

# MONTANA BOARD OF REGENTS

## LEVEL II REQUEST FORM

Item No.:	136-1905-R0907	Date of Meeting:	September 19-21, 2007
Institution:	The UM-Helena College of Technology		
Program Title:	Welding Technology		

Level II proposals require approval by the Board of Regents.

**Level II action requested (check all that apply):** Level II proposals entail substantive additions to, alterations in, or termination of programs, structures, or administrative or academic entities typically characterized by the (a) addition, reassignment, or elimination of personnel, facilities, or courses of instruction; (b) rearrangement of budgets, cost centers, funding sources; and (c) changes which by implication could impact other campuses within the Montana University System and community colleges. Board policy 303.1 indicates the curricular proposals in this category:

- 1. Change names of degrees (e.g. from B.A. to B.F.A.)
- 2. Implement a new minor or certificate where there is no major or no option in a major;
- 3. Establish new degrees and add majors to existing degrees;
- 4. Expand/extend approved mission; and
- 5. Any other changes in governance and organization as described in Board of Regents' Policy 218, such as formation, elimination or consolidation of a college, division, school, department, institute, bureau, center, station, laboratory, or similar unit.

### Specify Request:

**The University of Montana – Helena College of Technology seeks approval to award an Associate of Applied Science in Welding Technology.**

**The proposed Associate of Applied Science in Welding Technology would be an extension of the current Certificate of Applied Science in Welding Technology and Associate of Applied Science in Metals Technology already offered at UM-Helena.**

**M O N T A N A   B O A R D   O F   R E G E N T S**  
**NEW ACADEMIC PROGRAM PROPOSAL SUMMARY**

**ITEM 136-1905-R0907**

**Institution:** The University of Montana – Helena College of Technology

**Program Title:** Associate of Applied Science in Welding Technology

**Overview:**

**Provide a one paragraph description of the proposed program. Be specific about what degree, major, minor or option is sought.**

The UM-Helena College of Technology seeks approval to offer an Associate of Applied Science in Welding Technology. The proposed degree would allow UM-Helena to offer a higher level of education in the welding field and produce the highly qualified graduates that industry has demanded. Recent changes in technology, welding equipment, and welding processes have necessitated the need for more time to properly train students in this field.

**Need:**

- a) To what specific need is the institution responding in developing the proposed program?**
- b) How will students and any other affected constituencies be served by the proposed program?**
- c) What is the anticipated demand for the program? How was this determined?**

The approval of an Associate of Applied Science Degree for the Welding Technology Program would meet the needs identified by students, employers, and advisory boards. These needs have been identified through conversations with students, conversations with Advisory Council members, an informal survey of industry leaders at the Montana Manufacturing Extension Center (MMEC) state conference, and letters of support from potential employers (attached). Students, employers, and Advisory Council members have all indicated the desire for more training on the newer technologies, an increase in fabrication skills, and an increase in the number of graduates. Based upon our input from these groups, we expect demand for the program to be very high and expect to fill the program with 20 students within the first two years.

Although the current Certificate of Applied Science in Welding Technology has been a good fit for the program for many years, upgrades in equipment, technology, and welding processes have necessitated a change in time requirements to produce qualified graduates. UM-Helena has attempted to temporarily meet these challenges by offering a 30-credit Advanced Welding Certificate for the 2007-2008 academic year. However, this is only a temporary solution that will not meet the long-term needs of the program, students, or industry. The expansion of the program to offer a two-year Associate of Applied Science Degree will allow instructors to

adequately cover all necessary topics in Welding Technology and produce better-qualified graduates to enter the workforce.

UM-Helena's agreement with Miller Welding has also provided UM-Helena the unique opportunity to train on the latest and most advanced technologies. The equipment provided by Miller makes the UM-Helena welding facility the best- equipped shop, private or educational, in the state. By having this state-of-the-art equipment, UM-Helena has the ability to teach processes, techniques, and equipment operation that no other facility in the state can provide. To maximize this agreement with Miller and the equipment they provide, a two-year program in Welding is a necessity.

The addition of the Associate of Applied Science degree will also expand the number of access points students will have to enter and exit a degree in a metals-related field at UM-Helena. The combination of current Certificates of Applied Science in Welding and Machining, along with Associate of Applied Science Degrees in Machining and Metals Technology could be used in combination with this new degree to give students many choices in these metals-related fields. UM-Helena believes these increased options for students will increase enrollment, student satisfaction, and employer satisfaction.

### **Institutional and System Fit:**

**a) What is the connection between the proposed program and existing programs at the institution?**

The addition of the Associate of Applied Science Degree will be a natural expansion of offerings in UM-Helena's metals programs. This addition will give students more options of combining years of education in the Machining Program with years of education in the Welding Program and create a variety of program options in this field.

**b) Will approval of the program require changes to any existing programs at the institution? If so, please describe.**

The addition of this degree option will require no changes to existing programs at UM-Helena.

**c) Describe what differentiates this program for other, closely related programs at the institution.**

This degree is closely related to the Associate of Applied Science in Metals Technology, as it shares some of the same courses. However, the new degree would be distinctly different in the quantity and level of welding topics that would be presented to the students. The AAS in Metals Technology requires two semesters of Welding, whereas the new AAS in Welding will require four. This new degree focuses upon advanced welding topics, specialized welding techniques, and fabrication and layout skills.

**d) How does the proposed program serve to advance the strategic goals of the institution?**

The offering of this degree would advance three of the four major strategic goals of UM-Helena in the following ways:

1. Student Success. Develop and evaluate quality educational programs. Offering an AAS in Welding Technology will be an expansion and improvement on an already successful program at UM-Helena. Offering this program will make our graduates more qualified and ready to enter the workforce. We believe this meets our strategic goal of developing a quality educational program.
2. Connect with the Community. Identify and incorporate community interests/business and industry needs in future planning. Through our formal and informal research over the past two years, we have identified a need for a more advanced welding degree according to our business and industry contacts.
3. Create Access. Develop alternative methods of delivery and offerings for courses and degrees. The offering of the AAS degree in Welding Technology will create another degree path and option in our Metals Technology offerings. This will expand entry and exit points for students in our programs, along with expanding the possibility for depth of study.

**e) Describe the relationship between the proposed program and any similar programs within the Montana University System. In cases of substantial duplication, explain the need for the proposed program at an additional institution. Describe any efforts that were made to collaborate with these similar programs: and if no efforts were made, explain why. If articulation or transfer agreements have been developed for the substantially duplicated programs, please include the agreement(s) as part of the documentation.**

UM-Missoula College of Technology currently has an AAS in Welding Technology. Although some of the courses are similar, the overall program and emphasis of skills taught will differ considerably. Differences in course offerings would include courses in Advanced Blueprint, Structural Fabrication, Field Welding and Processes, CNC Burn Table Programming and Operation, MSHA training, and Advanced Shop Practices. These are courses that are not available at UM-Missoula.

UM-Helena's agreement with Miller Welding also provides us with a collection of equipment that is continually updated to provide the shop with the most advanced equipment in the welding field. This equipment is replaced continuously at no cost to the institution and comes with free training for our instructors. This equipment and training allow UM-Helena to deliver processes, skills, and techniques in the classroom that are unavailable to other institutions because of cost. Topics such as Pulse MIG welding, brazing, plasma-cutting procedures and equipment, portable welders and field processes, push-pull spool guns, and CNC burn table operation are some of the topics that will make this AAS unique from other state programs.

Adding a second year of training to an already strong and successful one-year program allows our students to remain in the community of their choice, build upon support systems already in place from their first year, and work with instructors that are familiar with their learning styles and needs. UM-Missoula College of Technology was notified of our intent to submit this proposal and full support was expressed by both their Dean and Associate Dean of our expansion of this program. They also expressed interest in possible collaborations in this area, including allowing access to our state-of-the-art equipment to their students for additional training for them.

A two-year program in Metals Fabrication also exists at the Montana Tech-UM College of Technology, but it is substantially different as it incorporates machining with the metals fabrication and welding.

**Program Details:**

- a) **Provide a detailed description of the proposed curriculum. Where possible, present the information in the form intended to appear in the catalog or other publications.**

**Associate of Applied Science Welding Curriculum**

**Fall Semester**

<b>Number</b>	<b>Course Title</b>	<b>Credits</b>
CW 112	Oxyacetylene Welding / Cutting	2
CW 130	Estimation of Job Materials	3
CW 120	Blueprint Reading	3
CW 118	Shielded Metal Arc Welding	3
CW 119	Gas Metal Arc Welding	4
	Tech Math	3
	<b>Total Credits</b>	<b>18</b>

**Spring Semester**

<b>Number</b>	<b>Course Title</b>	<b>Credits</b>
CW125	Layout and Pattern Making Fundamentals	3
CW240	Specialized Welding	6
CW245	Design and Fabrication	4
CW250	Shop Practices	2
OT112	Introduction to Microcomputers	3
	<b>Total Credits</b>	<b>18</b>

**Fall Semester**

<b>Number</b>	<b>Course Title</b>	<b>Credits</b>
CW 200	Pipe Welding	3
CW 210	Advanced Blueprint	2
CW 220	Metal Fabrication I	6
CW 225	Structural Fabrication	2
CW 230	Field Welding and Processes	2
ENG 107T	Technical Communications	3
	<b>Total Credits</b>	<b>18</b>

**Spring Semester**

<b>Number</b>	<b>Course Title</b>	<b>Credits</b>
CW 240	Metal Fabrication II	6
CW 250	CNC Burn Table Programming and Operation	3

CW 260	MSHA Safety Training	1
CW 270	Advanced Shop Practices	5
HR110T	Career Development and Human Relations	3
	<b>Total Credits</b>	<b>18</b>

### **WELD 200 Pipe Welding**

This course provides the student with a thorough technical understanding of preparation and fit up for welding pipe. Students acquire the necessary skills to perform satisfactory welds on different materials of pipe, in all positions and situations, using SMAW, TIG, GMAW-P, and GMAW-RMD welding processes. The student develops the skills necessary to produce quality pipe fitting, and welds needed in today's workforce.

### **WELD 210 Advanced Blueprint**

This course will instruct students how to draw and read sophisticated blueprints using Auto-Cad format. Instruction will also include taking general arrangements drawings and breaking them down into shop drawings. Students will learn how to properly dimension, detail, and include weld symbols into shop drawings

### **WELD 220 Welding Fabrication I**

Metal Fabrication will focus on the planning and execution of projects using the knowledge and skills already acquired during the first year of the welding program. Students will apply these skills in a shop like atmosphere working directly with customers, completing repairs, modifications and new construction. With this work the students will prepare blueprints, using hand drawing techniques along with Auto/Cad to complete more complicated drawings.

### **WELD 225 Structural Fabrication**

This course is designed to give students the ability to layout and fabricate various components used in the structural construction of buildings and infrastructure. Students will layout, drill and cut to length columns and beams according to blueprint specifications. Instruction will also be given on how to layout and fabricate base plates, gusset supports, and brackets used to support steel structure. In addition, students will fabricate a stairway and adjoining handrail using proper rise and run standards and dimensions.

### **WELD 230 Field Welding and Processes**

This course is designed to introduce the students into a field welder's environment. The students will become knowledgeable in the different weld applications presented in the field and the welding variables that can occur. In this course the students will learn to properly setup, and maintain portable welding power sources, suitcase wire feeders, cutting systems, and other field equipment. Students will be taught safety, and how to keep themselves safe in the field environment.

### **WELD 240 Metal Fabrication II**

Students will learn to layout and fabricate various ventilation components found in industrial settings. This course will give students instruction in laying out, cutting and fabricating elbows, square to round, cones, offsets and laterals. These components will be fabricated using shears, bending breaks, forming rolls, and hydraulic punches. In addition students will weld out and assemble ventilation components according to blueprint specifications.

### **WELD 250 CNC Burn Table Programming and Operation**

Introduction to computer numerically controlled (CNC) machines with an emphasis on programming, setup, and use of a plasma cutting burn table. The course will focus on the complete process of creating a specialty piece from the design stage to production. Students will use the Shop Data Systems HVAC Program and Auto/CAD to design and program the computer code necessary to cut the specialty parts on the CNC burn table. Students will also be required to show proficiency in the operation and setup when producing their specialty parts on the CNC burn table.

### **WELD 260 OSHA/MSHA Safety Training**

This course will introduce students to safety rules and regulations used in the Welding profession. This course will require students to learn the safety standards mandated by OSHA and MSHA that students will be required to adhere to when in the workplace. Learned safety regulations will be required to be followed and practiced throughout the student's time in the Welding program.

### **WELD 270 Advanced Shop Practices**

In this course students will focus on performing complex projects and repairs in a job shop atmosphere. Students will learn to manage every aspect of a project from introduction to completion. This will include customer relations, ordering parts, quality control, and time management. Emphasis will be placed on producing professional quality work while demonstrating the skills necessary to succeed in a shop environment.

**b) Describe the planned implementation of the proposed program, including estimates of numbers of students at each stage.**

The proposed degree would be offered starting with the Fall 2008 semester, and the estimated enrollment numbers at each stage are as follows:

Fall 2008		Fall 2009		Fall 2010	
1 <sup>st</sup> year students	2 <sup>nd</sup> year students	1 <sup>st</sup> year students	2 <sup>nd</sup> year students	1 <sup>st</sup> year students	2 <sup>nd</sup> year students
30 Students	10 Students	30 Students	20 Students	30 Students	20 Students

### **Resources:**

**a) Will additional faculty resources be required to implement this program? If yes, please describe the need and indicate the plan for meeting this need.**

In the first year of implementation, adjunct faculty or lab aides will be needed to cover the increase in courses and students. When the program reaches a level of 15 or more students, a full-time faculty member, or combination of adjunct faculty members, will be needed. The increase in FTE and tuition dollars will help offset the cost of this faculty increase.

**b) Are other additional resources required to ensure the success of the proposed program? If yes, please describe the need and indicate the plan for meeting this need.**

This program will require money for consumables in the different courses and an increase in floor space in the Welding Shop. The issue of floor space was addressed during the 2007 legislative session when UM-Helena was allocated \$3.5 million for expansion of its Airport Campus, which will include a Welding Shop addition. Planning for that expansion is already underway.

The money for course consumables has already been addressed by applying course fees to the courses that will be delivered in the Associate of Applied Science Welding curriculum. Most of these courses are already offered in UM-Helena's 30-credit Advanced Welding Certificate. Some money for course consumables will also be covered by using customer-based projects and general fund monies.

No additional equipment is needed for this program due to our Miller Welding agreement that provides the program with all the necessary welding equipment.

### **Assessment:**

#### **a) How will the success of the program be measured?**

The assessment and measurement of the success of the new program will be measured primarily upon student enrollment numbers, Student Satisfaction Surveys, Employer Surveys, and Graduate Surveys. We also expect to be able to show improvements in curriculum and curriculum development using the annual institutional assessment process.

### **Process Leading to Submission:**

#### **a) Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.**

The creation of this proposed program was begun two years ago under the direction of former instructor Joe Wenger and current instructor Tim Harris. The motivation behind the program resulted from their professional knowledge in the field, advice from Advisory Council members, student feedback, and employer feedback. Former and current instructors (Tim Harris and Sam Osborne) have continued to research the proposed program through conversations with various individuals as well as review of programs inside and outside the state. Letters of support from industry are included at the end of this document.

The proposed program has been approved internally by the Academic Standards and Curriculum Review Committee and the Faculty Senate, and is supported by the college's administration.



February 09, 2007

Mr. Tim Harris  
Helena College of Technology  
2300 Airport Road  
Helena, MT 59601

Dear Tim,

I would like to personally express my support for the expansion required to support a two-year degree curriculum for the Welding and Metal Fabrication program at the Helena College of Technology.

From a community and manufacturing industry point of view, I am confident that with the support and backing of the Montana state legislature, as well as the governor and other state officials, the graduates of your program will be better equipped to enter the manufacturing workforce as a semi-skilled, well paid technician who can immediately provide value to companies like Roscoe Steel and others around the region and state of Montana. The expansion of the current program will offer your graduates a toolbox of experience and credentials that will translate into well paying, productive, manufacturing careers in many areas of Montana industry. As I have indicated to you and your staff, there is a shortage of semi-skilled technicians available to the fabrication and manufacturing community.

We believe that an initiative to "up the bar" in terms of the educational and technical requirements associated with the technical degree (extensive blueprint reading, machine and equipment knowledge, rigorous training with various welding techniques and processes, and fabrication planning and layout) will benefit both the student and the manufacturing community.

We look forward to working with the College of Technology as you endeavor to respond to the needs of the manufacturing community through this initiative to produce a higher level of quality, experienced graduates.

Best regards,

Alan Sherbo

Alan Sherbo  
V.P. Operations  
Roscoe Steel & Culvert

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February 26, 2007

To: Members of the 2007 Montana Legislature

From: Buzz Moseman Human Resource Director; Allied Steel

Subject: Shop expansion at UM-Helena College of Technology.

This letter is to express our support for expansion of the various trade shops at the College of Technology. I have conducted recruiting sessions at the college for the past few years and intend to continue doing that.

I am impressed with the professional training that students are receiving presently at the college.

I have not been able to attract any of the students to come to Lewistown for employment although there were many that I would have hired.

As I am sure that you are aware, there is a growing shortage of skilled people in all of the trades. Especially welders, carpenters, equipment operators, mechanics and many other trades.

I currently recruit in a four-state area to attract skilled welders to our area.

There is so much demand and very little supply of applicants that we are constantly short of skilled welders. We have many potential young men and women locally that would like to learn the trade so that they could find suitable employment and stay in Montana. Many of them however, can not afford to go to a 4-year college but would attend a more limited and less expensive trade school.

Since there are so many facets of welding and other trades, the expansion of the shops would allow the instructors to be more focused on streamlining the training to fit the specific industry needs in Montana.

We have been trying for several years to increase our welding staff by 16 welders and have been unable to do so. This has slowed down our growth plans significantly. We are not alone when it comes to a shortage of welders and trades people in general. In a recent meeting here in Lewistown with local educators and business people it was unanimous that this is a serious and growing problem.

I would encourage the Legislature to seriously consider expanding programs like the one at UM-Helena College of Technology.

I sincerely believe that this would stimulate the growth of small business in the state and allow many of our young people to find a satisfying career here in Montana.

Please feel free to contact me if you would like any additional information.

Buzz Moseman



Human Resource Director

Allied Steel

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Dear Chairperson,

Felco Industries is a fabricator of excavator attachments located in Missoula, Montana for the past 25 years. Our industry is heavily tied to the rise and fall of the construction industry. As such, demand for our products the skilled workers to fabricate these products has been soaring.

Felco Industries has visited the UM-Helena College of Technology on two occasions and has been very impressed with the quality and passion of the instructors. As such, it is a highly desirable source of skilled welders and machinists for our company and we have approached them with job openings in the past. However, due to the high demand for their graduates, we have been unsuccessful in hiring anyone.

Our current need for qualified employees outstrips the ability of our local College of Technology to provide graduates and is actually currently limiting our ability to both increase sales and improve the speed and efficiency with which we fabricate our products. We are forced to rely heavily on personnel service agencies despite our preference for technical school graduates. Therefore, we strongly support any improvement to UM-Helena's Trades as we believe this will increase the pool of qualified welders in the western Montana region.

To summarize, Felco strongly supports the concept of funding improvements to UM-Helena and believes that these programs are vitally important to improving the economic prosperity of Montana. The extent to which manufacturing and other wealth-creating industries can be enticed to remain in or relocate to Montana directly correlates with the skilled labor available.

Thanks for your consideration of our opinion. Please feel free to contact me with any questions.

Regards,

Shawn Skinner  
General Manager  
Felco Industries



Decrease Your Costs

Increase Your Mobility®

January 10, 2007

Kevin Brockbank  
Trades Department Chair  
University of Montana-Helena College of Technology

To the Chairperson of The Appropriations Committee:

The name of our company is TowHaul Corporation. We are in the manufacturing industry and we are a very fast growing business. We manufacture lowboy trailers for hauling large mining equipment and we export approximately 80% of our product to 15 different countries. We were voted 2004 National and State Small Business Exporter of the year. In the past 2 years we have hired 11 employees and 7 of those employees were welders...which were very hard to find. We advertised through all the papers and local Job Service and also through the State Vo-tech's. We then contacted the State Universities and looked into their programs and spoke with the individual trade advisors and instructors. The University of Helena was most helpful in providing us with information on their Trades Program and how we could sponsor a student to "learn" our company with the intent of working here upon completing their courses. We have not been able to do this as of yet, but we have been fortunate to hire one of their students that completed their welding certifications and Ben is still with us as a valued welder in our factory.

As we had mentioned previously, we are a very fast growing business. Presently we have orders booked for our products into the year 2008. We have added 3 additional shops onsite to accommodate our orders and find we are in need of welders/fabricators to manufacture those products about every 1-2 months. We believe any improvements that are made to the UM- Helena's Trade programs would benefit our company as well as any employer in the manufacturing trade in our wonderful state.

We appreciate your time as well as your consideration for help and improvement in our most important education and training of our future workforce.

Sincerely,

Trudy Knodel  
Human Resource Manager

TowHaul Corporation  
340 Andrea Drive  
Belgrade, MT 59714

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## NORTHSIDE WELDING & FABRICATION INC.

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Helena, MT 59601

Telephone (406) 442-5150  
Fax (406) 442-4352

January 12, 2007

Kevin Brockbank  
2300 Airport Road  
Helena, MT 59601

Dear: Mr./Mrs. Chairperson of the Long Range Building Committee  
Mr./ Mrs. Chairperson of the Appropriations Committee  
Mr./ Mrs. Chairperson of the Senate Finance and Claims Committee

I am writing this letter in support of the welding shop at the UM - Helena College of Technology.

I am the owner of a local business here in Helena. We specialize in the welding and steel fabrication industry. This industry is continuing to grow at a pace that has become a challenge. Our concern with future growth is lack of labor force and potential entry level welders and fitters who lack a knowledge of the new technologies.

Northside Welding has worked with Helena College of Technology for the past 15 years. Joe Wenger and Tim Harris have brought their students over, minimum a couple times per year to visit and examine large projects we are working on. We also support the school with surplus tools and equipment.

The Helena College of Technology has always been a wonderful recruiter for our company. We utilize students during the school year so they can get hands on training and we frequently visit with the school instructors at the end of the year about entry level welding position we have available.

It is very important for the students to have up to date training, on equipment similar to what they would be utilizing in a plant such as ours. They also need to have a thorough knowledge of all aspects of welding, fitting and blue print reading.

I feel the College of Technology has an excellent program and quality instructors. I support the addition of facilities, courses and equipment that would give the student more tools for entry into the welding field.

Sincerely,



Lance Wenger  
Vice President  
Northside Welding Representative