

## **PURPOSE AND RATIONALE**

The proposed Dental Hygiene program prepares persons for employment as dental hygienists through a 70-credit program delivered over four semesters and an interim summer session. Admission to this program is contingent upon satisfactory completion of at least 19 semester credit hours of science and general education prerequisites and screening through an application process at the College of Technology. Students who successfully complete the program will be awarded an Associate of Applied Science degree and will be encouraged to take the examinations necessary for licensed practice.

### **Need**

Of the 250 colleges offering programs preparing dental hygienists in the United States, not one is located in Montana. The accredited, baccalaureate-degree dental hygiene program at Carroll College closed over a decade ago. Since then, Montana has been the only state in the nation without a dental hygiene program.

During the same time period, the availability of dental care has decreased and its cost has increased. In his report, "The State of Oral Health in Montana (January 26, 2001), Dr. Michael Spence of Montana's Department of Public Health and Human Services noted that twenty counties in Montana – over one-third of all the state's counties – are without a dental hygienist. The patient-to-hygienist ratios in Montana throughout the 1990s and continuing into the present exceed 1:2500. According to the Montana Dental Association, the scarcity of dental hygienists has increased the costs of dental care and decreased the availability of specialized care as dentists have assumed the tasks normally undertaken by hygienists. The scarcity of hygienists has also served as a disincentive to dentists considering practice in Montana, at a time when new dentists are urgently needed to respond to the imminent retirements of nearly 30% of Montana's dentists who are over the age of 55. The net result of these phenomena is that dental healthcare has become, in Dr. Spence's words, "the #1 medical problem in Montana." This proposal to establish an AAS-degree program preparing dental hygienists for employment is, first and foremost, a response to these critical needs. It is supported by the Montana Dental Association and the Montana Dental Hygienists Association.

Of additional importance is the need to provide Montana graduates with well-compensated employment in high-demand fields. According to Montana's Department of Commerce, in 1998 the median wage for a dental hygienist in Montana was \$25.06/hour, or \$52,100/year, well above the national average of \$22.06/hour, or \$45,900/year. The occupation of dental hygienist ranks thirteenth on the list of the highest-paid occupations in Montana. With more than 125 practicing dentists in Montana reporting that they are actively seeking to employ dental hygienists, the state's demand for this professional is clear. Nationally, it is projected to be one of the thirty fastest-growing occupations in the decade to come.

Apart from these needs, the reciprocal benefits of a high-demand, high-skill two-year degree to the Montana University System, which has long designated the enhancement of two-year education in Montana as one of its goals, are also considerable.

### **Program Description**

Montana State University—Great Falls College of Technology has a mission of preparing students for employment in high-skill, high-demand fields. Clearly, providing an Associate of Applied Science Degree in Dental Hygiene is central to that mission. For four reasons, the proposed Dental Hygiene program is a particularly appropriate offering for the College:

1. The College has the most extensive and diverse array of allied health programs in the state's two-year education system. The proposed program not only sharpens this distinctive niche, but also takes advantage of the College's experience and resources with respect to accreditation, curriculum development, academic support, liability, and clinical arrangements associated with allied health programs.
2. The College's certificate program in Dental Assisting, offered at the College since 1970, allows the College and the Montana University System to streamline the resources required to support both programs.
3. The rigorous requirements for college-level coursework, particularly in the biological sciences, that characterize the prerequisites for and the curriculum of dental hygiene programs align well with the College's rigorous expectations for AAS-degree programs in allied health. These requirements at the College are so well-established that no new general education course work will be required to implement the degree.

4. The population base of Great Falls, along with its varied medical and dental facilities, provides the necessary clients and resources for the program.

## **Intellectual Basis for Curriculum**

The proposed curriculum in Dental Hygiene reflects the accreditation standards established by the American Dental Association. Specifically, the curriculum content is designed to develop the competencies required for practice as a dental hygienist through:

- general education – oral communication, written communication\*, sociology, psychology, mathematics\*;
- biomedical science—anatomy and physiology\*, chemistry\*, biochemistry, microbiology, immunology, general pathology, nutrition, and pharmacology;
- dental sciences – tooth morphology; head, neck, and oral anatomy; oral embryology and histology; oral pathology; radiography, periodontology, pain management; dental materials; and
- dental hygiene science—oral health education and preventive counseling; health promotion; patient management; clinical dental hygiene; provision of services for and management of patients with special needs, including those with blood-borne infectious diseases; community oral health; medical and dental emergencies, including basic life support; legal and ethical issues of practice, infection and hazard control management.

\* This content is included in the prerequisites for the proposed program in Great Falls.

Instruction combines didactic, laboratory, and clinical experiences designed to develop students' psychomotor, cognitive, affective, and ethical skills, knowledge, and awareness through recursive interplay of theory, application, and practice.

## **Course of Study**

The proposed AAS-degree program in Dental Hygiene is a 70-credit course of study delivered in four semesters and an interim summer session. The proposed course work and sequence of study is provided as Appendix A, with new course descriptions provided separately in Appendix B. The College has reviewed curricula in the region to ensure that the College's course work and curriculum design reflect those of accredited two-year programs in similar institutions. A table delineating the course requirements and sequence for dental hygiene programs in five other regional two-year colleges, as well as a college with a dental assisting feeder program, is provided as Appendix C.

In order to ensure that students accepted into the program have the competencies required to succeed in it, the College's proposed course of study also includes 19 credits of prerequisite course work, or the demonstration of equivalent competencies, prior to admission into the program. (See Appendix A.) The proposed prerequisite competencies emphasize the background in biomedical sciences that provides the foundation for the dental and dental hygiene sciences in the program of study, as well as college-level proficiencies in mathematics and composition. A comparison of the College's proposed prerequisite requirements with those of other regional dental hygiene programs is provided as Appendix D.

## **ASSURANCES OF QUALITY**

The College has prepared this proposal with the intent of establishing an educational opportunity known for its quality, as measured by such indicators as licensure and placement of its graduates and full accreditation by regional and national associations. As with all its offerings, the College has also developed this program proposal to comport with its own institutional assessment and program review standards.

## **Adequacy of Resources**

Great Falls has the community resources identified by the American Dental Association as necessary to support a dental hygiene program: an adequate pool of professional resources; a diverse, ongoing patient population;

and an active Dental Hygiene Program Advisory Committee to serve as a liaison between the proposed program and professional dental communities.

The College will provide the additional resources necessary to comply with accreditation standards, Board of Regents policies, and its own core values and institutional assessment criteria. Specific resources required for start-up of the proposed program, as well as their costs, are provided in Appendix E. Specific resources required for the ongoing operation of the proposed program, including fiscal resources, are attached as Appendix F. Appendix F also documents the adequacy of the College's resource planning through a comparison of its proposed resources and their estimated costs with a model for resource planning provided by the American Dental Association.

The provision of resources during the start-up phase of the program has been made possible through a Congressional allocation of \$625,000 for the establishment of a Dental Hygiene program in Great Falls. As of April 13, 2001, both houses of the legislature had approved a state appropriation for a portion of the ongoing operation of the proposed program. An additional appropriation of \$60,000 per year will be requested in the 2004-05 biennium for an average annual general fund contribution of \$179,000 plus marginal state increments of \$1900 per FTE student and student tuition and fees. If the state is unable to meet the 2004-05 request, the college will need to institute methods to raise additional revenues, such as a super-tuition. In the future the program's impact on the College's resources will be evaluated, and if the findings are negative, the program may be discontinued.

## **Accreditation**

The proposed AAS-degree program in Dental Hygiene is designed to meet the accreditation standards of the Commission on Colleges of the Northwest Association of Schools and Colleges. In addition, the proposed program is designed to meet the accreditation requirements for Dental Hygiene established by the Committee on Accreditation of the American Dental Association. Because the Montana Board of Regents of Higher Education is aware of the requirements of the Commission on Colleges, this section of the proposal focuses solely on the requirements of the national professional accrediting organization.

Pending program approval by the Montana Board of Regents of Higher Education at its July 2001 meeting, the College's planned timetable for ADA accreditation is:

- October 2001:** Submission of self-study for accreditation-eligibility
- April 2002:** On-site visit of accreditation eligibility team
- July 2002:** Designation of accreditation eligibility by the Committee on Accreditation of the American Dental Association
- Winter 2004:** Submission of self-study for preliminary accreditation
- Spring 2004:** On-site visit of accreditation team
- July 2004:** Confirmation of accreditation

The College has planned its recruitment and admissions timelines to ensure that no students are admitted to the program prior to the establishment of accreditation eligibility. Costs of completing and submitting the accreditation self-study are borne by the College, as reflected in the salary of the Dental Hygiene Program Director and the program costs for clerical and technical support during the start-up period. Costs for accreditation visits are part of the projected full-implementation budget attached as Appendix F.

## **Program Assessment**

The proposed AAS-degree program in Dental Hygiene will undergo both internal and external evaluation. Like all the College's programs, the proposed program will be the subject of institutional assessment and program review. These processes are designed to provide formative and summative indicators of the quality of curriculum and instruction, responsiveness to industry demands, student-centered instruction and services, the adequacy of program support, student/alumni satisfaction, and employer satisfaction.

The proposed program will also undergo external review in three separate processes conducted respectively by the American Dental Association, the Commission on Colleges of Northwest Association of Schools and

Colleges, and Montana's Office of the Commissioner of Higher Education. Each of these processes involves, in varying degrees, documentation of the College's establishment of standards and assessment of achievement with regard to students' entry-level preparedness, intermediate assessment of student performance, end-of-instruction assessment, student/alumni satisfaction, employer satisfaction, and program review. The College has established measures in each of these areas for its existing AAS-degree programs and has an extensive record of successful external review and accreditation.

## **PROGRAM IMPACTS**

### **Resources**

Of the 70 credits required in the proposed program, 29 credits of course work are already provided through the College's established general education and dental assisting offerings. The human resources required to accommodate 24 additional students (or 12 additional students per year for two years), the anticipated increase in enrollment generated by the Dental Hygiene program, may require supplemental staffing in the dental assisting courses, and that staffing has been included in staffing projections for the Dental Hygiene program. The impact of 12 students each year in the general education course work required for the program will be minimal.

The director of an accredited dental hygiene program must be either a Montana-licensed dentist or a Montana-licensed dental hygienist with the minimum of a baccalaureate degree. Faculty must also hold, as a minimum, baccalaureate degrees and must teach in their fields of expertise. A dentist licensed to practice in the state of Montana must supervise clinical course work. The College's experience with recruiting and retaining dentists and qualified faculty for the dental assisting program documents that individuals meeting these qualifications are available at the salaries projected for the program.

The physical resources required for the establishment and operation of an accredited program in Dental Hygiene are extensive. Using the planning guide provided by the American Dental Association, the College has identified the space and capital improvements, the equipment, and the academic support resources, including library allocations, necessary to provide a high-quality, accredited program.

At this time, preliminary program reviews for adequacy and quality by the College's Allied Health Department Chair, the Academic Council, and the Dental Hygiene Program Advisory Committee have been completed. College personnel have also conducted site visits to three other dental hygiene programs in the region and discussed program development issues with other dental hygiene program directors to confirm program quality and resource adequacy.

### **Impacts on Enrollment**

Accreditation standards for dental hygiene programs include guidelines for enrollment based on faculty:student ratios (1:6 in clinical/lab settings and 1:15 in didactic courses) and operator: student ratios (1:2). The College plans to admit 12 students each year into the program, thereby providing a 1:4 student: faculty ratio in clinical settings, a 1:12 ratio in didactic courses, and a 1:1 student: operator ratio. The College may admit as many as 15 students and stay well within the accreditation standards and its own staffing projections.

Projections for employment in the Dental Hygiene profession are excellent. In Montana alone, according to a survey conducted by the Montana Dental Association, over 125 dentists are actively searching for qualified dental hygienists at the present time. Demand for the program is also high. Between December 2000, when the Congressional allocation of funding to establish a dental hygiene program in Great Falls was announced, and February 2001, the College received approximately 150 inquiries from individuals interested in enrolling in the program. Because the demand for the proposed program is so high, the College will use a selective process for admission. Selection criteria and procedures will be adopted by July 2001, pursuant to a study and recommendations by the College's Dental Hygiene Program Advisory Committee.

The Dental Hygiene program is expensive to establish and operate. Although funding for start-up costs has been provided through a Congressional allocation, the College must retain as many students who are admitted to the program as possible to ensure the best use of operational resources. To that end, the College has established pre-requisite requirements designed to identify those students most likely to succeed in the dental hygiene program, as well as to provide the background in biomedical sciences supporting student success in dental hygiene.

## Relationship to Other Programs on Campus

As noted in the Program Description section (p. 2), the proposed Dental Hygiene program aligns extremely well with the College's other programs, and the strength of this alignment will provide economies in resource allocation while it supports and extends the College's emphasis on high-quality, high-skill educational experiences.

Organizationally, the Dental Hygiene program will be included in the Allied Health Department, which offers eight AAS-degree programs and two certificate programs. Many of these programs assume challenges similar to those associated with Dental Hygiene, including meeting national accreditation requirements, providing high-quality clinical experiences, and addressing safety and liability issues in the healthcare setting.

The Dental Hygiene Program will partner with the College's established Dental Assisting program to maximize the effective use of faculty, staff, equipment, supplies, and library resources. Nearly half of the required course work for the AAS degree in Dental Hygiene, and all of the prerequisite course work, is already provided at the College through the Dental Assisting program and the General Education Department. The high expectations for course content and student proficiencies central to accredited Dental Hygiene programs will reinforce the College's own high expectations for general education, both in its AAS-degree requirements, and in its transfer core and A.S. degree programs.

## Relationship to Other Institutions

Montana has no educational program preparing individuals for careers as dental hygienists; therefore, no duplication-of-effort issue exists. Although this program entails a more expensive venue for providing Montanans with access to this highly desirable program offering, the residual benefits are also substantial. The benefits to Montanans seeking high-skill, well-compensated careers, as well as the benefits to dental health care, have been summarized elsewhere. The benefits to the Montana education system, however, should also be noted.

For over a decade, the Montana University System has responded to the recommendations of blue-ribbon committees and regional studies in a series of efforts to improve the image of two-year education as a viable option for Montanans. The establishment of a selective, rigorous, high-quality two-year program leading to high-demand and well-compensated careers in Montana represents a highly visible advance in the image -- and the reality -- of two-year education in Montana.

The program will also draw on its established relationships in higher education to improve student access to and upward mobility in higher education opportunities. The prerequisite course work has been designed to accommodate fulfillment of these requirements at other two-year and four-year campuses in Montana, through distributed learning, and in some cases, through advanced placement course work and examination. Some of the anticipated transfer equivalencies through these avenues are identified in Appendix I.

Finally, the College also plans to provide interested students with the potential to apply their AAS degree to the completion of a baccalaureate degree through articulations with the Bachelor of Applied Science degree at MSU-Northern, as well as through articulations with other interested campuses. Montana's only other dental assisting program (besides the College's own certificate program in Dental Assisting) is offered at Salish-Kootenai College, and that College is interested in the potential for articulation with this program.

All higher education institutions in Montana have been notified of this program proposal, and no objections from these institutions have been received. On the contrary, several colleges have expressed support for the proposal.

## PROCESS LEADING TO SUBMISSION OF PROPOSAL

The process leading to this proposal has spanned a decade. Since the closure of the dental hygiene program at Carroll College in Helena, dentists and dental hygienists in Montana have turned to other Montana colleges to provide the program. In response to requests from the field, Montana State University--Great Falls College of Technology developed a proposal for an AAS degree program in Dental Hygiene, which was approved by the Montana Board of Regents of Higher Education in 1992. Over the course of several legislative sessions, as well as a variety of grant proposals, the College was unable to secure the funding necessary to establish and

implement the program. In accordance with Board of Regents policy, the period for inclusion of the program in the College's offerings eventually elapsed without implementation.

In the last ten years, need for the program has become more pronounced and the resources for start-up and operations more extensive and expensive. At the same time, prerequisite course work, as well as required general education course work, has become more widely available at a variety of sites throughout Montana., suggesting that students today could complete much of the program from other sites. (See Appendix H.) With the Congressional allocation of \$625,000 for start-up costs in December 2000, the establishment of a Dental Hygiene program in Montana has perhaps never been so viable an option.

To keep that option viable, MSU--Great Falls College of Technology has developed this proposal through a collaborative effort of key faculty in the Allied Health Department, in consultation with individuals at the accreditation office of the American Dental Association and program directors in North Dakota and Idaho. This proposal has been reviewed by the Allied Health Department Chair; the College's Academic Council, comprised of elected and official representatives of each academic program, and the Dental Hygiene Program Advisory Committee, which consists of dentists, dental hygienists, community members, and educators.

Ten years ago, the need for a dental hygiene program in Montana prompted MSU—Great Falls College of Technology to respond. Today, MSU—Great Falls College of Technology's willingness— indeed, enthusiasm—to address that need remains as strong as it was a decade ago because the College recognizes the importance of that response. It is important primarily because of the demand for dental hygienists in a state suffering the multiple consequences of underserved dental health needs. However, it is also important because of the twin needs in Montana for providing well-compensated work in high-skill careers and for tapping the potential of two-year education. Approval of this program addresses an urgent healthcare need, a serious economic need, and a long-standing educational need.

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### **Appendix A: Proposed Program of Study for AAS-Degree in Dental Hygiene**

#### **Fall Semester (first year in DH program)**

<b>Course</b>	<b>No.</b>	<b>Title</b>	<b>Credits</b>
BIO	180	Microbiology *	4
CHEM	152	Essentials of Organic and Biochemistry *	3
CHEM	153	Essentials of Organic and Biochemistry Lab *	1
DH	101	Introduction to Dental Hygiene/Preclinic	2
DA/DH	110	Head and Neck and Oral Anatomy *	3
DA/DH	120	Oral Radiology I *	2
<b>Total</b>			<b>15</b>

#### **Spring Semester (first year in DH program)**

<b>Course</b>	<b>No.</b>	<b>Title</b>	<b>Credits</b>
AH/DH	140	Pharmacology/Dental Medicine *	2
DH	150	Clinical Dental Hygiene Theory I	2
DH	151	Clinical Dental Hygiene Practice I	3
DH	160	Periodontology I	2
DH	165	Oral Embryology and Histology	2
DA/DH	222	Oral Radiology II *	2
DH	240	Local Anesthesia/Nitrous Oxide Theory & Lab	2
<b>Total</b>			<b>15</b>

#### **Summer Semester (midway through DH program)**

<b>Course</b>	<b>No.</b>	<b>Title</b>	<b>Credits</b>
COMM	130	Public Speaking *	3
DH	201	Periodontology II	2
DH	210	Clinical Dental Hygiene Theory II	2
DH	211	Clinical Dental Hygiene Practice II	3
<b>Total</b>			<b>10</b>

### Fall Semester (second year in DH program)

Course	No.	Title	Credits
AH/DH	246	Nutrition *	3
DA/DH	130	Dental Materials *	2
DH	241	Gerontology and Special Needs Patients	2
DH	215	General/Oral Pathology	3
DH	250	Clinical Dental Hygiene Theory III	1
DH	251	Clinical Dental Hygiene Practice III	4
<b>Total</b>			<b>15</b>

### Spring Semester (second year in DH program)

Course	No.	Title	Credits
SOC	111	Introduction to Sociology *	3
PSY	109	Lifespan Development or General Psychology *	3
DH	230	Community Dental Health and Education	2
DH	235	Professional Issues & Ethics in Dental Practice	2
DH	280	Clinical Dental Hygiene Theory IV	1
DH	281	Clinical Dental Hygiene Practice IV	4
<b>Total</b>			<b>15</b>

**Total Degree Credits: 70**

\* Currently offered at MSU—Great Falls College of Technology

### Prerequisites

In order to ensure that students accepted into the program have the competencies required to succeed in it, the College's proposal also requires 19 credits of prerequisite course work, or the demonstration of equivalent competencies, prior to admission into the dental hygiene program. The proposed prerequisite courses, all of which are part of the College's current General Education Transfer Core, are:

Course	No.	Title	Credits
BIO	209	Anatomy and Physiology I*	3
BIO	210	Anatomy and Physiology I Lab *	1
BIO	211	Anatomy and Physiology II *	3
BIO	212	Anatomy and Physiology II Lab *	1
CHEM	150	Principles of Inorganic Chemistry *	4
CHEM	151	Principles of Inorganic Chemistry Lab *	1
ENGL	121	Composition I *	3
MATH	161	Math for Health Science or College Algebra *	4
<b>Total</b>			<b>19</b>

• Currently offered at MSU—Great Falls College of Technology

### Sample Dental Hygiene Associate Degree Programs' Requirements

COLLEGE	DEGREE	DURATION (after completion of prerequisites)	PREREQ. CREDITS	TOTAL CREDITS (w/prereqs.)
Clark College (WA)	AAS	7 quarters (w/summer)	30*	112*
Mount Hood Community College (OR)	AAS	6 quarters	9*	82*
Portland Community College (OR)	AAS	6 terms	16*	82*
Sheridan College (WY)	AAS	4 semesters	36	100
ND State College of Science (ND)	AS	4 semesters + summer	11	86
MSU—Great Falls College of Technology	AAS	4 semesters + summer	12-25**	89

\* The program's quarter credits have been converted to semester credits for the purposes of comparison.

\*\* Students must complete at least 12 credits of prerequisites, or demonstrate equivalent competencies, prior to admission into the program. However, they may complete as many as 25 credits of general education, or demonstrate equivalent competencies, and transfer them into the program once admitted.

## Appendix B: Dental Hygiene Course Descriptions

**Note:** The descriptions provided here are for those courses specific to the proposed dental hygiene program. In the interests of space, descriptions for courses officially described in the College's current catalog are not duplicated here.

### **DH 101-Intro to Dental Hygiene / Preclinic**

**2 credits**

An introductory course in dental disease prevention and health promotion providing basic knowledge and skills, along with patient motivation regarding oral hygiene care. Principles of immunology, infection and hazard control management, and professional environmental safety will be emphasized during operatory preparation and beginning implementation of patient preventative care.

### **DA/DH 130 Dental Materials**

**2 credits**

The study of materials most often used in dentistry, focusing on the characteristics, physical properties, instruction on manipulation, and practical application of each material. Safety precautions relating to each material and procedure are emphasized.

### **AH/DH 140 Pharmacology/Dental Medicine**

**2 credits**

Study of pharmaceuticals with an emphasis on those medications utilized in the practice of dentistry. Information on the chemical and physical properties of various drugs, as well as their therapeutic use and effects, is provided to familiarize dental hygiene students with prescribed medications that might affect patient's oral conditions.

### **DH 150-Clinical Dental Hygiene Theory I**

**2 credits**

Basic theory in the practice of dental hygiene, including responding to medical/dental emergencies, reviewing patient medical histories, examination of the oral cavity, dental charting, periodontal probing, and beginning instrumentation. Theory background is used to support activities in DH 151.

### **DH 151-Clinical Dental Hygiene Practice I**

**3 credits**

Practice in beginning instrumentation and patient assessment in clinical patient treatment, to accompany DH 150.

### **DH 160 Periodontology I**

**2 credits**

An introduction to the science and management of periodontal diseases. Emphasis on the etiology and classification of the disease, along with an overview of the anatomy and histology of periodontal structures and dental accretions. The dental hygienist's role in the recognition, prevention and therapeutic procedures of the disease will be explored. This course will correlate theory with clinical activities in DH 151.

### **DH 165 Oral Embryology and Histology**

**2 credits**

A study of tissue morphology, embryonic development, and histologic features of the face and oral cavity.

### **DH 201 Periodontology II**

**2 credits**

The advanced study of periodontology with special emphasis on various types of periodontal therapy and the rationale behind their uses, including information on surgical procedures and medications used to decrease periodontal pocket depth. This course correlates theory with clinical activities in DH 211.

### **DH 210 Clinical Dental Hygiene Theory II**

**2 credits**

A continuation of DH 150, this course increases the emphasis on the principles of instrumentation in periodontal therapy and patient management. Theory background is used to support activities in DH 211.

### **DH 211 Clinical Dental Hygiene Practice II**

**3 credits**

A continuation of DH 151, this course provides additional practical experience in clinical patient treatment with an emphasis periodontal therapy. Offered in conjunction with DH 210.

### **DH 215 General/Oral Pathology**

**3 credits**

Fundamentals of pathology including the inflammatory process, tumor development, metabolic pathways, and developmental disturbances. An emphasis on the study of oral diseases and recognition of those conditions will be made. Students will utilize this information during direct observations of patients and viewing radiographs in clinical practice.



**DH 230 Community Dental Health & Education****2 credits**

A presentation of various methods & materials used in dental health education and an overview of dental public health, including types of existing programs and new program development. This importance of a dental hygienist's role in the cooperative relationship between private practice and the community is emphasized. Field assignments in selected social settings and projects encourage student participation in community dental health care.

**DH 235 Professional Issues & Ethics in Dental Practice****2 credits**

A study of the legal restrictions and ethical responsibilities associated with the practice of dental hygiene and dentistry.

**DH 240 Local Anesthesia/Nitrous Oxide Theory & Lab****2 credits**

An integration of anatomy, physiology, and an introduction to pharmacology and emergency procedures as they relate to the administration of local anesthesia. Selection of proper anesthetic solutions to facilitate pain management and specific related needs of patients are included, incorporating pain control methods, including nitrous oxide, sedation, and general anesthesia. Laboratory sessions are integrated with didactic material to develop competency in administering local anesthetic.

**DH 241 Gerontology and Special Needs Patients****2 credits**

Preparation for clinical experience during patient assessment and treatment design for the geriatric and special needs patients. Innovative patient management and counseling will be included.

**DH 250 Clinical Dental Hygiene Theory III****1 credit**

A continuation of DH 210, this course expands upon the concepts of dental hygiene theory, including exposure to more difficult oral conditions and management of patients with special needs. Theory background is used to support activities in DH 251.

**DH 251 Clinical Dental Hygiene Practice III****4 credits**

A continuation of DH 211, this course provides clinical activities with increased patient difficulty and increased patient load. This course is offered in conjunction with DH 250.

**DH 280 Clinical Dental Hygiene Theory IV****1 credit**

Advanced dental theory including expanded functions, such as amalgam polishing/margination and pit and fissure sealants, along with theory applied to patients having moderate to severe periodontal involvement. An overview of the dental specialties and the role of the dental hygienist in those specialties will be covered. Theory background is used to support activities DH 281.

**DH 281 Clinical Dental Hygiene Practice IV****4 credits**

Clinical activities include all aspects of previous training at increased skill levels and expanded functions. Students simulate private practice and mock board activities. Provided in conjunction with DH 280.

## Appendix C: Curricula for a Sampling of Other Two-Year Dental Hygiene Programs

The table below delineates course work required at other two-year dental hygiene programs in the Northwest, as well as a two-year dental hygiene program in Philadelphia that features a dental assisting feeder program. In the first column under each college, the number of credits devoted to each course is provided. Note that some of these credits are quarter credits, rather than the semester credits used in the Montana University System. In the second column under each college, the year and session in which the course is offered is provided – e.g., 1.3 indicates a course offered in the first year, third session (quarter, in all likelihood).

<b>COLLEGE</b>	<b>Sheridan</b>		<b>Wahpeton</b>		<b>Portland*</b>		<b>Mt. Hood*</b>		<b>Clark*</b>		<b>Philadelphia</b>	
<b>DEGREE</b>	<b>AAS</b>		<b>AS</b>		<b>AAS</b>		<b>AAS</b>		<b>AAS/AA</b>		<b>AAS</b>	
<b>TOTAL CREDITS (PROGRAM + PREREQUISITES)</b>	64 + 15-21		75+11		81+23 *		104+15*		117+60*		88	
<b>COURSES</b>	<b>Credits</b>	<b>Yr.Sem</b>	<b>Credits</b>	<b>Yr.Sem</b>	<b>Credits</b>	<b>Yr.Sem</b>	<b>Credits</b>	<b>Yr.Sem</b>	<b>Credits</b>	<b>Yr.Sem</b>	<b>Credits</b>	<b>Yr.Sem</b>
Pre-Clinic/Orientation + Lab	? 2	1.1	3+1	1.1	4+3	1.1	3+2	1.1	3+2	1.1	4	1.1
Dental Anatomy	2	1.1	2	1.1	3	1.1	2	1.1	3	1.1	3	1.1
Oral Radiology I + II (III, IV, V)	3	1.1	3	1.1	2+1	1.3, 4	3+2	1.2, 3	3,3+3	1 & 2	2	1.1
Dental Health Education	3	1.1			2	1.2			3	2.1		
General/Pathology	2	1.1	3	1.2			3	1.3	3**	1.4		
Oral Pathology	2	2.1	1	2.1	3	1.3	2	2.1			2	2.1
Pharmacology	2	2.1	2	2.1	3	1.3	3	1.3	3	1.3	2	2.1
Clinic I (9 clinic hours sem, II & III quarter)	3	1.1	4	1.2	6	1.2, 3	6	1.2, 3	5	1.2, 3	4**	1.2, 3
Clinic I Theory	2	1.1	1	1.2	4	1.2, 3	3	1.2, 3	3	1.2, 3		
Head and Neck Anatomy	2	1.2			4**	2.1	4	2.1	4	2.1	2	1.2
Gerontology	1	1.2										
Oral Histology/Embryology	2	1.2	1	2.1	2	1.2	1	1.1				
Nutrition	2	1.2	3	2.1			4	2.2			3	1.1
Dental Materials (2 hours lab)	3	2.1	3	2.2	2	2.1	2	2.1	3	1.3	3	1.1
Clinic II-9 clinic hours sem, IV quarter)	3	1.2	3	1.2	5	2.1	5	2.1	4	1.4	4**	2.1
Clinic II Theory	2	1.2	1	1.2	2	2,1	1	2.1	1	1.4		
Periodontology I + II	3	2.1	1+1	1 + 2	2+2	2.1,2	2+2	2.1, 2	2+2	1 + 2	3+3	2.1, 2
Anesthesia (2 hours lab)	2	2.1			2	2.3	2	2.1	2	2.1		
Community and Dental Health	3	2.2	2	2.2	1, 1, 1	2	2	2.1	3+1	2.2, 3	3	2.2
Dental Law/Ethics	3	2.2	1	2.2	1	2.3	2	2.3	2**	2.3		
Dental Office Practice	2	2.2					2	2.3				
Clinic III (15 hours sem, V quarter)	5	2.1	4	2.1	5	2.2	5+5	2.1, 2	9	2.2	4**	2.1
Clinic III Theory	2	2.1	1	2.1	2	2.2	1+1		1	2.1		
Clinic IV (15 hours sem, VI quarter)	5	2.2	4	2.2	5	2.3	5	2.3	9+3	2.2, 3	4**	2.2
Clinic IV Theory	2	2.2	1	2.2	4	2.3	1	2.3	1+1	2.2, 3		

\* Quarter System

\*\* Course combined with other courses

**Appendix D**  
**Sample Dental Hygiene Associate Degree Programs – Duration and Prerequisite Requirements**

<b>COLLEGE</b>	<b>DEGREE</b>	<b>DURATION (after completion of prerequisites)</b>	<b>PREREQUISITE CREDITS</b>	<b>TOTAL CREDITS (w/prerequisites)</b>
Clark College (WA)	AAS	7 quarters (including 1 in summer)	30*	112*
Mount Hood Community College <b>OR</b>	AAS	6 quarters	9*	82*
Portland Community College (OR)	AAS	6 terms	16*	82*
Sheridan College (WY)	AAS	4 semesters	36	100
ND State College of Science (ND)	AS	4 semesters + summer session	11	86
MSU—Great Falls College of Technology	AAS	4 semesters + summer session	12-25**	89

\* The program's quarter credits have been converted to semester credits for the purposes of comparison.

\*\* Students must complete at least 12 credits of prerequisites, or demonstrate equivalent competencies, prior to admission into the program. However, they may complete as many as 25 credits of general education, or demonstrate equivalent competencies, and transfer them into the program once admitted.

## APPENDIX E: DENTAL HYGIENE PROGRAM START-UP COSTS

The development of a Dental Hygienist Program at Montana State University—Great Falls College of Technology includes preparing a proposal for the Board of Regents; conducting a self-study for accreditation eligibility with the American Dental Association; remodeling and equipping the existing Allied Health area to provide the necessary classrooms, clinical area, reception space and offices; recruiting faculty and staff for the program; and preparing the curriculum, the faculty, and the College for the addition of this program.

### Personnel

Program Director (Salary & Benefits, 1/01 – 6/02)	\$104,449	
Support Staff (Salary & Benefits, 1/01 – 6/02)	37,881	
Consultants	<u>5,000</u>	<b>Total: \$147,330</b>

### Facilities

Architectural Design & Construction Oversight	\$ 50,000	
Demolition	20,000	
Renovation	165,000	
Equipment Installation	<u>40,000</u>	<b>Total: \$275,000</b>

### Program Equipment

12	Dental Chairs	\$ 74,160	
12	Chairside Lights	4,944	
12	Delivery Systems	7,416	
1	Turbine	12,875	
1	Compressor	12,360	
20	Chairside Stools	1,400	
2	Cavitron Units	1,200	
2	Ultrasonic Cleaners	1,000	
1	Extra-Oral Pan-o-matic Radiograph Machine	20,600	
1	X-ray Processor	5,150	
	Cabinetry to Support Operatories	<u>18,540</u>	<b>Total: \$159,645</b>

### Program Support

Program Supplies	\$10,300	
Library Materials	13,725	
Office, reception area furniture	5,000	
Computers, printer, network support, software	6,500	
Office supplies	1,500	
Telephones, Mail, Fax	1,000	
Travel	<u>5,000</u>	<b>Total: \$ 43,025</b>

**TOTAL: \$625,000**

## Appendix F: Operational Resources for Fully Implemented Dental Hygiene Program

The fiscal information provided below compares the American Dental Association planning model when the program is fully implemented, based on 16 students/class in an 8-operator facility, with the MSU-GF proposal, based on 12 students/class in a 12-operator facility.

	<b>ADA MODEL 16 students/class</b>	<b>MSU-GF PLAN 12 students/class</b>
<b>Personnel</b>		
<u>Teaching/Administrative</u>	1.0 Program Director 3.0 FTE Faculty 1 part-time Faculty	1.0 Program Director 2.0 Faculty 1 part-time Faculty
<b>Salaries w/23.5% Benefits:</b>	\$197-310,000	\$175,442
<u>Support Staff</u>	1.25 Clerical	1.25 Clerical
<b>Salaries w/25% Benefits:</b>	\$28-42,000	\$28,670
<u>Dentist Contract (Stipend)</u>	\$3,000	\$28,800 (@ \$40/hr.)
<b>SUBTOTAL:</b>	<b>\$228-\$355,000</b>	<b>\$232,912</b>
<b>Maintenance, Operation, Support</b>		
Instructional Materials	\$ 9,000	\$ 6,000
Library	\$ 2,000	\$ 1,500
Faculty Library	\$ 1,000	\$ 1,000
Professional Development	\$ 8,000	\$ 6,000
Travel for Supervision	\$ 500	
Instructional Equipment	\$ 5,000	\$ 4,000
Equipment M & Repair	\$ 4,000	\$ 3,000
Accreditation Fees	\$ 1,500	\$ 1,500
Telephone	\$ 1,000	\$ 1,000
Postage	\$ 1,000	\$ 1,000
Advertising	\$ 1,000	\$
Copier/Printing	\$ 2,000	\$ 1,500
<b>SUBTOTAL</b>	<b>\$35,500</b>	<b>\$26,500</b>
<b>Program Supplies</b>		
Clinic Supplies	\$24,000*	\$18,000*
Laboratory Supplies	\$ 5,000	\$ 4,000
Office Supplies	\$ 1,500	\$ 1,000
Faculty Uniforms/Cleaning		\$ 500
<b>SUBTOTAL</b>	<b>\$30,500</b>	<b>\$23,500</b>
Pre-Inflation Total	\$269,500-396,500	
<b>2003 TOTAL</b>	<b>\$285,913-433,266</b>	<b>\$282,912</b>

\* With students purchasing supplies kit

## Appendix H: FIRST-YEAR AND FULL-IMPLEMENTATION COSTS

### Partial Implementation (First Year)

		<u>Salary &amp; Benefits</u>
Personnel		
Program Director	1.0 FTE + summer	\$ 56,067
<i>Including benefits @23.5%</i>		
Faculty	1.0 FTE	37,843
<i>Including benefits @23.5%</i>		

Staff (including benefits @ 25%)	1.0 FTE	22,053	
Supervising Dentist	135 hours @ \$40/hr.	<u>5,400</u>	
		\$ 121,363	<i>Subtotal</i>
Maintenance, Operation and Support		\$ 20,000	
Program Supplies		<u>10,000</u>	
		\$ 30,000	<i>Subtotal</i>
		<b>TOTAL:</b>	<b>\$151,363</b>

**Full Implementation (Second Year)**

Personnel		<u>Salary &amp; Benefits</u>	
Program Director	1.00 FTE + summer	\$ 60,137	
Faculty	2.00 FTE	102,345	
Staff	1.25 FTE	28,670	
Adjunct Clinical Faculty	720 hrs. @ \$18/hour	12,960	
Supervising Dentist	720 hrs. @ \$40/hour	<u>28,800</u>	
		\$ 232,912	<i>Subtotal</i>
Maintenance, Operation and Support		\$ 26,500	
Program Supplies		<u>23,500</u>	
		\$ 50,000	<i>Subtotal</i>
		<b>TOTAL:</b>	<b>\$282,912</b>

**Revenue: First Year**

<b>Cost per Student Estimate</b>		\$ 12,614	
Tuition & Fees (12 students) \$880 X 3		31,680	
Funding needed: AY 2002-03			<b>\$ 119,683</b>

**Revenue: Second Year**

<b>Cost per Student Estimate</b>	\$ 11,788		
Tuition & Fees (X 24 students) \$880		63,360	
General Fund (X 24 students) \$1,800		43,200	
Funding needed: AY 2003-04			<b>\$ 176,352</b>
	AY 04-05 (@4%)		<b>\$ 183,406</b>
	AY 04-05 (@4%)		<b>\$ 190,742</b>

## Appendix G: Completing General Education Course work for the Proposed Dental Hygiene Program

It appears that a variety of options are available for students to complete the general education course work required for the proposed AAS degree at MSU—Great Falls College of Technology. Through these options, students could fulfill the prerequisite requirements for the program, as well as general education courses within the program itself. The table below lists options students might pursue to complete the prerequisite and/or general education requirements for the proposed Dental Hygiene program at MSU—Great Falls College of Technology. **Note:** Although the catalog information suggests that these courses would qualify as equivalents for transfer to MSU—Great Falls, until the curriculum is adopted and the transfer equivalencies are established, this list is tentative and may not include all the available options. Part of the program development process will include identifying all available equivalencies and making prospective students aware of established options.

Course	Offered in MT	Distributed	AP Option
Anatomy & Physiology I (with Lab)	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Miles City, Missoula, Pablo, Poplar		
Anatomy & Physiology II (w/ Lab)	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Miles City, Missoula, Pablo		
Inorganic/General Chemistry (w/ Lab)	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Lame Deer, Miles City, Missoula, Pablo, Poplar, Rocky Boy		Yes
Organic Chemistry (w/Lab)	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Miles City, Missoula, Pablo, Poplar, Rocky Boy		
Microbiology (w/Lab)	Billings, Bozeman, Browning, Butte, Dillon, Great Falls, Harlem, Havre, Helena, Kalispell, Miles City, Missoula, Pablo, Poplar		
Composition	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Havre, Harlem, Helena, Kalispell, Lame Deer, Miles City, Missoula, Pablo, Poplar, Rocky Boy	Yes	Yes
College-level Math	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Havre, Harlem, Helena, Kalispell, Lame Deer, Miles City, Missoula, Pablo, Poplar, Rocky Boy	Yes	Yes
Nutrition	Billings, Bozeman, Browning, Butte, Crow Agency, Dillon, Glendive, Great Falls, Helena, Kalispell, Lame Deer, Miles City, Missoula		
Public Speaking	Billings, Bozeman, Butte, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Lame Deer, Miles City, Missoula, Pablo, Rocky Boy	Yes	
Psychology/Lifespan	Billings, Bozeman, Browning, Butte, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Lame Deer, Miles City, Missoula, Pablo, Poplar, Rocky Boy	Yes	Yes?
Sociology	Billings, Bozeman, Browning, Butte, Dillon, Glendive, Great Falls, Harlem, Havre, Helena, Kalispell, Lame Deer, Miles City, Missoula, Pablo, Poplar, Rocky Boy	Yes	Yes