PROGRAM DESCRIPTION

1.   **Briefly describe the proposed new program. Please indicate if it is an expansion of an existing program; a new program; a cooperative effort with another institution, business, or industry; an on-campus or off-campus program. Attach any formal agreements established for cooperative efforts.**

This proposed program is a cooperative effort between the North and South campuses of Montana Tech. In developing this program, Montana Tech seeks to combine key elements of two successful programs in an effort to fill needs in areas of expanding demand. The convergence of communication technologies means that network professionals must manage the development and distribution of a wide range of media -- from voice and data, to graphics, animation, and video. This program couples an existing two-year curriculum in Network Technology with expertise in multimedia development and advanced networking. Furthermore, this program taps a growing trend by allowing students to articulate credits earned at the high school level. Students are thus provided with a multi-entry, multi-exit program tailored to meet a variety of student needs.

Students entering the program with Cisco Networking Academy coursework may articulate those credits, as well as other courses covered by articulation agreements, directly into the program. Students may opt to continue with their studies or they may exit the program with an AAS Degree in Network Technology. Those students continuing in the program can expect to graduate with a B.S. degree and skills in the area of multimedia design and development, and advanced networking. As current articulation agreements develop, the proposed degree would allow for the implementation of a true 2+2+2 model of articulation.

2.   **Summarize a needs assessment conducted to justify the proposal. Please include how the assessment plan was developed or executed and the data derived from this effort.**

An Information Technology Association of America report released in April 2000 states that employers will create a demand in this country for roughly 1.6 million information technology workers this year. With demand for appropriately skilled people far exceeding supply, half of these positions (843,328) will likely go unfilled. In a total U.S. information technology workforce of 10 million, that shortfall means one job in every dozen will be vacant.

According to a November 1999 report, the Bureau of Labor Statistics released the following information: The five fastest growing occupations, for the years including 1998-2008, are all information technology positions. Of these five occupations, computer network support and desktop publishing and communication occupy two of the positions. According to the same recent study, the fastest wage and salary employment growth is in computer and data processing services.

3.   **Explain how the program relates to the Role and Scope of the institution as established by the Board of Regents.**

Growing out of a strong industrial base, Montana Tech prides itself on blending high quality formal instruction with hands-on learning. Central to Tech's mission is its ability to ground general education principles while preparing students to pursue their chosen professions. Also key to Tech's success is its ability to constantly evolve its programs to meet the needs of students and society. The proposed Bachelor of Science Degree in Information Technology and Design continues this tradition. This program supplements a strong applied program in networking technologies with foundational general education courses and directed studies in multimedia design and production, and advanced networking.

4. **Please state what effect the proposed program will have on the administrative structure of the institution, if any. Also, indicate the potential involvement of other departments, divisions, schools, or colleges.**

The Information Technology and Design degree will have no direct effect on the administrative structure of the institution other than to facilitate tighter integration of the North and South campuses. The Bachelor of Science Degree will be administered through the College of Humanities, Social Sciences and Information Technology, while the College of Technology's Business Technology Department will retain administrative control over the AAS—Network Technology degree program. Development of these integrated programs will occur through collaboration between the two responsible departments. The College of Technology's Business Technology Department and the North campus departments of Business and Computer Science will provide additional support.

5. **Describe the extent to which similar programs are offered in Montana, the Pacific Northwest, and states bordering Montana. How similar are these programs to the one herein proposed?**

No other program of this nature is currently available in Montana or in neighboring states. While elements of this degree are certainly available regionally, Montana Tech is unique in its desire to integrate multimedia design and development with a practical networking program. The most closely related program is the Bachelor of Science Degree in Telecommunications, Multimedia, and Applied Computing offered by California State University in Monterey Bay.

6. **Please name any accrediting agency(ies) or learned society(ies) that would be concerned with the particular program herein proposed. How has this program been developed in accordance with the criteria developed by said accrediting body (ies) or learned society(ies)?**

At the present time, no specialized accrediting agency will be concerned with the proposed program. However, the delivery of the Cisco Networking Academy component of the curriculum must be done through Cisco certified instructors.

7. **Prepare an outline of the proposed curriculum showing course titles and credits. Please include any plans for expansion of the program during its first three years.**

BS—IT&D Degree

Freshman

Fall			Spring		
Engl1046	English Comp	3	PTC1146	Publication Design	2
IT0140	Computer Concepts	3	IT0110	Intro to Operating Systems	4
IT1416	MicroComputer Software	3	IT0115	Network Design & Tools	3
Math1056	Algebra	3	IT0126	Networking Fundamentals	4
Psyc1000	General Psychology	3	IT0156	Internet	2
			PTC2146	Presenting Technical Info.	2
	Total	**15**		**Total**	**17**

Sophomore

Fall			Spring		
IT0130	Intro to NT Server	4	IT0210	Intro to Novell Netware	4
IT0135	Comp. Maint.& Repair	3	MathXXX	Mathematics Elective	3
IT0176	Intro to Routers	4	IT0226	Routing and Switching	4
PTC2506	WebPage Design	2	IT0276	WAN Technologies	4
IT0247	Intro. to Programming	3			
	Total	**16**		**Total**	**15**

Junior

Fall			Spring		

IT3016	Advanced Routing	3	IT3026	Remote Access Networks	3
PTC2886	Digital Imaging	3	Jour3156	Audio/Video Presentation	3
3XXX	Physical or Life Science	3	C.S.2106	Intro to Computer Science	3
TBDXXX	Business Elective	3	3XXX	Open Elective	3
3XXX	Humanities Elective	3	PTC4916	Internship	3
	Total	**15**		**Total**	**15**

Senior

	Fall			**Spring**	
PTC3306	New Media Design I	3	PTC4306	New Media Design II	3
HSS3376	Professional Ethics	3	3XXX	Physical or Life Science	3
3XXX	Humanities Elective	3	C.S.XXX	Computer Science Elective	3
Jour4136	Instructional Media	3	IT4026	Network Troubleshooting	3
IT4016	Multi-Layer Switching	3			
	Total	**15**		**Total**	**12**
				TOTAL	**120**

Course Descriptions

Note: Only four new courses are required in this program, when it is fully implemented.

IT3016 Advanced Routing Configuration   3 credits
This course introduces IP traffic management techniques as well as single and multiple area OSPF configurations. Configuration of BGP and Enhanced IGRP are demonstrated. Extended IP addressing is introduced.

IT3026 Remote Access Networks   3 credits
This course concentrates on remote connectivity options. Assembling and optimizing WAN components, traffic flow and traffic shaping are topics demonstrated. A more in-depth examination of PPP and ISDN configurations is presented.

IT4016 Multi-Layer Switching   3 credits
This course is a more detailed look at Virtual LANs and the architecture of the Catalyst switch. Configuration and troubleshooting topics are introduced.

IT4026 Network Troubleshooting   3 credits
This course concentrates on resources for troubleshooting support. Troubleshooting routers and switches, frame relay and ISDN connections are major topics.

FISCAL IMPACT AND BUDGET INFORMATION

	FY 2002 First Year FTE	Headcount	FY 2003 Second Year FTE	Headcount	FY 2004 Third Year FTE	Headcount
I. PLANNED STUDENT ENROLLMENT						
A. New Enrollment	30	35	30	35	30	35
B. Shifting & Continuing Enrollment	35	40	45	45	55	60
GRAND TOTAL PLANNED STUDENT ENROLLMENT	65	75	75	85	85	95

	First Year FTE	Cost	Second Year FTE	Cost	Third Year FTE	Cost
II. EXPENDITURES						
A. Personnel Cost						
1. Faculty			1	40000	1	40000
2. Administrators						
3. Adjunct Faculty						
4. Graduate/Instruct Asst.						
5. Research Personnel						
6. Support Personnel						
7. Fringe Benefits				8000		8000
8. Other(_____)						
Total Personnel FTE And Cost	0	0	1	48000	1	48000
B. Operating Expenditures						
1. Travel				1000		1000
2. Professional Services						
3. Other Services						
4. Communications						
5. Utilities						
6. Materials and Supplies				500		500
7. Rentals						
8. Repairs & Maintenance						
9. Materials & Goods for Manufacturing & Resale						
10. Miscellaneous						
Total Operating Expenditure	0	0	1	49500	1	49500
C. Capital Outlay						
1. Library Resources		1500		500		500
2. Equipment		10000		10000		10000
Total Capital Outlay		11500		10500		10500
D. Physical Facilities Construction or Major Renovation						
E. Indirect Costs (overhead)						
GRAND TOTAL EXPENDITURES		11500		60000		60000

	FY 2002 First Year FTE	Cost	FY 2003 Second Year FTE	Cost	FY 2004 Third Year FTE	Cost
III. REVENUES						
A. Source of Funds						
1. Appropriated Funds-Reallocation		11500		60000		60000
2. Appropriated Funds-New						
3. Federal Funds						
4. Other Grants						
5. Fees						
6. Other(_____)						
TOTAL SOURCE OF FUNDS						
B. Nature of funds						
1. Recurring		11500		60000		60000
2. Non-Recurring						
GRAND TOTAL REVENUES		11500		60000		60000

FACULTY AND STAFF REQUIREMENTS

1. **Please indicate, by name and rank, current faculty who will be involved with the program proposed herein**.

    Dr. Paul van der Veur, Assoc. Prof.; PTC Department Head
    Dr. David Carter, Professor
    Dr. Joanne Cortese, Professor
    Dr. Bill Macgregor, Professor
    Dr. Patrick Munday, Professor

    Linda Granger, Instructor; Business Technology Department Head
    Judy Brogan, Instructor
    Ann Marie Field, Instructor
    Alice McDonough, Instructor
    Ed Metesh, Instructor

2. **Please project the need for new faculty over the first five-year program. Include special qualifications or training. If present faculty are to conduct the new program, please explain how they will be relieved from present duties.**
    An additional faculty member will be required in the Fall of 2003. This person will be required to have expertise in computer networking at an advanced level and to be Cisco certified.

    Since the proposed curriculum is tightly integrated with existing programming, no changes are expected in teaching loads and in duties for current faculty under the proposed implementation plan.

3. **Please explain the need and cost for support personnel or other required personnel expenditures.**

    If projected growth takes place, three graduate teaching associates will be needed within the PTC Department to assist with instruction and supervision of labs.

CAPITAL OUTLAY, OPERATING EXPENDITURES, AND PHYSICAL FACILITIES

1. **Please summarize operating expenditure needs.**

    Operating expenses are expected to increase $1500/year due to the addition of one faculty.

2. **Please evaluate library resources. Are they adequate for the operation of the proposed program? If not, how will the library need to be strengthened during the next three years?**

    Materials related to information technology and multimedia development are currently available in the Montana Tech Library. Supplemental funding to strengthen the collection is needed and has been budgeted.

3. **Please indicate special clinical, laboratory, and/or computer equipment that will be needed. List those pieces of equipment or computer hardware presently available in the department.**

    Program implementation requires the upgrade of a small existing computer lab for use in the IT component of this proposal. The cost of the upgrades has been factored into the proposed budget.

4.   **Please describe facilities and space required for the proposed program. Are current facilities adequate for the program? If not, how does the institution propose to provide new facilities?**

Current facilities with minor modifications are adequate for the program.

EVALUATION OF PROPOSED PROGRAM

1.   **Please name faculty committees or councils that have reviewed and approved the program herein proposed**.

This proposal was developed in committee comprised of representatives from the College of Technology, the College of Humanities, Social Sciences and Information Technology, and the College of Mathematics and Sciences. The Director of Educational Outreach was also actively involved.

The proposal was approved by the Montana Tech Curriculum Review Committee on April 28, 2000, and by the full faculty of Montana Tech on May 3, 2000.

2.   **If outside consultants have been employed, please list the names of these consultants, their current positions and titles. Append copies of their written reports.**

No outside consultants have been employed.