MONTANA BOARD OF REGENTS

LEVEL II REQUEST FORM

Item No.: 136-301-R0707 **Date of Meeting: July 11-12, 2007**

Institution: Flathead Valley Community College

Program Title: Associate of Applied Science Degree in Electrical 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 where there is no 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:

Flathead Valley Community College (FVCC) seeks approval to award the Associate of Applied Science degree in Electrical Technology.

The proposed Associate of Applied Science Degree in Electrical Technology is designed to satisfy part of the training and instructional requirements of a traditional apprenticeship by providing face-to-face classroom and lab instruction in support of field experience. The proposed Electrical Technology AAS degree is aligned with the Montana State University – Northern (MSU-N) AAS in Electrical Technology that was developed with the assistance of the Department of Labor and Industry and an electrical technology advisory board made up of independent and union electricians from the state of Montana.

FVCC also formed a local advisory group consisting of representation from union and independent electrical contractors, the Department of Labor Apprenticeship Program, local electrical suppliers and educators. The local advisory group has assisted in certificate level curriculum implementation; reviewed facility design for the new educational facility; and participated in the selection of training devices and equipment to support performance training requirements.

It is expected that students who complete the AAS in Electrical Technology degree will satisfy approximately two years of the four-year apprenticeship period required of licensed journeymen electricians. Students graduating from this program will be eligible to enroll in the post-associate distance learning courses under development by MSU-N. This distant learning opportunity will support third and fourth year apprentice candidates in successfully completing apprentice program licensure requirements.

MONTANA BOARD OF REGENTS

NEW ACADEMIC PROGRAM PROPOSAL SUMMARY

Institution: Flathead Valley Community College (FVCC)

Program Title: Associate of Applied Science Degree in Electrical Technology

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

The proposed Associate of Applied Science degree in Electrical Technology expands upon the foundation of the existing Electrical Technology Certificate of Applied Science and provides students a more detailed background necessary for entry into the field of electrical wiring on residential, commercial and industrial construction sites. The Electrical Technology Certificate of Applied Science was designed to give students the fundamental skills necessary for successful entry level employment in the electrical industry. Program materials include study of electrical theory, applied math, code study, and residential wiring. A substantial amount of hands-on training is provided through lab experience in AutoCAD, test equipment, electric motors, magnetic motor starters, programmable controllers, electronic devices and residential wiring. The proposed AAS provides additional course offerings in planning and estimating, commercial wiring, advanced code study, and motor controls. Graduates of this option will be prepared to meet the challenges of today's modern equipment and wiring systems and be eligible for advanced placement into a registered apprentice position.

2. **Need:**
   a. **To what specific need is the institution responding in developing the proposed program?**

FVCC is responding to a local economic development need for skilled electrical technicians. This is supported by local student interest in meeting employment requirements and employer demand for qualified employees. In June 2004, The Flathead Valley chapter of the Montana Independent Electrical Contractors Association (MIECA) proposed the idea of establishing a college supported local electrical training program. FVCC faculty and staff met several times with MIECA representatives. In September 2004, a program advisory board was formed with representation from local union and independent electrical employers, electrical suppliers, and Department of Labor job service and apprenticeship departments. The advisory committee completed a feasibility study on the proposed electrical program and determined that establishing an electrical training curriculum would benefit employer needs, student interests and economic development activities within the Flathead Valley.

   b. **How will students and any other affected constituencies be served by the proposed program?**

The program will serve students by providing them a local opportunity to pursue a career in electrical technology. Students enrolled in the Certificate of Applied Science program will be afforded the opportunity to continue their education in pursuit of Montana licensure as an electrician. Certificate students currently receive 1557 hours of work experience and complete six academic courses required to fulfill a successful apprentice program (approximately 1 year of the 4 year requirement). This is provided through an articulation agreement with the Montana Department of Labor Apprenticeship Program. The expansion of the certificate to the AAS level will increase the opportunity to 3414 hours of work experience and eighteen academic courses (approximately 2 years of the 4 year requirement). When distance learning programs for third and fourth year students become available, local students will be able to complete licensure requirements while working and living in the Flathead Valley. The program will

serve local employers by providing them both trained employees and the opportunity to participate in a business/education partnership to ensure curriculum is aligned with employment demands.

c. What is the anticipated demand for the program? How was this determined?

The long term anticipated demand is best summarized by The United States Department of Labor prediction indicating a significant increase in the number of electrician jobs in future years. The Department estimates that the United States economy will need 37,000 new electricians every year until 2010. The U.S. Department of Labor's *Occupational Outlook Handbook* states "…the electrical industry will employ 25 to 36 percent more workers through 2010. Because of the increased sophistication of the systems these technicians work on and the equipment they use, the prospects will be considerably better for those with technical school or formal training. Electricians can expect to earn over $47,000 a year, while a seasoned technician, contractor, or engineer can earn up to $100,000 a year."

The Flathead Valley is experiencing acceleration in the growth of the construction industry. The FVCC Electrical Advisory Committee needs assessment indicated that the Flathead will experience a greater increase than the national average of 25 to 36 percent through 2010.

3. Institutional and System Fit:

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

Flathead Valley Community College, in response to local business requests and area economic development needs, began the development of educational programs focused on the Construction Trades Career Cluster in 2001. The College currently offers five pathway certificate level programs. These include Building Trades (Carpentry), Electrical Technology, Heating and Air Conditioning, Plumbing, and Heavy Equipment Operator. FVCC also offers an Associate of Applied Science program in Building Trades. This request represents the progression of the Electrical Technology Certificate of Applied Science program to an Associate of Applied Science level.

Construction of a $3 million facility to house the Career and Technical Education programs at FVCC was completed in January 2007. The procurement of training devices, materials and equipment necessary to expand curriculum offerings has provided FVCC the opportunity to develop this proposal.

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

Approval of this proposal will not require changes to existing programs. The Certificate of Applied Science in Electrical Technology will be expanded to include those classes necessary for achievement of an Associate of Applied Science Degree.

c. Describe what differentiates this program from other, closely related programs at the institution (if appropriate).

The Associate of Applied Science degree in Electrical Technology expands upon the certificate foundation and provides students the background necessary to enter the field of electrical wiring on residential, commercial and industrial construction sites. The AAS provides additional course offerings in planning and estimating, commercial wiring, advanced code study and motor controls. Graduates of this option will be prepared to meet the challenges of today's modern equipment and wiring systems and be eligible for advanced placement into a registered apprentice position.

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

Flathead Valley Community College promotes excellence in lifelong learning by offering two-year college programs, the first two years of a four-year college degree, occupational training, and opportunities that enhance the cultural, social, and economic well-being of our students and communities. The College's strategic goals are as follows:

- We will provide educational programs and courses that prepare our students for transfer to other post-secondary institutions, for the workforce, and for citizenship.
- We will increase lifelong learning opportunities for our students and our community.
- We will be responsive to the community's economic and workforce training needs.
- We will promote programs and activities that enhance the cultural and social well-being of our students and communities.
- FVCC will foster a positive learning and working environment and provide support service for student success.

The expansion of the Electrical Technology program to include an Associate of Applied Science Degree clearly reflects the College's strategic goals. This proposal expands student opportunities to prepare for workforce and transfer options and increases learning opportunities for our community.

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.

The proposed Electrical Technology AAS program is aligned with the Montana State University–Northern AAS in Electrical Technology. The MSU-N curriculum was developed with the assistance of the Department of Labor and an electrical advisory board made up of independent and union electricians throughout the state of Montana. This alignment is reflective of Flathead Valley Community College's commitment to the Board of Regents' efforts to ensure career development programs are compliant with national and industrial standards and fully aligned and articulated with similar curriculum offerings within Montana.

The need for duplication of this program within the Flathead Valley is determined by three factors. First, the electrical technology program is deeply embedded in the apprenticeship concept of linking academic coursework with workplace experience. FVCC Electrical Technology students are typically employed by local electrical contractors and work an average of 30 plus hours per week in the Flathead area. This work environment precludes students from relocating to distant locations to attend school. Second, the mission of a community college is to provide local educational opportunities for the community at large. Both employers and students have identified electrical technology as a viable program offering for the Flathead Valley. Finally, Electrical Technology is an integral part of the FVCC career and technical education focus. The College has committed to developing two primary Career Clusters; Manufacturing and Construction Trades to support economic development activities within the Flathead. An Electrical Technology program is essential to fulfilling that commitment.

FVCC participated in the Montana State University- Northern development efforts while concurrently pursuing resource availability and community support for local implementation. The intent was to ensure standardization of a curriculum within the state developed Electrical Technology program. We believe this curriculum philosophy will promote a single Electrical Technology program within Montana and will ensure consistency in course content, instructional methodology,

student performance standards, and evaluation criteria. Future proposed changes to the curriculum will be conducted with both local and state advisory boards, Montana State University-Northern program administration, and the Department of Labor Apprenticeship Training Program. Proposed changes will be implemented only after concurrence is reached by all parties. This policy will further ensure a single program offering is sustained throughout the Montana Education System. Students graduating from this program will be eligible for enrollment in the post-associate distance learning courses. This distance learning opportunity will support third and fourth year apprentice candidates in successfully completing apprentice program licensure requirements while living and working in the Flathead Valley.

FVCC has a signed articulation agreement with the Montana Department of Labor and Industry Apprenticeship Program for its Certificate of Applied Science in Electrical Technology. Upon approval from the Board of Regents, the College will establish articulation of the AAS Degree. (Attachment)

4. 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. NOTE: in the case of two-year degree programs and certificates of applied science, the curriculum should include enough detail to determine if the characteristics set out in Regents' Policy 301.12 have been met.

Program Description

The Electrical Technology Certificate of Applied Science is designed to give students the skills necessary for successful entry level employment in the electrical industry. Program materials include study of electrical theory, applied math, code study and residential wiring. A substantial amount of hands-on experience is provided. Lab experience will be provided for AutoCAD, test equipment, electric motors, magnetic motor starters, programmable controllers, electronic devices and residential wiring.

The Associate of Applied Science degree in Electrical Construction Technology expands upon the certificate foundation and provides students the background necessary to enter the field of electrical wiring on residential, commercial, and industrial construction sites. The AAS provides additional course offerings in planning and estimating, commercial wiring, advanced code study and motor controls. Graduates of this option will be prepared to meet the challenges of today's modern equipment and wiring systems and be eligible for advanced placement into a registered apprentice position.

Proposed Sequencing

Fall (Year 1)

ELEC 100*	Introduction to Electricity	3 credits
ELEC 101*	Electrical Fundamentals I	5 credits
CMPA 100T*	Introduction to Microcomputers	1 credit
BUS 121*	Math and Communications for the Trades	5 credits
ELEC 137*	Electrical Drafting	2 credits

Spring (Year 1)

▪	ELEC 102*	Electrical Fundamentals II	5 credits
▪	ELEC 103*	Electrical Code Study- Fundamentals	2 credits
▪	ELEC 111*	Electric Meters and Motors	3 credits
▪	ELEC 133*	Basic Wiring	3 credits
▪	HLTH 202*	Health and Behavioral Emergencies for the Trades	1 credit
⇒	IT 175	Introduction to AutoCAD	3 credits

Fall (Year 2)

⇒	ELEC 139	Electrical Code Study-Residential	3 credits
⇒	ELEC 201	Alternating Current Theory	5 credits
⇒	ELEC 204	Electrical Planning & Estimating	3 credits
⇒	ELEC 205	Electrical Design & Lighting	3 credits
⇒	ELEC 211	AC Measurements	3 credits

Spring (Year 2)

⇒	ELEC 233	Commercial Wiring Lab	3 credits
⇒	ELEC 236	Conduit, Raceways & Code Lab	3 credits
⇒	ELEC 239	Grounding/Bonding Fundamentals	3 credits
⇒	ELEC 241	Electric Motor Controls	3 credits
⇒	ELEC 247	Medium & High Voltage	3 credits
⇒	SP 120	Interpersonal Relations/Communications	3 credits

*Courses in the Certificate of Applied Science Degree

CERTIFICATE OF APPLIED SCIENCE TOTAL CREDITS 30 CREDITS

ASSOCIATE OF APPLIED SCIENCE DEGREE TOTAL CREDITS 68 CREDITS

4b. Describe the planned implementation of the proposed program, including estimates of numbers of students at each stage.

The program will begin upon Board of Regents approval. The anticipated initial program enrollment is 38 students. These projections were determined by analyzing current enrollment trends in the FVCC Certificate program and the transition of students from the Flathead Independent Electrical Contractors Association (IEC) approved apprenticeship course being taught in Kalispell. The IEC program currently has 56 active apprentice students enrolled. Projected enrollments include current FVCC students, integration of IEC students and new annual enrollments.

Projected Enrollment FY2008		Projected Enrollment FY2009		Projected Enrollment FY2010	
1st year students	2nd year students	1st year students	2nd year students	1st year students	2nd year students
21	17	21	19	21	19

5. 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.

Additional adjunct faculty will be needed for the second year Electrical Technology courses. Estimated annual salary and benefits will be $17,353. This cost will be included in the College's adjunct faculty budget. Increases in revenues from new enrollments will cover the increased cost in adjunct faculty.

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 the need.

No additional resources are required. FVCC constructed facilities to support the Electrical Technology program in the new Occupational Trades Building completed in January 2007. Training equipment was purchased through the 2005 legislative appropriation for two year educational equipment. In addition, local business partners have donated supplies and labor to upgrade instructional resources to accommodate the transition from the certificate of applied science to the associate of applied science level. Student lab fees will cover the cost of consumable supplies.

6. Assessment: How will the success of the program be measured?

The Electrical Technology program is supported by an active advisory board that consists of at least one member from each of the following entities: the Independent Contractors, the electrical union, electrical suppliers and the Montana Department of Labor. The board will meet at least twice a year to evaluate the success of the program and advise regarding program needs. Licensure pass rates, feedback from employers who assess student readiness to enter the apprenticeship programs, and preparedness of students transitioning to the MSU-N advanced correspondence program will also be used to determine the effectiveness of the program.

7. Process Leading to Submission: Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.

Development of this proposal was in compliance with the established FVCC program development process. The request to expand the certificate of applied science to an associate of applied science degree initiated at the division level in response to student inquiries and advisory board member requests. The AAS in Electrical Technology received Faculty Senate, Curriculum Committee and FVCC Board of Trustee approval before being submitted to the Board of Regents. In addition, the College has been an active participant in state-wide articulation efforts with the Montana Department of Labor and Industry Apprentice Program.

MEMORANDUM OF UNDERSTANDING
BETWEEN FLATHEAD VALLEY COMMUNITY COLLEGE
AND
THE MONTANA APPRENTICESHIP AND TRAINING PROGRAM

Concerning the transfer of applicable educational and on-the-job training credit obtained from completing the one year certificate program in Electrical Technology from Flathead Valley Community College (FVCC) to an inside wireman/residential wireman apprenticeship program registered by the Apprenticeship and Training Program, Montana Department of Labor and Industry, the following has been agreed on by the representing parties:

1. For full credit as stated in this agreement, the apprenticeship applicant must have successfully met all the requirements necessary for obtaining satisfactory completion for the certificate program in Electrical Technology at FVCC.
2. Nine (9) months, (1557 hours) of on-the-job experience which can be applied toward a registered inside wireman or residential wireman apprenticeship will be approved by the Apprenticeship and Training Program. As per Montana apprenticeship regulations, the Program has the authority to approve credit, but the employing sponsor is authorized to actually grant the credit.
3. The educational experience obtained by successful completion of the Certificate Program in Electrical Technology will satisfy the following course of study required in registered apprenticeship for inside wireman/residential wireman for those sponsor's utilizing the approved correspondence course of study from either Montana State University- Northern or North Dakota State College of Science:

    a) Safety and Health
    b) Practical Math
    c) Electric Principles and Practices
    d) Electric Systems
    e) Electric Wiring - Residential

4. Educational and On-the-Job Training credit for those who have successfully completed the Certificate Program in Electrical Technology entering either the Joint NECA/IBEW or an IEC sponsored apprenticeship program will be determined by an evaluation process approved by the perspective state-wide committees.

5. In understanding, the applicant for apprenticeship who has successfully completed the Certificate Program in Electrical Technology will be required to serve no less than **thirty nine (39) months, (6443 hours)** of registered apprenticeship working experience. Those applicants entering a registered apprenticeship sponsor's program where either the MSU-N or NDSCS correspondence course work is utilized will be required to complete the following course of study to successfully meet the educational experience required by registered apprenticeship: **a) Rigging – Principles and Practices b) Electric Wiring -Industrial c) Transformers d) National Electrical Code Blueprint Reading e) Journeyman Electrician's Workbook f) Electric Wiring-Commercial g) Industrial Electricity h) Electric Motor Control i) Electrical Estimating j) Math for Electricians**

6. In cooperation with FVCC, the Apprenticeship and Training Program will provide no less than annually, informational presentations on registered apprenticeship for inside wireman/residential wireman to all students enrolled in the Certificate Program for Electrical Technology at FVCC.

7. In cooperation with FVCC, the Apprenticeship and Training Program will provide, no less than annually, to the all registered sponsors (employers) of electrical related apprenticeships, a list of completing students from the FVCC certificate program. FVCC will extend assistance in this matter by providing the Apprenticeship and Training Program the necessary information as requested on a timely basis.

8. Certificate Program Electrical Technology graduates who enter into a registered inside wireman apprenticeship agreement will be required to serve a one year (2,000 hour) probationary period and those entering into a registered residential wireman apprenticeship agreement will be required to serve a six month (1,000 hour) probationary periods with the sponsoring party. The probationary period has been established by the industry and is required by Montana law governing apprenticeship registration.

9. In cooperation with FVCC, the Apprenticeship and Training Program will on an annual basis provide all active area electrical apprenticeship sponsors with notice of available live classroom instruction. The Apprenticeship and training Program will promote and encourage attendance by existing registered electrical apprentices.

This memorandum and all contents herein, has been agreed upon by the parties representing the FVCC Electrical Industry Advisory Committee, the Flathead Community College and the Montana Apprenticeship and Program. Although this memorandum is dynamic and is subject to change, it cannot be altered or revised without the signed consent of all parties. The memorandum is effective as of February 1, 2007.

MONTANA APPRENTICESHIP AND TRAINING PROGRAM

Mark S. Metz, State Dir.
(Signature and Title)

2/16/07
(Date)

FLATHEAD VALLEY COMMUNITY COLLEGE

President
(Signature and Title)

2/16/07
(Date)

FVCC ELECTRICAL INDUSTRY ADVISORY COMMITTEE

Richard Funk Risk Elec.
(Signature and Title)

2/12/07
(Date)