

NEW PROGRAM PROPOSAL: (Form NP)

Sponsoring Institution(s): Crowder College

Program Title: Advanced Manufacturing Technology

Degree/Certificate: Associate of Applied Science **(AAS)**

Options: Advanced Manufacturing Maintenance Technician, Advanced Manufacturing Automation/Robotics Technician

Delivery Site(s): Crowder College, Neosho Campus

CIP Classification: 15.0613 (Manufacturing Technology/Technician)

Implementation Date: Spring 2010

Cooperative Partners: N/A

Expected Date of First Graduation: Spring 2013

AUTHORIZATION

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3/11/11

CONTACT

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NEED:

As addressed in Section C below, there continues to be a relatively high demand for technicians trained in automated manufacturing repair and maintenance. Help wanted ads in area newspapers are consistently seeking qualified individuals for employment in this field. Industry contacts active in our advisory panels confirm the need in our region of the state for multi-skilled –computer literate automated/robotics and maintenance technicians. Crowder currently has a new program of study dedicated to filling this need.

Student Demand:

- i. Estimated enrollment each year for the first five years for full-time and part-time students (Form SE)

STUDENT ENROLLMENT PROJECTIONS

Year	1	2	3	4	5
Full Time	6	12	15	20	20
Part Time	4	8	10	10	10
FT equivalent (if PT students go HT)	8	16	20	25	25
Total	10	20	25	30	30

- ii. Will enrollment be capped in the future? No

B. Market Demand:

Southwest Missouri Workforce Investment Region					
2008-2018 Industry Projections					
Manufacturing/Maintenance Job Forecast					
Industry Code	Title	Employment		Change	
		2008 Estimated	2018 Projected	2008-2018 Numeric	2008-2018 Percent
311000	Food Manufacturing	9,089	9,175	86	0.9%
322000	Paper Manufacturing	688	713	25	3.6%
326000	Plastics and Rubber Products Manufacturing	254	264	10	3.9%
	Nonmetallic Mineral Product Manufacturing				
327000	Manufacturing	352	361	9	2.6%
332000	Fabricated Metal Product Manufacturing	3,345	3,377	32	1.0%
336000	Transportation Equipment Manufacturing	1,326	1,338	12	0.9%
339000	Miscellaneous Manufacturing	791	805	14	1.8%
811000	Repair and Maintenance	980	1,029	49	5.0%
		16,825	17,062	237	1.4%

C. Societal Need:

i. General needs which are not directly related to employment

Crowder's stated mission is "Building a civil, serving, literate, learning community of responsible citizens". Obviously, the attainment of beneficial employment is a key factor in the pursuit of this mission as it relates to responsible citizenship. However, in addition to these most tangible employability benefits, the intangible contributions of participating in a higher educational experience are often difficult to quantify but often provide the greatest benefit to creating members of a "...civil, serving, learning community...". For example, Crowder's required orientation course now requires each student to participate in some type of "service seed" project by becoming involved at a voluntary level in any one of several community service projects. Many technology students who would not normally pursue a traditional 4-year college degree and thus miss out on these benefits will now have the opportunity to participate and grow, should this Advanced Manufacturing AAS be approved.

Creating this college-level, post-secondary program will also benefit graduates from our area secondary CTE schools by providing an opportunity to articulate credit for high school level Technology courses into a college-level AAS program without the need to travel to more distant programs within the state.

D. Methodology used to determine "B" and "C" above.

As noted above, Section B data was obtained from the state's MERIC website and from interaction with various advisory panel members and sponsors. Comments in Section C are based upon the vision of Crowder's Board and their recognition of the importance of both tangible and intangible components inherent in obtaining a college degree.

DUPLICATION AND COLLABORATION: If similar programs currently exist in Missouri, what makes the proposed program necessary and/or distinct from the others at public institutions, area vocational technical schools, and private career schools?

Although other Advanced Manufacturing programs exist at public institutions within the state, the nearest post-secondary program to Crowder's Neosho campus is at State Fair Community College in Sedalia, approximately 190 miles to the northeast. We believe that our proximity to both Joplin (25 miles to the north) and to the currently booming northwest Arkansas economy (Wal-Mart's international headquarters is located in Bentonville, only 43 miles to our south) gives us a unique opportunity to provide a service to both potential students and employers in our area without creating any significant negative impact to other existing programs.

Does delivery of the program involve a collaborative effort with any external institution or organization? No

PROGRAM STRUCTURE (Form PS)

- A. Total credits required for graduation: 62 Credits for the Maintenance Option and 65 Credits for the Automation/Robotics Option.
- B. Residency requirements, if any: Standard Crowder College requirements.
- C. General education: Total credits: 16 Credit Hours

Courses:

COLL 101 College Orientation	1 credit hour
English	6 credit hours
Choose from among:	
ENGL 100 Mechanics of Composition	3 credit hours
ENGL 101 English Composition	3 credit hours
ENGL 102 Advanced English Composition	3 credit hours
ENGL 203 Technical Writing	3 credit hours
SPCH 101 Fundamentals of Speech	3 credit hours
MATH 104 Technical Math	3 credit hours
Missouri Constitutional Requirement	3 credit hours
Choose from among:	
PLSC 103 National, State, Local Government	3 credit hours
HIST 106 U.S. History I	3 credit hours

- D. Major requirements: Automation/Robotics Total credits: 49 Credit Hours

Courses:

Advanced Manufacturing Core	28 credit hours
CONS 105 Introduction to Construction Technology	3 credit hours
AMT 102 Introduction to Industrial Electricity	3 credit hours
AMT 104* Electrical Motor Controls	3 credit hours
AMT 204* Programmable Controllers	3 credit hours
AMT 142 Manufacturing Mechanics	3 credit hours
DRFT 101 Introduction to Engineering Drawing	3 credit hours
CONS 155* Basic HVAC	3 credit hours
WELD 113 Introduction to Welding	3 credit hours
DIES 134 Hydraulics	4 credit hours
Support Courses	9 credit hours
COMP 120* Computer Applications	3 credit hours
or BSAD 125 Business Computer Applications	3 credit hours
BSAD 103 Professional Development	2 credit hours
BSAD 104 Introduction to Computers	1 credit hour
AMT 122 Basic Machining	3 credit hours
Speciality Option: Automation/Robotics	12 credit hours
CNS 101 Introduction to Electronics	3 credit hours
AMT 182 Introduction to Automated Robotics	3 credit hours
AMT 284* Automated Robotic Programming	3 credit hours
AMT 206* Programmable Controllers II	3 credit hours

Major requirements: Maintenance Option Total credits: 46 Credit Hours

Advanced Manufacturing Core		31 credit hours
CONS 105 Introduction to Cons. Technology	3 credit hours	
AMT 102 Introduction to Industrial Electricity	3 credit hours	
AMT 104* Electrical Motor Controls	3 credit hours	
AMT 204* Programmable Controllers	3 credit hours	
AMT 142 Manufacturing Mechanics	3 credit hours	
DRFT 101 Introduction to Engineering Drawing	3 credit hours	
WELD 113 Introduction to Welding	3 credit hours	
AMT 122 Basic Machining	3 credit hours	
CONS 133 Basic Plumbing	3 credit hours	
DIES 134 Hydraulics	4 credit hours	
Support Courses		6 credit hours
COMP 120* Computer Applications	3 credit hours	
or BSAD 125 Business Computer Applications	3 credit hours	
BSAD 103 Professional Development	2 credit hours	
BSAD 104 Introduction to Computers	1 credit hour	
Approved Electives		9 credit hours
CONS 155 Basic HVAC	3 credit hours	
CNS 101 Introduction to Electronics	3 credit hours	
CNS 115 Introduction to Networking	3 credit hours	
WELD 145 Gas Metal Arch-GMAW	3 credit hours	
WELD 150 Gas Tungsten Arc Welding-GTAW	3 credit hours	
WELD 155 Shielded Metal Arc Welding-SMAW	3 credit hours	

Free elective credits: None

E. Requirements for thesis, internship or other capstone experience: None

F. Any unique features such as interdepartmental cooperation: None.

Form PG

PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name: Crowder College

Program Name: Advanced Manufacturing

Date: March 11, 2011

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.

* The Compass Test will be administered to determine level of competence in math and reading comprehension. A cut score will be determined and remedial help given as needed.

*Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.

*Will have a minimum of three years (6,000 hours) of related job experience in the manufacturing area.

*The faculty member will meet the Crowder College criteria for instructors.

* The program will be taught by both full time and adjunct faculty.

Expectations for professional activities, special student contact, teaching/learning innovation.

* The instructor will be expected to participate in appropriate professional development activities relevant to their teaching assignment to enhance their skills in teaching, tutoring and internship activities.

Enrollment Projections

- Student FTE majoring in program by the end of five years.
 - Percent of full time and part time enrollment by the end of five years.
- * It is anticipated that ten to thirty students per session will be enrolled fulltime.

Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.
- * We plan to hold ongoing classes each semester and anticipate ten to twenty graduates per year after year three.
- Special skills specific to the program.
- * Students will gain basic entry level knowledge and skills in the areas of industrial electricity, automation, robotics, hydraulics, machining, HVAC, welding, and mechanics.
- Proportion of students who will achieve licensing, certification, or registration.
- * At present there are no identified certifications available for this broad application of skills. A comprehensive third party examination is currently being prepared. It is estimated that all graduates will pass this exam.

Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.

- Placement rates in related fields, in other fields, unemployed.
- * We would anticipate a placement rate of at least ninety percent in the related fields with the remaining ten percent obtaining employment as manufacturing/ production operators .
- Transfer rates, continuous study.
- * It is anticipated that less than 25 percent of the graduates will have immediate plans to transfer or continue their education.

Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide reasons.

* Program accreditation is through Crowder College's normal HLC/AQIP program. We have reviewed specialized accreditation options, but at this time have been unable to identify any outside agency which provides a good fit for our needs. We will continue to pursue an appropriate accrediting agency.

Alumni and Employer Survey

- Expected satisfaction rates for alumni, including timing and method of surveys
- Expected satisfaction rates for employers, including timing and method of surveys

* Faculty and Student satisfaction surveys will be administered according to school policy, thus, all students will be contacted six months after graduation.