication | 3.0 |
|  | Required Major Course | MFGT-140 | Introduction to Industrial Hydraulics and Pneumatics | 2.0 |
|  | Required Major Course | MFGT-150 | Introduction to Industrial Electricity | 2.0  |
|  | Required Major Course | MFGT-169 | Hazmat and Industrial Safety | 2.0 |
|  | Required Major Course | MFGT-180 | Industrial Workplace Skills | 1.0 |
|  | Required Major Course | WLD-150 | Basic Welding | 3.0 |
|  |  |  | **SUBTOTAL UNITS (=19.0)** |  |
| **🗸** | **RESTRICTED MAJOR ELECTIVES Select one of the following** | **Course No.** | **Course Title** | **Units** |
|  | Required Major Course | MFGT-131 | Intermediate Metal Fabrication | 3.0 |
|  | Required Major Course | MFGT-141 | Intermediate Industrial Hydraulics and Pneumatics | 2.0 |
|  | Required Major Course | MFGT-151 | Intermediate Industrial Electricity | 2.0 |
|  |  |  | **SUBTOTAL UNITS (≥ 2.0)** |  |

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| **🗸** | **RESTRICTED MAJOR ELECTIVES (Select two courses from the following** | **Course No.** | **Course Title** | **Units** |
|  | Required Major Elective | CMA -81 | Computer Aided Drafting and Design I | 3.0 |
|  | Required Major Elective | CMA-76 | Computer - Aided Mechanical Drafting and Detailing | 3.0 |
|  | Required Major Elective | CMA-75 | Engineering Drawing with Solidworks | 3.0 |
|  | Required Major Elective | MFGT-71 | Agricultural and Industrial Equipment Operation | 3.0 |
|  | Required Major Elective | MFGT-75 | Agriculture Machinery and Management | 3.0 |
|  | Required Major Elective | MFGT-132 | Advanced Metal Fabrication | 3.0 |
|  | Required Major Elective | WLD-152 | Sheet Metal Fabrication | 2.0 |
|  | Required Major Elective | WLD-151 | Introduction to GTAW/TIG Welding | 3.0 |
|  |  |  | **SUBTOTAL UNITS (≥ 5.0)** |  |

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|  | **REQUIRED GENERAL EDUCATION COURSES** | **Course No.** | **Course Title** | **Units** |
|  | **Natural Sciences** (Select a minimum of 3 units from catalog GENERAL EDUCATION REQUIREMENTS) |  |  | 3.0 |
|  | **Social & Behavioral Sciences** (Select a minimum of 3 units from catalog GENERAL EDUCATION REQUIREMENTS) |  |  | 3.0 |
|  | **Humanities** (Select a minimum of 3 units from catalog GENERAL EDUCATION REQUIREMENTS) |  |  | 3.0 |
|  | **Ethnic Groups in the United States** (Select a minimum of 3 units from catalog GENERAL EDUCATION REQUIREMENTS) |  |  | 3.0 |
|  | **Language and Rationality (9 Units)** |  |  |  |
|  | **A. Written Composition** | ENG-1A | College Composition and Reading | 3.0 |
|  | **B. Communication and Analytical Thinking** | MAT-123\* | Intermediate Algebra | 5.0 |
|  |  **Communication and Analytical Thinking**  |  |  | 1.0 |
|  | **General Education** | **21.0** |
|  |  **Required Major Courses and Restricted Major Electives**  | **26.0** |
|  | **ELECTIVES (Courses Numbered 1–199) required when GE units plus Degree units total are fewer than 60.0** | **13.0** |
|  | **TOTAL UNITS**  | **60.0** |
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\*\*Eligibility for MAT-123 fulfills this requirement.

**TRANSFER STUDENTS:** Completing the AS degree does not meet all the requirements for transfer. Students planning to transfer to a university should follow the requirements of the four-year university. Information on course equivalencies and major preparation requirements for the University of California (UC) and California State University (CSU) systems are available online at . Please consult with a Hartnell College counselor to review transfer requirements.

**MANUFACTURING TECHNOLOGY- CERTIFICATE OF ACHIEVEMENT**

In all certificate programs, it is required that at least of the required number of units be taken at Hartnell College. A grade of “C” or better must be maintained in all certificate- applicable units.

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| **🗸** | **REQUIRED MAJOR COURSES:****Emphasis: Manufacturing Technology** | **Course No.** | **Course Title** | **Units** |
|  | Required Major Course | CMA-74 | Industrial Drawing and Print Reading  | 3.0 |
|  | Required Major Course | MFGT-70 | Introduction to Mechanized Agriculuture | 3.0 |
|  | Required Major Course | MFGT-130 | Introduction to Metal Fabrication | 3.0 |
|  | Required Major Course | MFGT-140 | Introduction to Industrial Hydraulics and Pneumatics | 2.0 |
|  | Required Major Course | MFGT-150 | Introduction to Industrial Electricity | 2.0  |
|  | Required Major Course | MFGT-169 | Hazmat and Industrial Safety | 2.0 |
|  | Required Major Course | MFGT-180 | Industrial Workplace Skills | 1.0 |
|  | Required Major Course | WLD-150 | Basic Welding | 3.0 |
|  |  |  |  **SUBTOTAL UNITS (=19.0)** |  |
| **🗸** | **RESTRICTED MAJOR ELECTIVES Select one of the following** | **Course No.** | **Course Title** | **Units** |
|  | Required Major Course | MFGT-131 | Intermediate Metal Fabrication | 3.0 |
|  | Required Major Course | MFGT-141 | Intermediate Industrial Hydraulics and Pneumatics | 2.0 |
|  | Required Major Course | MFGT-151 | Intermediate Industrial Electricity | 2.0 |
|  |  |  | **SUBTOTAL UNITS (≥ 2.0)** |  |
| **🗸** | **RESTRICTED MAJOR ELECTIVES (Select two courses from the following** | **Course No.** | **Course Title** | **Units** |
|  | Required Major Elective | CMA -81 | Computer Aided Drafting and Design I | 3.0 |
|  | Required Major Elective | CMA-76 | Computer - Aided Mechanical Drafting and Detailing | 3.0 |
|  | Required Major Elective | CMA-75 | Engineering Drawing with Solidworks | 3.0 |
|  | Required Major Elective | MFGT-71 | Agricultural and Industrial Equipment Operation | 3.0 |
|  | Required Major Elective | MFGT-75 | Agriculture Machinery and Management | 3.0 |
|  | Required Major Elective | MFGT-132 | Advanced Metal Fabrication | 3.0 |
|  | Required Major Elective | WLD-152 | Sheet Metal Fabrication | 2.0 |
|  | Required Major Elective | WLD-151 | Introduction to GTAW/TIG Welding | 3.0 |
|  |  |  | **SUBTOTAL UNITS (≥ 5.0)** |  |
|  | **OTHER REQUIRED COURSES** | **Course No.** | **Course Title** | **Units** |
|  | Required course  | ENG-101\*or ELS-101\* | Intermediate Composition and ReadingOr Academic Writing & Reading II | (3.0)(5.0) |
|  | Required course | MAT 106 (pending CC and BOT approval) | Integrated Mathematics | (3.0) |
|  |  |  |  **TOTAL UNITS (≥ 26.0)**  |  |

\*Eligibility for ENG-1A fulfills this reuirement.

\*\*Eligibility for MAT-123 or completion of any math in which MAT-121 is a prerequisite with a grade of “C” or better or a score of 70% or greater on the mathematics competency exam fulfills this requirement.