



NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s): Missouri Western State University

Program Title: A.A.S. Manufacturing Engineering Technology

Degree/Certificate: Associate of Applied Science

Options: A.A.S. – M.E.T. General Option; A.A.S. –M.E.T. – Precision Machining; A.A.S. – Instrumentation and Automation

Delivery Site(s): MWSU – St. Joseph, MO campus

CIP Classification: 150613

*CIP code can be cross-referenced with programs offered in your region on MDHE's program inventory highered.mo.gov/ProgramInventory/search.jsp

Implementation Date: Fall 2017

Cooperative Partners:

*If this is a collaborative program, form CL must be included with this proposal

AUTHORIZATION:

Jeanne Daffron, Provost

Name/Title of Institutional Officer

Jeanne Daffron
Signature

6/27/17
Date

Kathleen O'Connor

816-271-4518

Person to Contact for More Information

Telephone

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PROGRAM STRUCTURE

A. Total credits required for graduation: 62

B. Residency requirements, if any: 20 credits

C. General education: Total credits: 15

Courses (specific courses OR distribution area and credits):

See attached MWSU Curriculum Structure

Course Number	Credits	Course Title

D. Major requirements: Total credits: _____

Course Number	Credits	Course Title

E. Free elective credits:

3-8, depending on option

(Sum of C, D, and E should equal A.)

See attached MWSU Curriculum Structure

F. Requirements for thesis, internship or other capstone experience:

Yes. Students in all three options are required to complete a 3 credit hour internship (co-op).

G. Any unique features such as interdepartmental cooperation:

No

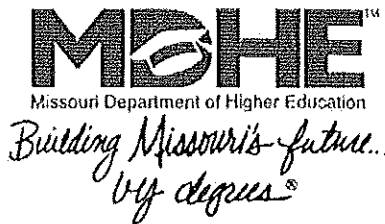
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Form PS -- Program Structure

Missouri Western State University
 A.A.S. in Manufacturing Engineering Technology
 Proposed Curricular Structure
 5-26-17

A.A.S. Manufacturing Engineering Technology		Instrumentation and Automation	
General Option	Precision Machining	CORE	Instrumentation and Automation
EGT 110 ET Fundamentals and Critical Thinking	3 EGT 110 ET Fundamentals and Critical Thinking	3 EGT 110 ET Fundamentals and Critical Thinking	3 EGT 110 ET Fundamentals and Critical Thinking
EGT 205 Computer Aided Drafting I	3 EGT 205 Computer Aided Drafting I	3 EGT 205 Computer Aided Drafting I	3 EGT 205 Computer Aided Drafting I
EGT 215 Computer Aided Drafting II	3 EGT 215 Computer Aided Drafting II	3 EGT 215 Computer Aided Drafting II	3 EGT 215 Computer Aided Drafting II
MET 100 Electrical Circuits for Manufacturing	3 MET 100 Electrical Circuits for Manufacturing	3 MET 100 Electrical Circuits for Manufacturing	3 MET 100 Electrical Circuits for Manufacturing
MET 111 Manufacturing Processes	2 MET 111 Manufacturing Processes	2 MET 111 Manufacturing Processes	2 MET 111 Manufacturing Processes
MET 132 Manufacturing Methods	3 MET 132 Manufacturing Methods	3 MET 132 Manufacturing Methods	3 MET 132 Manufacturing Methods
EGT 290 ET Practicum/Co-op	3 EGT 290 ET Practicum/Co-op	3 EGT 290 ET Practicum/Co-op	3 EGT 290 ET Practicum/Co-op
EGT 390 ET Seminar	2 EGT 390 ET Seminar	2 EGT 390 ET Seminar	2 EGT 390 ET Seminar
CSC 201 Microcomputer Applications	3 CSC 201 Microcomputer Applications	3 CSC 201 Microcomputer Applications	3 CSC 201 Microcomputer Applications
Total Core	25	Total Core	25
EGT 220 Engineering Materials	3 EGT 220 Engineering Materials	3 MET 101 Elec. Instrumentation for Manufacturing	3
EGT 260 Statics	3 MET 131 Machine Workshop	3 MET 231 PLC and Automation	3
EGT 325 Machine Parts and Mechanical Design	3 MET 223 Machines and Tooling	3 MET 232 Automated Manufacturing	2
MET 101 Elec. Instrumentation for Manufacturing	3 MET 241 CNC Machining	3 MET 322 Electrical Circuits II	4
MET 232 Automated Manufacturing	2 MET 242 CNC Machining Processes	2 MET 324 Industrial Controls	3
MET 242 CNC Machining Processes	2		
MET 315 Mechanical Systems	3		
TOTAL Option	19	TOTAL Option	14
TOTAL Core	25	TOTAL Core	25
General Education	15	General Education	15
Free electives	3	Free electives	8
TOTAL	62	TOTAL	62



PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name Missouri Western State University
Program Name Associate of Applied Science – Manufacturing Engineering Technology
Date June 29, 2017

(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.)

1. 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.
No special preparation required
- Characteristics of a specific population to be served, if applicable.
N/A

2. Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.
Faculty are required to hold a minimum of a masters degree in engineering technology or a related field.
- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.
75%
- Expectations for professional activities, special student contact, teaching/learning innovation.
[Click here to enter text.](#)

3. Enrollment Projections

- Student FTE majoring in program by the end of five years.
20
- Percent of full time and part time enrollment by the end of five years.
Full time = 50%; Part time = 50%

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4. Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.
3 years = 14; 5 years = 34
- Special skills specific to the program.
Proficiency with technology related to CNC and PLC machining.
- Proportion of students who will achieve licensing, certification, or registration.
N/A
- 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.
N/A
- Placement rates in related fields, in other fields, unemployed.
Related fields = 75%; Related fields = 20%; Unemployed = 5%
- Transfer rates, continuous study.
Continuous study = 30%

5. Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. **If there are no plans to seek specialized accreditation, please provide a rationale.**
N/A

6. Alumni and Employer Survey

- Expected satisfaction rates for alumni, *including timing and method of surveys*.
Graduates are administered an end-of-program survey. Satisfaction rates expected to be 80% satisfied.
- Expected satisfaction rates for employers, including timing and method of surveys.
Employer surveys and open forums are conducted annually at the Engineering Technology Advisory Board meeting which is well attended by industry representatives, including program alumni. Expected satisfaction rate is expected to be 80% satisfied that graduates are meeting employer expectations.

7. Institutional Characteristics

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- Characteristics demonstrating why your institution is particularly well-equipped to support the program.

Missouri Western State University currently offers both a bachelor of science and associate of applied science in manufacturing engineering technology. A term of the 2009 agreement with MCC and NCMC was that Missouri Western would retain the right to offer the A.A.S. in Manufacturing Engineering Technology due to advanced manufacturing workforce demands. Missouri Western has strong collaborative relationships with regional industry partners such as Herzog Corporation, Altec, Johnson Controls, Gray Manufacturing, Hillyard Industries, and others. Representatives from these industries have advised Missouri Western on the design of the curriculum in order to meet their needs for well-trained workers in skilled machining, CNC operations, troubleshooting and maintenance, electronics installation and repair, automated production line operations, and computer-integrated manufacturing operation and maintenance.

Since proposing this program restructure to DHE, Missouri Western, Metropolitan Community College and North Central Missouri College have engaged in face-to-face and telephone discussions regarding this program. Consensus has been reached that the most efficient way to meet the regional workforce demands in St. Joseph is for Missouri Western to offer this program. Agreement has been reached to collaborate on future technical education offerings in St. Joseph. (See attached email from Carlos Penaloza, Vice Chancellor for Academic Affairs at MCC.)

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6/27/2017

Missouri Western State University Mail - Fwd: FW: MWSU Manufacturing Engineering Technology

To: Zora Mulligan, Commissioner of Higher Education

Re: Missouri Western addition of options to the AAS, Manufacturing Engineering Technology

On March 9th 2017, Metropolitan Community College (MCC) appealed the CBHE decision, approving two new degree options at Missouri Western State University (MWSU), as these programs were developed in the absence of MCC and outside of the Mission of MWSU; and in conflict with a memorandum of understanding signed in 2009, restricting MWSU on future associate level offerings.

Given the relationship between MCC, MWSU and the St. Joseph service region; MCC and MWSU engaged in discussion, with the intent of addressing needs in the St. Joseph area and working in collaboration to serve these needs.

It is recognized that MCC has existing programming that could serve the needs; that the proposed programming can be perceived duplicative to that of MCC; and that the proposed programming happened in the absence of MCC representation. And it is recognized, that in order for MCC to support these programmatic offerings with timeliness in serving the St. Joseph region, there would be significant investments in time and resources. MCC records its appeal, recognizing that MWSU will continue to work MCC and the St. Joseph region in meeting their needs. With this request, MWSU recognizes that they are restricted in offering associate level degrees and that any future submissions of substantive curricular revisions, or new submissions will only happen with the collaboration of MCC and or North Central Missouri College (NCMC).

MWSU recognizes that MCC has been in discussions to help meet needs, and has engaged in non-credit training to support the workforce development of the St. Joseph region. MCC has made considerable investments in curriculum, personnel, and facilities and will work in collaboration with MWSU to leverage resources and support the future workforce needs of the St. Joseph area.

MCC and MWSU are engaged in discussions on opportunities that will help meet the regional educational needs; and will engage in creative ways, sharing resources to meet these needs. Both institutions recognize that collaboration will result in efficiencies and better aligned outcomes.

Carlos G. Peñaloza, Ph.D

Vice Chancellor for Academic Affairs

Metropolitan Community College

3200 Broadway

Kansas City, Missouri 64111

(816) 604-1206



Carlos G. Peñaloza, Ph.D

Vice Chancellor for Academic Affairs

Metropolitan Community College

3200 Broadway

Kansas City, Missouri 64111



STUDENT ENROLLMENT PROJECTIONS

Year	1	2	3	4	5
Full Time	4	6	8	8	10
Part Time	4	4	4	8	10
Total	8	10	12	16	20

Please provide a rationale regarding how student enrollment projections were calculated:

Missouri Western's A.A.S. – M.E.T. program has averaged 12 majors and 3 graduates over the past three years. Because the current degree plan essentially consists of the first two years of the baccalaureate degree in M.E.T., most students who initially declared the associate degree opted to move into the bachelor's degree without applying for graduation with an A.A.S. degree. Also, because this degree did not focus on specific job-ready skills, few students opted for the degree. Likewise, employers did not value this degree as providing specific skill proficiencies needed in the workplace. Employer input through the St. Joseph Workforce Alliance suggests that graduates of the proposed degree would be sought-after candidates for regional manufacturing jobs. This type of employer endorsement will enhance enrollment in this degree among Missouri Western's general student population.

Additional enrollment is anticipated based on the collaborative articulation with Hillyard Technical Center (HTC) in St. Joseph. HTC provides skilled technical education for regional high school students and adults seeking workforce training. Approximately ninety (90) students each year complete technical programs that will serve as feeder programs into the A.A.S. in Manufacturing Engineering Technology. Additionally, Missouri Western is collaborating with HTC to provide MT1 certificate training for high school students to increase interest and basic proficiency in advanced manufacturing. Students who have completed Hillyard Technical Center's precision machining and other related programs will receive articulated credit in the A.A.S. – M.E.T. program in order to recognize and build upon skills and abilities and shorten

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time to degree completion. Employment opportunities and ability to “stack credentials” from HTC to Missouri Western will contribute to additional enrollment in this program.

Provide a **rationale** for proposing this program, including **evidence of market demand and societal need supported by research**:

The St. Joseph Chamber of Commerce created the St. Joseph Workforce Development Alliance to establish an industry-education partnership to grow and sustain a talent pipeline for business and industry. The Alliance focuses on both education and skills attainment by establishing career pathways that prepare college and career ready individuals. However, to support strategic economic growth of manufacturing within St. Joseph, it was determined that the community must leverage additional workforce solutions to create a “manufacturing work ready” workforce by closing two gaps faced by industry: (1) interest and (2) skills.

Interest Gap: The interest gap is a result of the misperceptions about career opportunities in modern manufacturing.

Skills Gap: The skills gap is a result of the misalignment of education and training programs with employers’ skills requirements.

Missouri Western is a partner in the Workforce Development Alliance. Development of the revised A.A.S. in Manufacturing Engineering Technology (M.E.T.) curriculum came about as a strategic initiative to address the skills gap in advanced manufacturing. Missouri Western is also partnering with the Chamber of Commerce and industry leaders to re-image careers in manufacturing and to increase access to information and experiences that facilitate the career exploration and planning process.

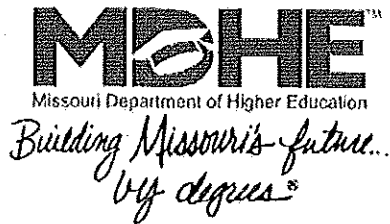
The proposed restructured A.A.S. - M.E.T has been specifically created to meet the identified demand for workforce ready graduates in the robust advanced manufacturing industry in the St. Joseph region. As examples, Gray Manufacturing is adding a night shift and Altec Industries, Inc. is adding over 100 high skilled jobs in the next year. Johnson Controls and others have identified an aging workforce and will need additional skilled workers over the next several years. Other industries who have identified need for skilled workers are Herzog, Inc. and Hillyard Industries. Graduates of this degree’s options will possess much needed skills for jobs as precision machinists, CNC operators, automated production line operators and plant facilities’ technicians.

The proposed curriculum has been praised by the St. Joseph Chamber of Commerce, local industry leaders, and the St. Joseph News-Press (see attached editorial).

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Form SE - Student Enrollment Projections



To address the interest gap, Missouri Western and Hillyard Technical Center have collaborated on articulation agreements to encourage interest and ability to pursue educational advancement into the associate degree program. Specifically, students who have completed Hillyard Technical Center's precision machining and other related programs will receive articulated credit in the A.A.S. – M.E.T. program in order to recognize and build upon skills and abilities and shorten time to degree completion.

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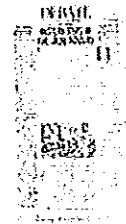
Form SE - Student Enrollment Projections

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Our opinion

WESTERN STEPS UP FOR LOCAL INDUSTRY

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Cooperation and teamwork are qualities St. Joseph's leaders pride themselves on. Ask the county, city, chamber of commerce and other key players — they all agree.

Still, getting help from a community partner isn't automatic. A fair hearing? Yes. But a commitment of resources and realignment of a partner's efforts to meet your vision? That's much bigger, and it's never automatic.

This is why Missouri Western State University has come in for widespread praise recently. The university listened to local employers and is adding new options to its two-year program offering an associate of applied science in manufacturing engineering technology.

Starting this fall, students can focus their studies on precision machining or on instrumentation and automation. In cooperation with Hillyard Technical Center and the St. Joseph School District, Hillyard graduates will have the further advantage of being awarded college credit for their work done before arriving on the Western campus.

Pat Lilly, president and chief executive officer of the St. Joseph Chamber of Commerce, correctly noted these degree options are "a great step forward."

"Local employers have indicated they have positions that go unfilled as a result of lack of skills-based training and education ...," he said. Students completing the new degrees will have "an

opportunity for a good job and career here in St. Joseph."

Stef Schanze, president of Gray Manufacturing, lauded Western for working with industry "in developing these new options as part of an overall community strategy to better prepare graduates for the evolving manufacturing workforce."

The target group of students is mechanically inclined and interested in working in advanced manufacturing.

The precision machining option will put students in machine tool and computer numeric control (CNC) labs. The coursework will prepare them to work in machine and tool design, manufacturing machine operation, CNC operation and basic troubleshooting and maintenance.

The instrumentation and automation sequence will provide training in electricity, electronics and computer applications in industry. Graduates will be equipped for careers in industrial automation, automated production line operation, plant electricity and computer-integrated manufacturing operation and maintenance.

Western is to be commended for adding these new options. To take advantage of them — for yourself or a family member — or for more information, contact Dr. Jinwon Zhu, professor and chair of engineering technology, at 816-271-5822 or at jzhu@missouriwestern.edu.

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ST. JOSEPH
Chamber of Commerce

June 20, 2017

Commissioner Zora Mulligan
Missouri Department of Higher Education
205 Jefferson Street
Jefferson City, MO 65101

3003 Frederick Ave. | St. Joseph, MO 64506
016.232.4661 | saintjoseph.com

Dear Commissioner Mulligan,

I am writing this letter to express support for the new program proposal: Associate of Applied Science in Manufacturing Engineering Technology submitted to MDHE by Missouri Western State University. The proposed program consists of a restructuring of the current Associate of Applied Science in Manufacturing Engineering Technology, creating three options: Precision Machining, Instrumentation/Automation, and General.

As a member of the St. Joseph Workforce Development Alliance, Missouri Western collaborated with workforce representatives focusing on training and educational issues in the region to support the needs of local businesses and prepare students for future careers in St. Joseph. The overarching goal of the Alliance is to coordinate local training and educational initiatives to support a prepared and engaged workforce leading to successful local businesses, with a strategic focus on sustaining and growing manufacturing. Options in the restructured degree program allow students to focus their studies on precision machining or on instrumentation and automation, two areas of critical need in advanced manufacturing. Employers were given opportunity to review the curriculum structure and make suggestions to address skill proficiencies needed in today's highly technical manufacturing settings.

Collaboration between Missouri Western and Hillyard Technical Center will allow Hillyard students completing the precision machining and other related courses to receive college credit towards their associate degree before arriving on the Missouri Western campus. This initiative, along with a marketing campaign by the Alliance to re-image careers in manufacturing, will drive enrollment in these programs.

The region's workforce needs in advanced manufacturing are significant and will continue to increase due to an aging workforce and a robust manufacturing economy in St. Joseph. I urge MDHE to approve this degree program which will provide well-paying career opportunities for students and will enhance the economic welfare of the region.

Sincerely,

R. Patt Lilly
President/CEO



Midwest Operations
2106 S. Riverside Rd.
St. Joseph MO 64507

June 21, 2016

Commissioner Zora Mulligan
Missouri Department of Higher Education

Commissioner Mulligan,

I am writing this letter to express support for the new program proposal: Associate of Applied Science in Manufacturing Engineering Technology submitted to MDHE by Missouri Western State University. The proposed program consists of a restructuring of the current Associate of Applied Science in Manufacturing Engineering Technology, creating three options: Precision Machining, Instrumentation/Automation, and General.

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The region's workforce needs in advanced manufacturing are significant and will continue to increase due to an aging workforce and a robust manufacturing economy in St. Joseph. I urge MDHE to approve this degree program which will provide well-paying career opportunities for students and will enhance the economic welfare of the region.

Sincerely,

A handwritten signature in cursive script that reads 'Lana K Beavers'.

Lana K. Beavers, PHR
HR Manager



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June 20, 2017

Commissioner Zora Mulligan
Missouri Department of Higher Education

Dear Commissioner Mulligan,

I am writing this letter to express support from Gray Manufacturing for the new program proposal: Associate of Applied Science in Manufacturing Engineering Technology submitted to MDHE by Missouri Western State University. The proposed program consists of a restructuring of the current Associate of Applied Science in Manufacturing Engineering Technology, creating three options: Precision Machining, Instrumentation/Automation, and General.

As a member of the St. Joseph Workforce Development Alliance, Missouri Western collaborated with workforce representatives focusing on training and educational issues in the region to support the needs of local businesses, such as Gray Manufacturing, and prepare students for future careers in St. Joseph. The overarching goal of the Alliance is to coordinate local training and educational initiatives to support a prepared and engaged workforce leading to successful local businesses, with a strategic focus on sustaining and growing manufacturing. Options in the restructured degree program allow students to focus their studies on precision machining or on instrumentation and automation, two areas of critical need in advanced manufacturing. Employers were given opportunity to review the curriculum structure and make suggestions to address skill proficiencies needed in today's highly technical manufacturing settings.

Collaboration between Missouri Western and Hillyard Technical Center will allow Hillyard students completing the precision machining and other related courses to receive college credit towards their associate degree before arriving on the Missouri Western campus. This initiative, along with a marketing campaign by the Alliance to re-image careers in manufacturing, will drive enrollment in these programs. Gray Manufacturing, a proud U.S., Missouri, and St. Joseph manufacturer specializing in quality lifting products for the heavy duty truck industry, certainly stands to benefit from this program as we look to hire its graduates in the future.

The region's workforce needs in advanced manufacturing are significant and will continue to increase due to an aging workforce and a robust manufacturing economy in St. Joseph. I urge MDHE to approve this degree program which will provide well-paying career opportunities for students and will enhance the economic welfare of the region.

Sincerely,

Sterett W. Schanze

President, Gray Manufacturing