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ABSTRACT

This skills inventory for health care occupations was developed by a technical committee in Montana to assist in the development of model curricula and to address state labor market needs. The committee included employers from hospitals and other health care providers, members of trade and professional associations, and educators. The validated task list and defined job clusters are intended to provide information on the type and level of knowledge and skills needed for entry, retention, and advancement in Montana health care occupations. The guide contains the following: (1) Montana supply and demand occupational information; (2) occupational characteristics of selected jobs in the health care industry; and (3) task lists for a core curriculum in health care occupations and task lists for specialized areas which include medical laboratory technician, phlebotomist, ward secretary/clerk, home health care technician, catheterization technician, and histology technician. The task lists include information on training time for health care occupations; mathematics and language training time; physical demands; and environmental working conditions. (KC)

HEALTH

Montana Center for Research, Curriculum and Personnel Development

TECHNICAL COMMITTEE ON OCCUPATIONAL CURRICULUM DEVELOPMENT

HEALTH CARE TECHNICAL

ADVISORY COMMITTEE

ON CURRICULUM DEVELOPMENT

JOB CLUSTERS, COMPETENCIES AND TASK ANALYSIS

Completed by the Montana
Center for Vocational Education Research,
Curriculum and Personnel Development
Located at Northern Montana College
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  Saint Martin's College, Lacey, Washington

- Research and Analysis Bureau, Montana Department of
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- Florida Department of Education, Division of Vocational, Adult and Community Education, Tallahassee, Florida,

INTRODUCTION

The Carl D. Perkins Vocational Education Act (Public Law 98-524) was enacted in 1984 to replace the Vocational Education Act of 1963 and its subsequent amendments. It is the major vehicle for federal support of vocational education to the states.

The Perkins Act heralded a desire by Congress to better target the responsiveness of vocational and technical education and training to the requirements of the marketplace. The Act sets forth guidelines for implementing this desire by mandating significantly greater involvement of business and industry in the curriculum development process through the mechanism of State Technical Committees.

The Montana State Office of the Commissioner of Higher Education, with the assistance of the State Council for Vocational Education designated 14 distinct business and industry areas for future Technical Committee organization. Five Technical Committees were established for 1988-89 to assist in the development of model curricula and to address state labor market needs. The five committees were responsible for developing an inventory of skills that may be used to define state-of-the-art model curricula for Montana. The five designated committees are:

- TOURISM AND TRAVEL
- AGRICULTURE
- FORESTRY AND LUMBERING
- HEALTH CARE
- MINING AND MINERALS

Montana's Technical Committees represented employers from the industry or occupations for which the committee was established; members from trade or professional organizations representing relevant occupations, and members of organized labor (where appropriate).

Committee members met twice during Fall 1988 to validate relevant skills inventory lists for the foundation of curriculum development. Staff from the Center for Vocational Education served as facilitators. This validated task list and defined job clusters should provide the type and level of knowledge and skills needed for entry, retention, and advancement in Montana.

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MONTANA SUPPLY AND DEMAND INFORMATION

A continuing challenge facing education and training institutions is to identify, design, and offer training programs that serve both the needs of individual participants and the needs of the economy and society as a whole. It is crucial that training programs designed to prepare individuals for specific occupations be realistic in light of anticipated job openings (demand) and the expected number of persons available for and prepared to fill them (supply).

The following projected information can assist in looking into the future job market with some confidence. Through the use of the information individuals and jobs can be matched, thereby decreasing unemployment and increasing job satisfaction. This will also benefit the business community and taxpayers. Through the use of this information, better decisions can be made for the future by having a more realistic knowledge of Montana's employment trends.

The following tables and statistics have been taken from the Montana Supply and Demand Report, Fifth Edition, October 1988, Montana State Occupational Information, Coordinating Committee.

MONTANA HEALTH OCCUPATIONAL INFORMATION DEMAND REPORT
1986-1995

OCCUPATIONAL TITLE	1986 EMPLOY.	1995 EMPLOY.	EST. ANNUAL OPENINGS
MEDICAL RECORDS			
Medical Secretaries	466	590	27
DENTAL TECHNOLOGY			
Dental Hygienists	273	344	10
Dental Assistants	574	720	18
MEDICAL LABORATORY			
Med./Clinical Lab Technologists	556	647	16
Med./Clinicial Lab Technicians	187	219	6
NURSING ASSISTANT			
Nursing Aides and Orderlies	3766	4532	204
Home Health Aides	490	532	44
RADIOLOGIC TECHNOLOGY			
Nuclear Medicine Technologist	18	23	1
Radiologic Technologist and Technicians	403	527	30
REHABILITATION			
Physical, Correctional Therapy Assistants	126	146	5
Occupational Therapy Assistant	27	30	1
EMERGENCY MEDICAL TECHNOLOGY			
Emergency Medical Technicians	255	287	6
Ambulance Drivers and Attendants	66	74	3
OTHER MEDICAL TECHNOLOGY			
Pharmacy Assistants	73	94	4
All Other Health Service Workers	221	264	25

MONTANA SUMMARY OF JOB CLUSTERS IN DESCENDING ORDER BY DEMAND, (ESTIMATED ANNUAL OPENINGS VS. TRAINING COMPLETERS)

CLUSTER TITLE	DEMAND	SUPPLY
Sales	1482	554
Institutional and Building Service	822	117
Food Production	523	132
Nursing Assistant	262	138
Heavy Equipment Repair and Operation	229	96
Office and Information Services	188	76
Recreation and Tourism	156	205
Other Medical Technology	150	238
Horticulture and Landscaping	113	24
Electrical and Electronic Technology	106	279
Natural Resources Technology	97	217
Forestry and Lumber Production	64	129
Medical Laboratory	59	193
Dental Technology	56	31
Agriculture Business	55	178
Agriculture Production	3C	440
Radiologic Technology	31	22
Medical Records	27	47
Environmental Control Technology	25	24
Marketing Management	14	87
Agriculture Mechanics	12	37
Mechanical Technology	10	105
Emergency Medical Technology	9	1
Fish and Wildlife	3	75

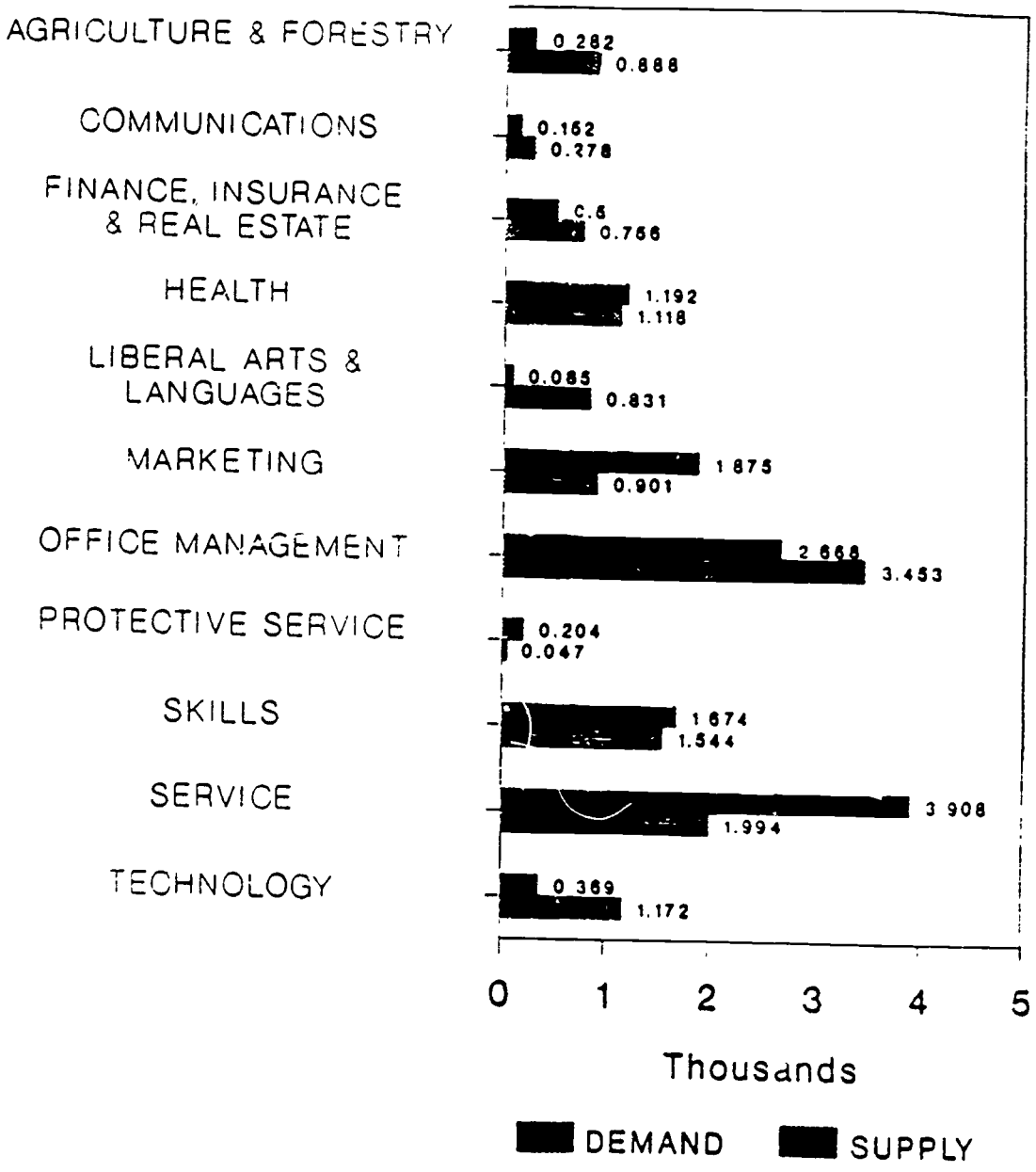
These clusters are representative of clusters found within one or more of the five designated technical advisory committees industry areas: Agriculture, Forestry, Mining and Minerals, Travel and Tourism, and Health Services.

MONTANA OCCUPATIONS RANKED BY ANNUAL OPENINGS TO 1995

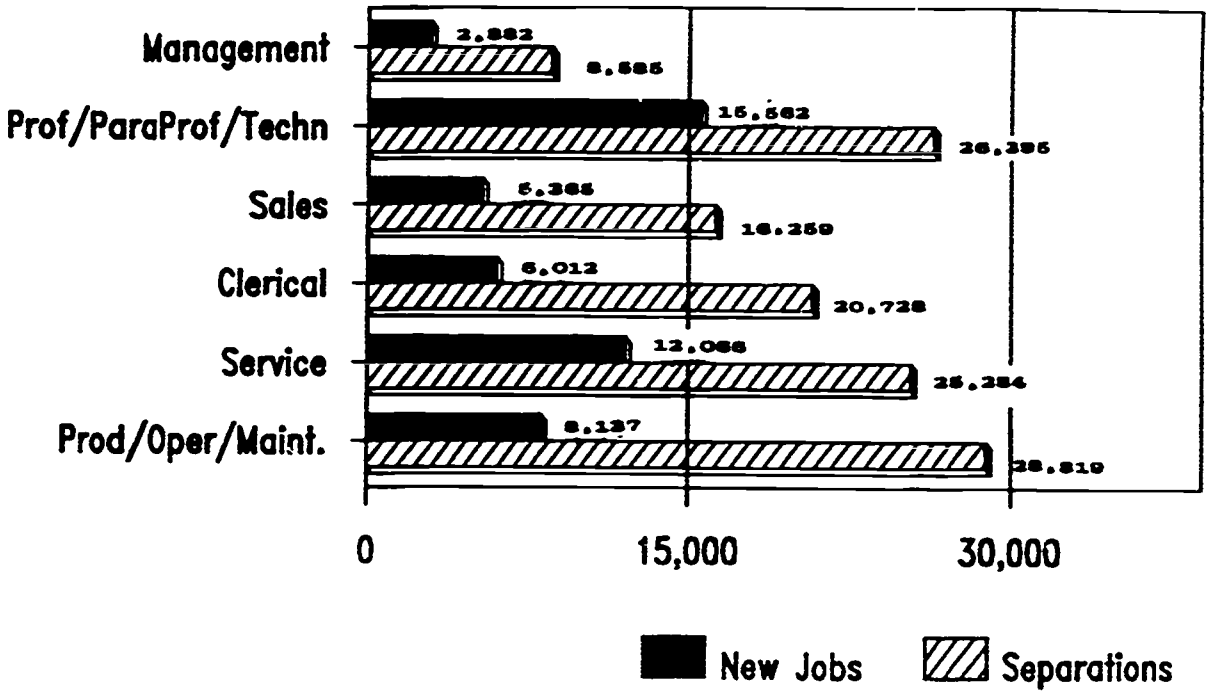
OCCUPATIONAL TITLE	ANNUAL OPENINGS TO 1995
Salespersons, Retail	604
Janitors and Cleaners, excluding Maids	498
Cashiers	324
Waiters and Waitresses	213
Nursing Aides and Orderlies	204
Maids and Housekeeping Cleaners	187
Restaurant Cooks	170
Bartenders	151
Licensed Practical Nurses	108
Gardeners and Groundskeepers	105
Fast Food and Short Order Cooks	105
Combination Food Preparations and Service	97
Institutional or Cafeteria Cooks	88
Food Preparation Workers	88
Receptionists, Information Clerks	75
Institutional Housekeepers	72
Hotel Desk Clerks	65
Food Service and Lodging Managers	65
Guards and Watch Guards	60
Grader, Dozer, Scraper Operators	50
Home Health Aides	44
All Other Foods Service Workers	44
All Other Cleaning, Building Services	43
Bus, Truck, Diesel Eng. Mechanic	40
Bakers, Bread and Pastry	32
Radiologic Technologists and Technicians	30
Butchers and Meat Cutters	29
Dining Room and Bartender Helpers	29
Mobile Heavy Equipment Mechanics	28
Hosts and Hostesses: Restaurant and Lounges	28
Medical Secretaries	27
Amusement and Recreation Attendants	26
All Other Health Service Workers	25
Welders and Cutters	25
All Other Agriculture, Forestry, Fishery Personnel	24
Advertising Sales Agents	23
Travel Agents	23
Machinists	23
Reservation and Transportation Ticket Agent	22
Marketing, Advertising, Public Relations Managers	21
Forest and Conservation Workers	19
Counter and Rental Clerks	19
Excavation Loading Machine Operators	19
Dental Assistants	18
All Other Machinery Mechanics	17
Farm and Home Management Advisors	16
Fallers and Buckers	16
Medical/Clinical Laboratory Technologists	16

Electrical and Electronic Technicians	16
Surveying and Mapping Technicians	16
Medical Assistants	14
Medical Records Technicians and Technologists	13
Sawing Machine Operator, Tender	13
Farm Purchasing Agents and Buyers	11
Machinery Maintenance Workers	11
Millwrights	10
Farm Equipment Mechanics	9
Nursery Workers	8
Logging Tractor Operators	7
Medical/Clinical Laborator Technicians	6
Mining and Related Managers	6
Emergency Medical Technicians	6
Tool Grinders, Filers, Sharpeners	6
Log Handling Equipment Operators	5
Physical Therapy Assistant	5
Recreation Workers	5
Ushers, Lobby Attendants, Ticket Takers	5
Biological, Agriculture Food Technicians	4
First Line Supervisor, Agriculture, Forestry, Fisheries	4
Pharmacy Assistants	4
Choke Setters	3
Crane and Towing Operators	3
Wood Machinists	3
Parking Lot Attendants	3
Well Head Pumpers	3
Curators, Archivists, Museum Technicians	2
Head Sawyers	2
Mine Cutting Machine Operators	2
Agriculture Production Graders and Sorters	1
Log Graders and Scalers	1
Nuclear Medicine Technologists	1
Occupational Therapy Assistants	1

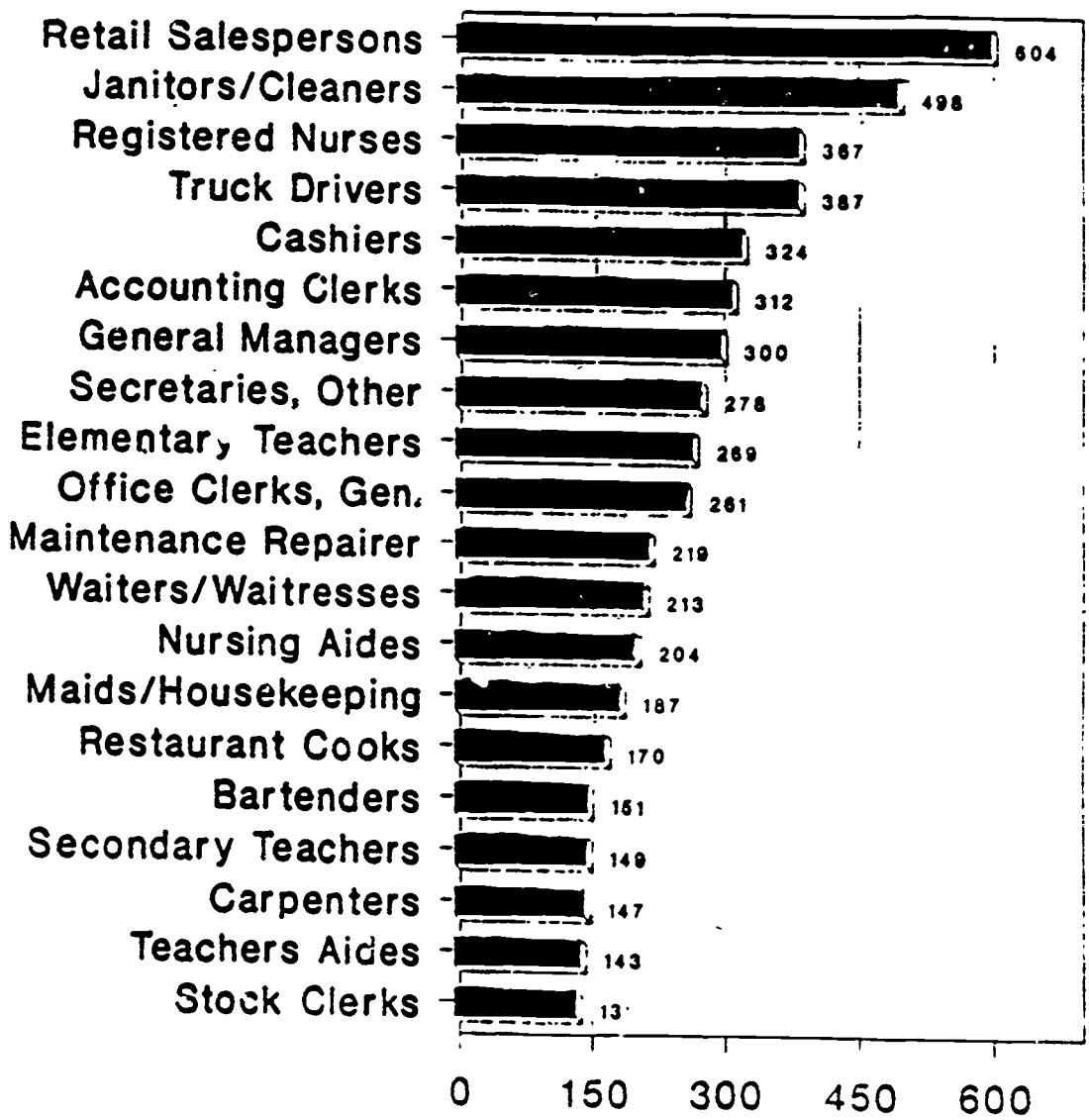
MONTANA CLUSTERS
DEMAND VS. SUPPLY
ESTIMATED ANNUAL OPENINGS VS. TRAINING COMPLETERS



Total Job Openings
Montana Occupations
Growth vs Separations



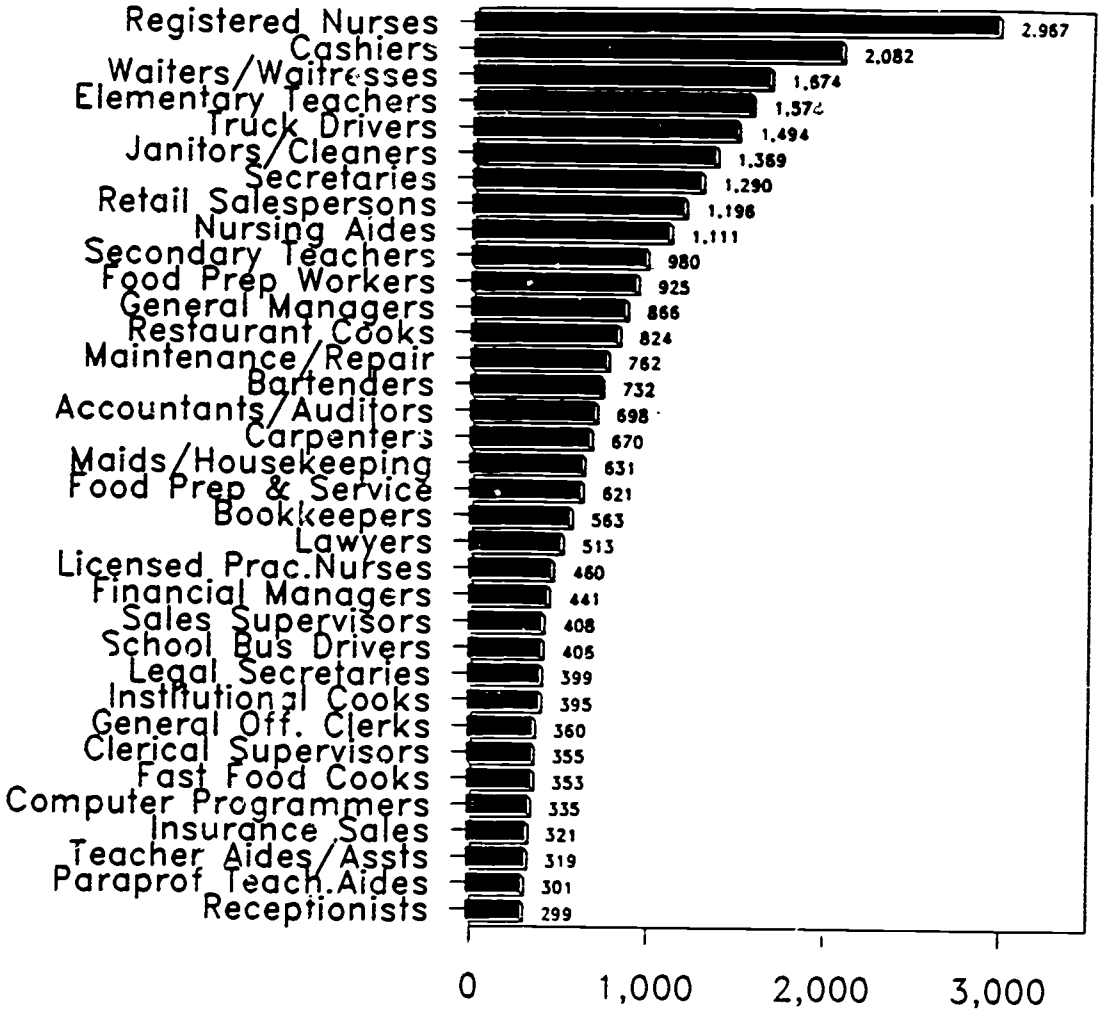
MONTANA
HIGH GROWTH OCCUPATIONS
Estimated Annual Openings to 1995



Montana Job Growth

High Growth Careers

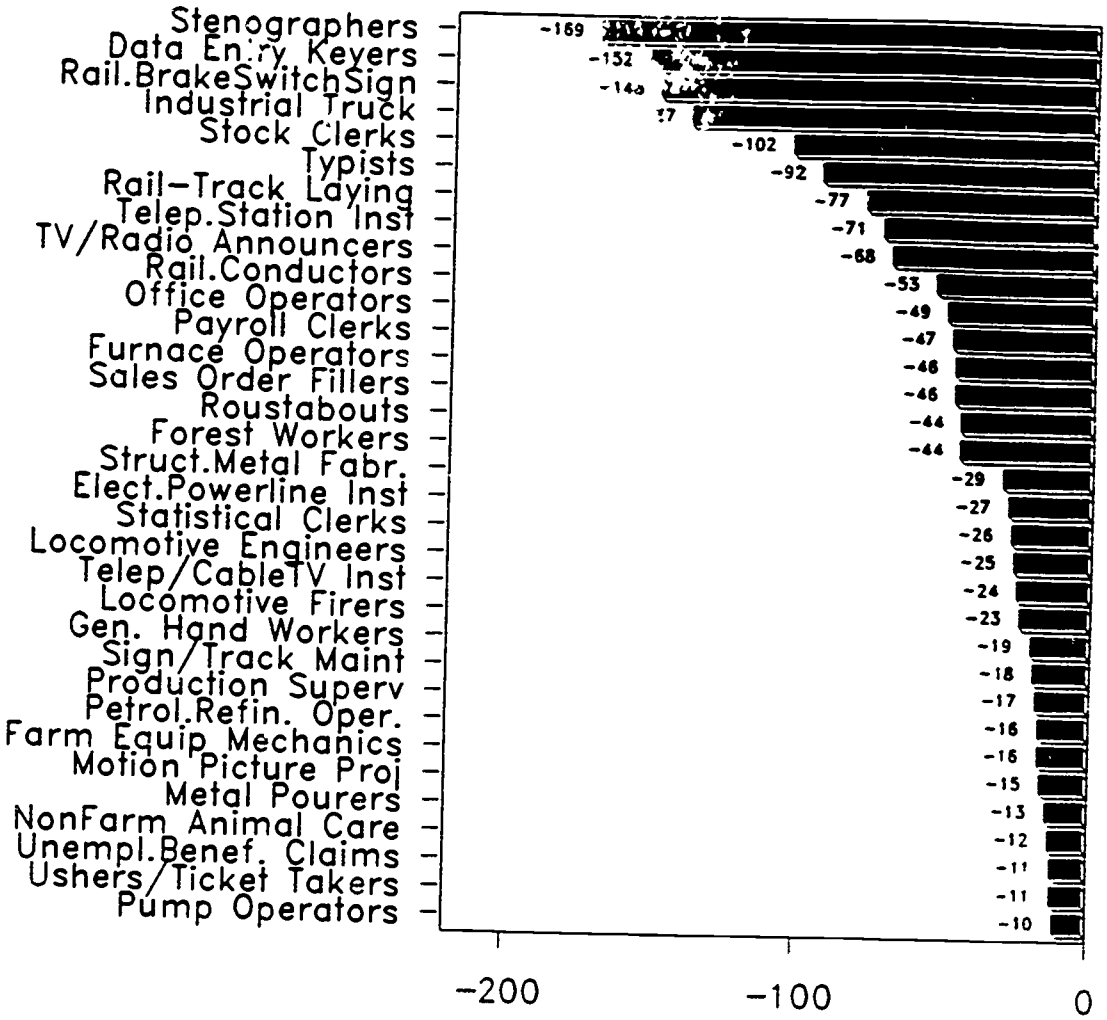
Specific Jobs



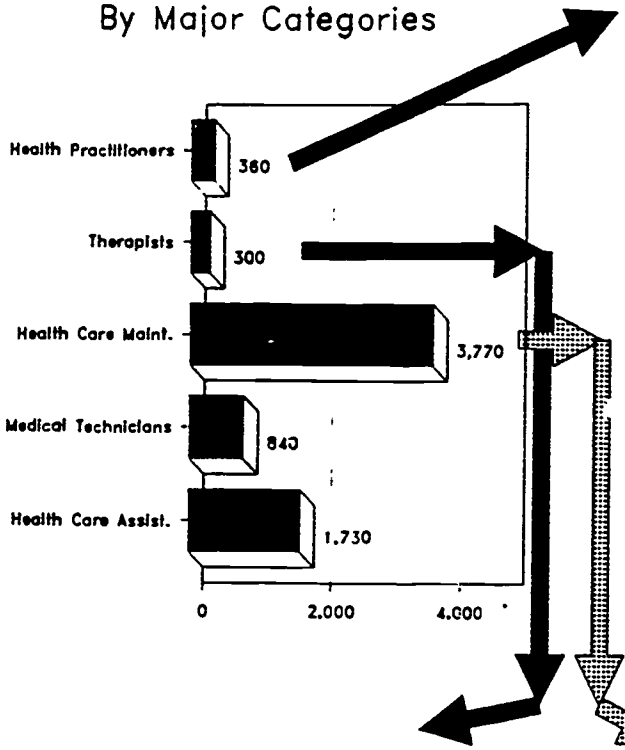
Montana Job Growth

Declining Job Areas

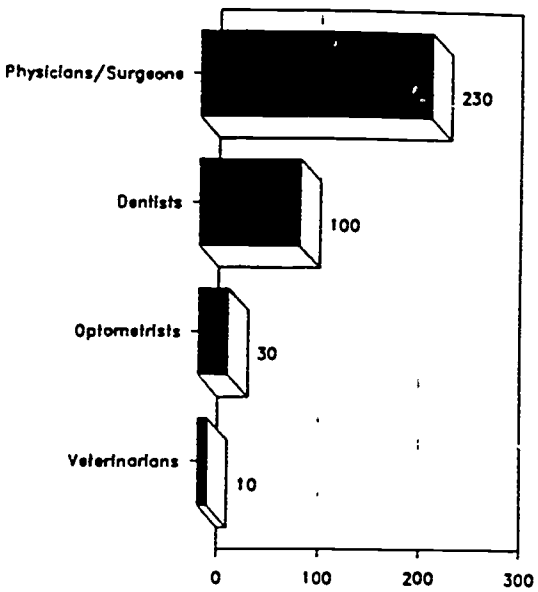
Specific Jobs



New Health Care Jobs
Montana, 1986–2000
By Major Categories

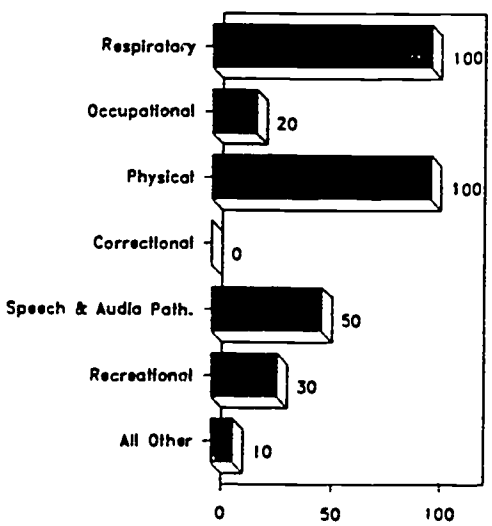


Health Practitioner
Major Job Titles

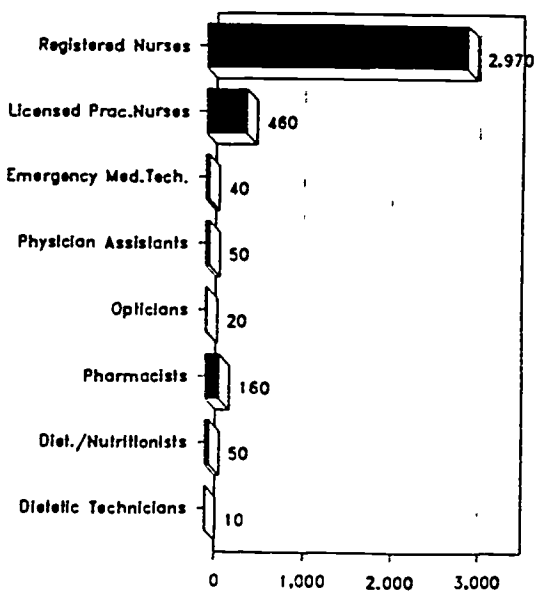


Therapist
Major Job Titles

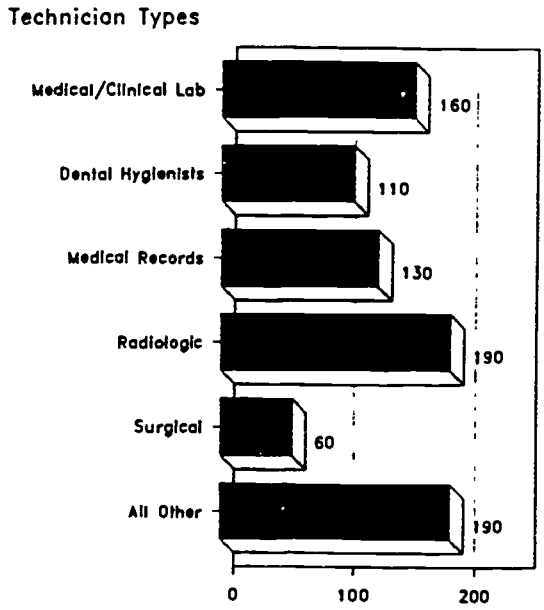
Therapist Categories



Health Care Maintenance
Major Job Titles



Medical Technician
Major Job Titles



Health Care Assistant
Major Job Titles

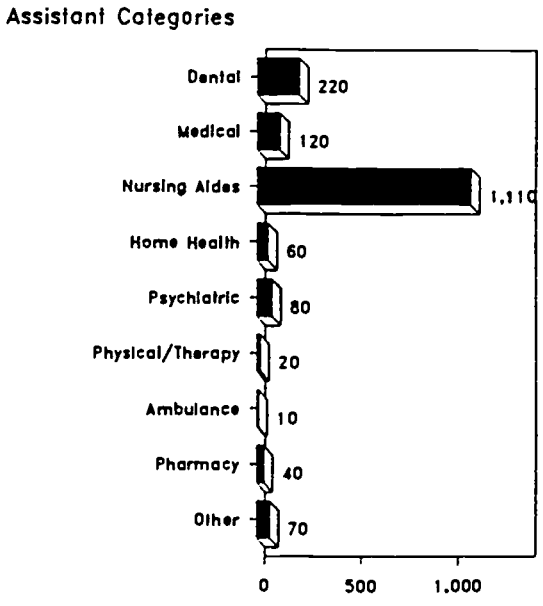


Figure 3.22 Continued

Occupational Characteristics of Selected Jobs in the Health Care Industry

The following list of occupations are representive of the Health Care Industry. While not all of them are found in Montana, they do however represent the most common job titles in the industry.

The selected occupational characteristics are taken from the Dictionary of Occupational Titles and the code to the numbers or letters found in each column is given on the pages following this list. The column marked SVP identifies the Specific Vocational Preparation, or the amount of time required to be trained for the job. The GED columns are marked R M L and are coded to describe the reading, mathematical and language development level necessary to meet the job requirements. The physical demands are noted in the next six columns and the environmental working conditions are coded in the last seven columns.

CIP	DICTIONARY OF OCCUPATIONAL TITLES		GED			PHYSICAL	WORKING	
CODE	CODE	TITLE	SVP	R	M	L	DEMANDS	CONDITIONS	
(17.0210)	079.361-010	RESPIRATORY THERAPIST	6	4	3	3	L 4 6	I	7
(17.0803)	076.121-010	OCCUPATIONAL THERAPIST	7	5	4	5	L 456	I	
(17.0813)	076.121-014	PHYSICAL THERAPIST	7	5	4	5	L 3456	I	
(18.1101)	075.124-010	NURSE, SCHOOL	7	5	4	5	M 456	I	
(18.1101)	075.124-014	NURSE, STAFF, COMMUNITY HEALTH	7	5	4	5	M 456	I	
(00.0000)	075.127-014	NURSE, CONSULTANT	7	5	4	5	S 45	I	
(18.1101)	075.127-018	NURSE, HEAD	7	5	4	5	L 456	I	
(00.0000)	075.127-022	NURSE, SUPERVISOR	7	5	4	5	L 456	I	
(18.2204)	075.127-026	NURSE, SUPERVISOR, COMMUNITY-HEALTH NURSING	7	5	4	5	L 456	I	
(18.1101)	075.127-030	NURSE SUPERVISOR, EVENING-OR-NIGHT	8	5	4	5	L 456	I	
(00.0000)	075.137-010	NURSE, SUPERVISOR, OCCUPATIONAL HEALTH NURSING	7	5	4	5	L 456	I	
(00.0000)	07_.264-010	NURSE PRACTITIONER	8	5	5	5	L 456	I	
(00.0000)	075.264-014	NURSE-MIDWIFE	7	5	5	3	M 456	I	
(18.1101)	075.371-010	NURSE ANESTHETIST	7	5	4	5	M 4 6	I	7
(18.1101)	075.374-010	NURSE, GENERAL DUTY	7	5	4	5	M 456	I	
(18.1101)	075.374-014	NURSE, OFFICE	7	5	4	5	M 456	I	
(18.1101)	075.374-018	NURSE, PRIVATE DUTY	7	5	4	5	M 456	I	
(18.1101)	075.374-022	NURSE, STAFF, OCCUPATIONAL HEALTH NURSING	7	5	4	5	L 456	I	
(17.0605)	079.374-0..	NURSE, LICENSED PRACTICAL	6	4	3	4	M 456	I	7
(17.0206)	079.374-010	EMERGENCY MEDICAL TECHNICIAN	5	4	3	4	M23456	B	
(00.0000)	074.161-010	PHARMACIST	7	5	5	5	L 4 6	I	
(00.0000)	074.161-014	RADIOPHARMACIST	7	6	5	5	L 456	I	6
(17.0302)	078.381-010	MEDICAL-LABORATORY ASSISTANT	4	4	4	4	L 4 6	I	
(17.0302)	078.381-014	MEDICAL-LABORATORY TECHNICIAN	5	5	4	5	L 4 6	I	
(17.0102)	078.361-010	DENTAL HYGIENIST	6	4	3	4	L 456	I	
(17.0506)	079.367-014	MEDICAL RECORD TECHNICIAN	6	5	4	5	L 45	I	
(17.0208)	078.161-018	CHIEF TECHNOLOGIST, NUCLEAR MEDICINE	8	5	4	5	L 456	I	6
(17.0208)	078.361-018	NUCLEAR MEDICAL TECHNOLOGIST	7	5	4	5	L 456	I	6
(17.0207)	078.361-034	RADIATION-THERAPY TECHNOLOGIST	6	5	4	4	L 4 6	I	
(17.0101)	079.371-010	DENTAL ASSISTANT	6	4	3	4	L 4	I	
(17.0815)	076.224-010	PHYSICAL THERAPIST ASSISTANT	6	4	3	4	M 3456	I	67
(17.0301)	079.364-022	PHLEBOTOMIST	3	4	2	4	L 456	I	
(17.0819)	355.674-022	RESPIRATORY-THERAPY AIDE	4	3	3	3	M 456	I	
(00.0000)	355.677-014	HOSPITAL ENTRANCE ATTENDANT	2	2	1	2	M 345	I	
(15.0401)	359.363-010	HEALTH-EQUIPMENT SERVICER	5	3	2	3	V 456	I	6
(20.0406)	520.487-014	FORMULA-ROOM WORKER	3	2	2	2	L 4 6	I	

Specific Vocational Preparation (Training Time)

This represents the amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job-worker situation. The training may be acquired in a school, work, military, institutional, or a vocational environment. It does not include orientation training required of even every fully qualified worker to become accustomed to the special conditions of any new job. Specific vocational training includes training given in any of the following circumstances:

a. Vocational education (such as high school commercial or shop training, technical school, art school, and that part of college training which is organized around a specific vocational objective);
b. Apprentice training (for apprenticeable jobs only);
c. In-plant training (given by an employer in the form of organized classroom study);
d. On-the-job training (serving as learner or trainee on the job under the instruction of a qualified worker);
e. Essential experience in other jobs (serving in less responsible jobs which lead to the higher grade job or serving in other jobs that qualify).

The following is an explanation of the various levels of specific vocational preparation.

Short demonstration.

Level	Time
1	Short demonstration.
2	Anything beyond short demonstration up to and including 30 days.
3	Over 30 days up to and including 3 months.
4	Over 3 months up to and including 6 months.
5	Over 6 months up to and including 1 year.
6	Over 1 year up to and including 2 years.
7	Over 2 years up to and including 4 years.
8	Over 4 years up to and including 10 years.
9	Over 10 years.

Mathematical Development and Language Development (Training Time)

Commonly referred to as "tool knowledges," these embrace those aspects of education (formal and informal) of a general nature that contribute to the acquisition of such skills but do not have a recognized, fairly specific, occupational objective, ordinarily obtained in elementary, high school, or college environs and augmented by past experiences and self-study. They provide linkage between norms used for interpretation of the Basic Occupational Literacy Test (BOLT) scores and level requisites for DOT occupations. Following are the definitions and scale levels applicable to each:

a. Mathematical Developmental or Arithmetic Computation (M): The acquisition of basic mathematical skills, not specifically vocationally oriented, such as the ability to solve arithmetic, algebraic, and geometic problems ranging from fairly elemental to dealing with abstractions.

b. Language Development or Literacy Training (L): The acquisition of language skills, not specifically vocationally oriented, such as mastery of an extensive vocabulary; use of correct sentence structure, punctuation, and spelling; and an appreciation of literature.

Level	*Mathematical Development*	*Language Development*
6	Advanced calculus: Work with limits, continuity, real number systems, mean value theorems, and implicit function theorems. Modern algebra: Apply fundamental concepts of theories of groups, rings, and fields. Work with differential equations, linear algebra, infinite series, advanced operations methods, and functions of real and complex variables. Statistics: Work with mathematical statistics, mathematical probability, and applications, experimental design, statistical inference, and econometrics.	Reading: Read literature, book and play reviews, scientific and technical journals, abstracts, financial reports, and legal documents. Writing: Write novels, plays, editorials, journals, speeches, manuals, critiques, poetry, and songs. Speaking: Conversant in the theory, principles, and methods of effective and persuasive speeking, voice and diction, phonetics, and discussion and debate.

Level	Mathematical Development	Language Development
5	Algebra: Work with exponents and logarithms, linear equations, quadratric equations, mathematical induction and binomial theorems, and permutations. Calculus: Apply concepts of analytical geometry, differentiations and integration of algebraic functions with applications. Statistics: Apply mathematical operations to frequency distributions, reliability, and validity of tests, normal curve, analysis of variance, correlation techniques, chi-square application and sampling theory, and factor analysis.	Same as level 6
4	Algebra: Deal with system of real numbers; linear, quadratic, rational, exponential; logarithmic, angle, and circular functions, and inverse functions; related algebraic solution of equations and inequalities; limits and continuity, and probability and statistical inference. Geometry: Deductive axiomatic geometry, plane and solid; and rectangular coordinates. Shop Math: Practical application of fractions, percentages, ratio and proportion, mensuration, logarithms, slide rule, practical algebra, geometric construction, and essentials of trigonometry.	Reading: Read novels, poems, newspapers, periodicals, journals, manuals, dictionaries, thesauruses, and encyclopedias. Writing: Prepare business letters, expositions, summaries, and reports, using prescribed format, and conforming to all rules of punctuation, grammar, diction, and style. Speaking: Participate in panel discussions, dramatizations, and debates. Speak extemporaneously on a variety of subjects.
3	Compute discount, interest, profit, and loss; commission, markups, and selling price; ratio and proportion, and percentages. Calculate surfaces, volumes, weights, and measures. Algebra: Calculate variables and formulas, monomials and polynomials; ratio and proportion variables; and square roots and radicals. Geometry: Calculate plane and solid figures, circumference, area, and volume. Understand kinds of angles, and properties of pairs and angles.	Reading: Read a variety of novels, magazines, atlases, and encyclopedias. Read safety rules, instructions in the use and maintenance of shop tools and equipment, and methods and procedures in mechanical drawing and layout work. Writing: Write reports and essays with proper format, punctuation, spelling, and grammar, using all parts of speech. Speaking: Speak before an audience with poise, voice control, and confidence, using correct English and well-modulated voice.

Level	*Mathematical Development*	*Language Development*
2	Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphs. Perform arithmetic operations involving all American monetary units.	Reading: Passive vocabulary of 5,000-6,000 words. Read at rate of 190-215 words per minute. Read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation. Read instructions for assembling model cars and airplanes. Writing: Write compound and complex sentences, using cursive style, proper end punctuation, and employing adjectives and adverbs. Speaking: Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present, perfect, and future tenses.
1	Add and subtract two digit numbers. Multiply and divide 10's and 100's by 2, 3, 4, 5. Perform the four basic arithmetic operations with coins as part of a dollar. Perform operations with units such as cup, pint, and quart; inch, foot, and yard; and ounce and pound.	Reading: Recognize meaning of 2,500 (two- or three-syllable) words. Read at a rate of 95-120 words per minute. Compare similarities and differences between words and between series of numbers. Writing: Print simple sentences containing subject, verb, and object, and series of numbers, names, and addresses. Speaking: Speak simple sentences, using normal word order, and present and past tenses.

Physical Demands

The physical demands listed in this publication serve as a means of expressing both the physical requirements of the job and the physical capacities (specific physical traits) a worker must have to meet those required by many jobs (perceiving by the sense of vision), and also the name of a specific capacity possessed by many people (having the power of sight). The worker must possess physical capacities at least in an amount equal to the physical demands made by the job.

The Factors

1. Strength: This factor is expressed in terms of *Sedentary, Light, Medium, Heavy,* and *Very Heavy.* It is measured by involvement of the worker with one or more of the following activities:

   a. Worker position(s):

      (1) *Standing:* Remaining on one's feet in an upright position at a workstation without moving about.
      (2) *Walking:* Moving about on foot.
      (3) *Sitting:* Remaining in the normal seated position.

   b. Worker movement of objects (including extremities used);

      (1) *Lifting:* Raising or lowering an object from one level to another (includes upward pulling).
      (2) *Carrying:* Transporting an object, usually holding it in the hands or arms or on the shoulder.
      (3) *Pushing:* Exerting force upon an object so that the object moves away from the force (includes slapping, striking, kicking, and treadle actions).
      (4) *Pulling:* Exerting force upon an object so that the object moves toward the force (includes jerking).

The five degrees of Physical Demands Factor No. 1 (strength), are as follows:

S Sedentary Work

Lifting 10 lbs. maximum and occasionally lifting and/or carrying such articles as dockets, ledgers, and small tools. Although a sedentary job is defined as one which involves sitting, a certain amount of walking and standing is often necessary in carrying out job duties. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.

L Light Work

Lifting 20 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 10 lbs. Even though the weight lifted may be only a negligible amount, a job is in this category when it requires walking or standing to a significant degree, or when it involves sitting most of the time with a degree of pushing and pulling of arm and/or leg controls.

M Medium Work

Lifting 50 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 25 lbs.

H Heavy Work

Lifting 100 lbs. maximum with frequent lifting and/or carrying of objects weighing up to 50 lbs.

V Very Heavy Work

Lifting objects in excess of 100 lbs. with frequent lifting and/or carrying of objects weighing 50 lbs. or more.

2. *Climbing and/or Balancing*
   (1) Climbing: Ascending or decending ladders, stairs, scaffolding, ramps, poles, ropes, and the like, using the feet and legs and/or hands and arms.
   (2) Balancing: Maintaining body equilibrium to prevent falling when walking, standing, crouching, or running on narrow, slippery, or erratically moving surfaces; or maintaining body equilibrium when performing gymnastic feats.

3. *Stooping, Kneeling, Crouching, and/or Crawling:*
   (1) Stooping: Bending the body downward and forward by bending the spine at the waist.
   (2) Kneeling: Bending the legs at the knees to come to rest on the knee or knees.
   (3) Crouching: Bending the body downward and forward by bending the legs and spine.
   (4) Crawling: Moving about on the hands and knees or hands and feet.

4. *Reaching, Handling, Fingering, and/or Feeling:*
   (1) Reaching: Extending the hands and arms in any direction.
   (2) Handling: Seizing, holding, grasping, turning, or otherwise working with the hand or hands (fingering not involved).
   (3) Fingering: Picking, pinching, or otherwise working with the fingers primarily (rather than with the whole hand or arm as in handling).
   (4) Feeling: Perceiving such attributes of objects and materials as size, shape, temperature, or texture, by means of receptors in the skin, particularly those of the fingertips.

5. *Talking and/or Hearing:*
   (1) Talking: Expressing or exchanging ideas by means of the spoken word.
   (2) Hearing: Perceiving the nature of sounds by the ear.

6. *Seeing:* Obtaining impressions through the eyes of the shape, size, distance, motion, color, or other characteristics of objects. The major visual functions are: (1) acuity, far and near, (2) depth perception, (3) field of vision, (4) accommodation, and (5) color vision. The functions are defined as follows:

   (1) Acuity, far—clarity of vision at 20 feet or more. Acuity, near—clarity of vision at 20 inches or less.
   (2) Depth perception—three-dimensional vision. The ability to judge distance and space relationships so as to see objects where and as they actually are.
   (3) Field of vision—the area that can be seen up and down or to the right or left while the eyes are fixed on a given point.
   (4) Accommodation—adjustment of the lens of the eye to bring an object into sharp focus. This item is especially important when doing near-point work at varying distances from the eye.
   (5) Color vision—the ability to identify and distinguish colors.

Environmental Working Conditions

Environmental conditions are the physical surroundings of a worker in a specific job.

1. *Inside, Outside, or Both:*
   I Inside: Protection from weather conditions but not necessarily from temperature changes.
   O Outside: No effective protection from weather.
   B Both: Inside and outside.

A job is considered "inside" if the worker spends approximately 75 percent or more of the time inside, and "outside" if the worker spends approximately 75 percent or more of the time outside. A job is considered "both" if the activities occur inside or outside in approximately equal amounts.

2. *Extremes of Cold Plus Temperature Changes:*
   (1) Extremes of Cold: Temperature sufficiently low to cause marked bodily discomfort unless the worker is provided with exceptional protection.
   (2) Temperature Changes: Variations in temperature which are sufficiently marked and abrupt to cause noticeable bodily reactions.

3. *Extremes of Heat Plus Temperature Changes:*
   (1) Extremes of Heat: Temperature sufficiently high to cause marked bodily discomfort unless the worker is provided with exceptional protection.
   (2) Temperature Changes: Same as 2(2).

4. *Wet and Humid:*
   (1) Wet: Contact with water or other liquids.
   (2) Humid: Atmospheric condition with moisture content sufficiently high to cause marked bodily discomfort.

5. *Noise and Vibration:* Sufficient noise, either constant or intermittent, to cause marked distraction or possible injury to the sense of hearing, and/or sufficient vibration (production of an oscillating movement or strain on the body or its extremities from repeated motion or shock) to cause bodily harm if endured day after day.

6. *Hazards:* Situations in which the individual is exposed to the definite risk of bodily injury.

7. *Fumes, Odors, Toxic Conditions, Dust, and Poor Ventilation:*
   (1) Fumes: Smoky or vaporous exhalations, usually odorous, thrown off as the result of combustion or chemical reaction.
   (2) Odors: Noxious smells, either toxic or nontoxic.
   (3) Toxic Conditions: Exposure to toxic dust, fumes, gases, vapors, mists, or liquids which cause general or localized disabling conditions as a result of inhalation or action on the skin.
   (4) Dust: Air filled with small particles of any kind, such as textile dust, flour, wood, leather, feathers, etc., and inorganic dust, including silica and asbestos, which make the workplace unpleasant or are the source of occupational diseases.
   (5) Poor Ventilation: Insufficient movement of air causing a feeling of suffocation; or exposure to drafts.

TECHNICAL ADVISORY COMMITTEE ON CURRICULUM PLANNING

HEALTH CARE

The Technical Advisory Committee on Curriculum Planning for Montana's Health Care industry was comprised of members of several health care businesses and local and state government agencies.

I. The basic Health Care Core Curriculum should include:
   a) Customer/Client Relations
   b) Medical Terminology
   c) Computer PC training
   d) Physics for Health Care Workers
   e) Chemistry for Health Care Workers
   f) Basic Accounting/Budgeting process
   g) Marketing for the Industry and for the Student
   h) Anatomy & Physiology
   i) Basic Electronics
   j) CPR
   k) Sterilization (asepsis) Techniques

A. Customer/Client Relations

- define health care, curative, preventative and supportive terminology
- describe the health/illness continuum
- identify factors that influence personal and community health
- discuss general health care trends in America
- evaluate impact of rising costs and technology in availability of health care
- define "health care system"
- list relationship and functions of the following health care systems: HMO's, public agencies, private care, Medicare, Medicaid
- describe levels of care in a hospital
- describe levels of care in a long-term facility
- discuss alternatives to hospital and nursing home care--advantages and disadvantages
- discuss the meaning of the social field of health care
- describe difference between ethical and legal responsibilities of nurses
- summarize code of ethics established by national health care associations
- summarize the patient's Bill of Rights
- list in sequence the five levels of Maslow's hierarchy of needs

B. Medical Terminology

- define introduction to word parts
- understand structure of the human body
- understand integumentary system
- understand directional terms, anatomical planes and regions
- understand musculoskeletal system
- understand digestive systems
- understand male reproductive system
- understand female reproductive system

C. Computer (PC) Literacy

- define the following terms: computer; data; input; output; hardware; software, language; processing - word, data; memory - RAM, ROM; program; terminal; peripheral devices and keyboard characters and control
- operate a computer by performing the following steps: turn the equipment on and off; load a program; run and use a program; store a program; display a program and enter an execute a simple program
- identify the safety precautions that must be observed in using equipment
- describe the general use of computer technology in health care
- discuss the advantages and disadvantages in the use of different computers

D. Physics For Health Care Workers

1. Matter
   - identify density of specific gravity
   - identify structure of matter
2. Kinematics - the description of motion
   - identify uniform motion
   - identify average velocity
   - identify instantaneous velocity
   - calculate displacement
   - identify uniform accelerated motion
   - identify vectors
   - identify relative velocity
   - identify projectiles
3. Dynamics
   - identify force as the cause of acceleration
   - identify Newton's laws
   - identify units for force and mass
4. Statics
   - define equilibrium
   - define center of gravity
   - define friction

5. Conservation of Momentum
   - define momentum
   - define weight, weightlessness and artificial gravity
6. Conservation of Energy
   - define work
   - define work against variable force
   - identify energy
   - identify conservation of energy
   - identify equilibrium and potential energy
   - identify power and efficiency
7. Rotation
   - identify angular quantities
   - identify uniform circular motion
   - identify centripetal force
   - identify centrifugal force
   - identify rotational inertia
8. Elasticity and Vibration
   - identify elastic constants - Hooke's law
   - identify simple harmonic motion
   - identify non-simple harmonic motion
9. Fluids
   - define fluids
   - define pressure
   - define Pascal's Principle
   - define measurement of pressure
   - define Archimede's Principle
   - define surface tension
   - identify fluids in motion - Bernoulli's equation
   - define viscosity
10. Temperature and Expansion
   - define temperature
   - define temperature scales
   - define thermal expansion of solids, liquids and gases
11. Heat and Heat Transfer
   - define the caloric theory and its overthrow
   - define internal energy, heat and work - the laws of thermodynamics
12. Electrons and Protons
13. Atomic Structure
14. The Nucleus

E. Chemistry for Health Care Workers

1. General Chemistry
   - describe matter and measurements
   - describe atoms
   - describe the atomic nucleus
   - define chemical and reactions
   - describe oxidation and reduction
   - describe solutions
   - describe gases
   - describe electrolytes
   - describe atomic nucleus

2. Physiological Chemistry
   - define carbon, hydrogen and halide compounds
   - discuss hydrocarbons
   - discuss halogenated hydrocarbons
   - define simple carbon, hydrogen and oxygen compounds and their main functional groups
   - discuss alcohols, phenols and ethers
   - discuss aldehydes and ketosis
   - discuss carboxylic acids and carbon derivatives
   - define complex carbon, hydrogen and oxygen compounds
   - list carbohydrates
   - list lipids, specifically triglycerides
   - define compounds with added elements
   - list imines
   - list amides and derivatives
   - list organic compounds of sulfur
   - list proteins
   - list nucleic acids

F. Basic Accounting/Budgeting Process

1. Controlling Cash
   - prepare source documents to record receipt of cash
   - verify cash receipts to invoice amounts
   - analyze and code receipts
   - deposit cash
   - prepare cash receipt journals
   - verify cash payments to invoice amounts
   - prepare vouchers
   - analyze and code payments
   - prepare checks
   - prepare cash disbursement journals
   - prove cash
   - maintain petty cash records
   - maintain cash account balances
   - ensure security of cash
   - prepare bank reconciliations

2. Processing Accounts Receivable
   - prepare customer invoices
   - verify accuracies of source documents
   - maintain customer account files
   - prepare sales journals
   - credit accounts for returns and allowances
   - compute discounts
   - post accounts receivable transactions to subsidiary ledger
   - compute interest charges
   - prepare account receivable statements

- age accounts
- initiate collections of delinquent accounts
- maintain list of customer accounts written off
- respond to customer's complaints and questions

3. Processing Accounts Payable
   - prepare purchase orders
   - match receiving documents with invoices and purchases
   - compute extensions
   - match invoices with statements
   - compute discounts
   - prepare purchase journals
   - verify approvals for payments
   - process checks
   - maintain price lists

4. Performing Payroll Functions
   - compute employee work times from time cards
   - compute wages of hourly employees
   - compute wages of salaried employees
   - compute taxes to be withheld
   - compute other deductions to be withheld
   - prepare and balance payroll registers
   - prepare check
   - compute and record employers' shares of payroll taxes
   - record payroll entries for journals
   - record payroll data to employee earning records
   - post payroll entries
   - maintain employee records

5. Processing Tax Reports
   - compute payroll taxes to be deposited on timely bases
   - prepare city, county and state sales tax reports
   - prepare city, state and federal withholding tax reports
   - prepare state and federal unemployment forms
   - prepare wage and tax statements
   - process property tax forms

6. Maintaining Inventory Control Records
   - take physical inventories
   - compute values of inventories
   - update inventory records
   - maintain stock inventory records

7. Maintaining Fixed Asset Records
   - compute depreciation and maintain depreciation schedules
   - compute gains or losses upon dispositions
   - maintain adequate insurance records

8. Posting Accounting Data
   - post cash receipts to general ledgers
   - post cash disbursement to general ledgers
   - post accounts receivable totals to general ledgers
   - post account payable totals to general ledgers
   - post payroll journals to general ledgers
   - reconcile subsidiary ledgers to general ledgers controlling accounts
   - reconcile supporting schedules to general ledgers controlling accounts
   - post all other journal entries to general ledgers

9. Preparing Financial Statements
   - prepare working trial balances
   - prepare journal entries
   - prepare income statements
   - prepare capital statements
   - prepare balance sheets
   - assist other workers in preparing statements of changes in financial position

10. Performing Office Activities
   - originate files
   - maintain files
   - close out-dated files
   - maintain confidentialities of office records
   - report questionable or potentially illegal information to supervisor
   - process incoming/outgoing mail
   - prepare reports and correspondence
   - type and proofread routine documents
   - operate typewriter and ten-key calculators
   - operate copier machines
   - input accounting data records at computer work stations
   - edit and update accounting data records at computer work stations
   - operate other office equipment such as microfiche readers and binding equipment
   - assist other workers in making arrangements for supplies, services and other needed items
   - process newly acquired books and technical reports
   - maintain list of authorized signatures
   - use reference materials
   - implement agency policies and procedures
   - maintain stocks of business forms and supplies

11. Performing Miscellaneous Activities
   - prepare closing journal entries
   - post closing journal entries
   - prepare appropriate records/files for next accounting period

G. Marketing for the Student

1. Careers
   a. Understand Marketing for Health Care Jobs
      - discuss production businesses
      - discuss marketing businesses
      - discuss service businesses
   b. Understand Employment Opportunities
      - discuss career opportunities in health related fields
   c. Understand Levels and Diversity of Health Care Occupations
      - discuss entry-level jobs
      - discuss career sustaining jobs
      - discuss specialized jobs
      - discuss managerial jobs

2. Communications
   a. Understand Business Communication
      - discuss process of communication
      - discuss causes for communication breakdown
      - discuss guides for improving communication
      - discuss communication channels
      - maintain positive public relations
      - maintain positive human relations
      - continue professional education
   b. Understand Personal Communication
      - discuss process of communication
      - discuss causes for communication breakdown
      - discuss guides for improving communication
      - identify stages of human growth and development and appropriate communication stages

3. Office Skills
   a. Understand Basic Office Procedures
      - answer and place telephone calls
      - relay or refer telephone calls
      - relay messages effectively
      - greet callers or visitors
      - guide visitors and make introductions
      - carry out instructions given by supervisors in timely manner
      - compile information as requested by supervisors
      - set up efficient work flows
      - clean and organize own work area
   b. Understand the Automated Office
      - discuss computers and technology
      - discuss electronics communication

H. Anatomy and Physiology

1. Morphology Foundation & Functions
   a. define cells and tissues associated with the human body
2. Physiological Molecules
   a. discuss role of molecules in diffusions, osmosis, nutrition, metabolism and homeostasis
3. Histological processes covering major human tissues that comprise organs, systems, etc.
4. Specialized system covering:
   a. discuss integumentary - skin and its structure and functions
   b. discuss skeletal - bones, articulation form and functions
   c. discuss muscular - major muscles function & physiology
   d. discuss respiratory - lung morphology, importance of gases, physiology
   e. discuss cardiovascular - blood vessels heart, structure and physiology
   f. discuss lymphatic - lymph glands, vessels and major role in immunology
   g. discuss nervous system - central, sensory, motor and autonomic functions
   h. discuss endocrine system - hormones, interactions & physiology
   i. discuss digestive system - structure, processes and physiology
   j. discuss urinary system - structure and function of kidney, bladder, etc.
   k. discuss reproductive system - female & male reproductive morphology, and physiology

I. Basic Electronics

1. Identify basic terminology
2. Identify safety guidelines and techniques
3. Identify maintenance guidelines
4. Identify specific duties or tasks pertinent to operating electronic equipment

J. CPR -

1. The validated duties and tasks for CPR or Basic Life Support (BLS) Training should be structured according to the recognized standards defined by the American Heart Association.

K. Sterilization (asepsis) Techniques

1. Demonstrate an understanding of the basic sciences related to infection control
   - explain microbiology and its relationship to the health care environment

- demonstrate knowledge of medical/surgical terminology
- relate anatomy and physiology to specific health care procedures
- apply the principles of asepsis

2. Describe and practice safety measures in the health care environment
   - inspect equipment and supplies for condition and quality
   - identify and report/correct unsafe conditions
   - identify and report, to designated personnel, conditions which may exist that could negatively affect the health, safety and well being of the patient or personnel
   - demonstrate correct body mechanics

3. Perform patient care procedures related to the health care environment and describe methods for meeting patient's needs
   - perform patient transfer/transportation techniques
   - take and record temperature, pulse, respiration, and blood pressure
   - assist with positioning and restraining patient
   - assist in applying sterile dressing and bandage

4. Demonstrate knowledge of the skills necessary to function safely and effectively
   - select instruments, equipment and supplies for specific health care duty
   - measure and pour sterile solutions
   - perform surgical scrub
   - put on sterile gown and gloves
   - identify/correct and/or report breaks in aseptic technique
   - identify principles and demonstrate techniques of disinfection and sterilization
   - prepare specimen for laboratory analysis
   - decontaminate instruments, equipment and environment
   - replenish supplies and equipment
   - prepare and/or update procedure cards

II. SPECIALIZED TRAINING AREAS

Several specialized job training areas were considered for possible future program initiation at the Vo-Tech level in Montana. While many of the specialized training areas would ultimately fall under legislative approval for a tiered licensing or certification process, the committee referred validation of these areas to the specific regulatory agencies. Further legislation and approval of these job titles and their competencies rests with the Montana State legislature and regulatory agencies.

The committee identified these specialized training areas as:

a) Medical Laboratory Technician-MLT
b) Phlebotomists
c) Insurance Technicians
d) Ward/Unit Secretary or Clerk
e) Home Health Care Technician
f) Perfusionist
g) Cath Technician
h) EMT-Emergency Medical Technician
i) Histology Technician

Certification or licensure is currently required in Montana for the following areas; consequently, no task list was made for them.

a) Pharmacists
b) Physical Therapists
c) EMT's
d) Occupational Therapists
e) Nuclear Medicine Technicians
f) X-ray Technician
g) Dental Hygienists
h) Registered Nurse
i) Licensed Practical Nurse

Presently, there has been no legislation or certification established for the following titles; consequently, no task list has been prepared.

-Pharmacy Technician
-Physical Therapy Assistant
-Occupational Therapy Technician
-Nuclear Medicine Technician
-Two-year associate degree Dental Hygienist

A. Medical Laboratory Technician (Associate Degree)

1. Discuss Phlebotomy in Relation to the Health Care Setting
   - list, classify and discuss various departments and services within the health care setting in which the phlebotomist must interact to obtain laboratory specimens from patients
   - identify the major departments/sections within the clinical laboratory, the major types of procedures run in each department/section, and their specimen requirements
   - describe the roles of the major classifications of clinical laboratory personnel (i.e., pathologist, chief/administrative technologist, CLS, MT, MLT, phlebotomist, etc.)
   - define and utilize correct medical terminology and metric measurement needed

- describe appropriate and legal usage of patients' medical charts

2. Identify the Anatomic Structure and Function of the Body Systems in Relation to Services Performed by Clinical Laboratory Personnel
   - discuss the renal system and related laboratory tests
   - discuss the liver as related to liver function tests
   - discuss enzymes in relation to health and disease
   - discuss lipid metabolism and related tests
   - discuss the reproductive system and venereal diseases
   - discuss body fluids, fecal and blood components and related procedures
   - discuss carbohydrate metabolism and its relationship to diabetes mellitus
   - discuss electrolyte balance as related to health and disease
   - discuss the physiology of the endocrine system and the principle tests used to determine endocrine function
   - define and discuss the differences between transudates and exudates
   - discuss physical and chemical properties of immunoglobulins and their reactions in vitro
   - discuss basic genetics of the antigen system
   - discuss hemolytic disease of the newborn and related procedures
   - discuss the organs, cells and cellular interaction of the lymphoid and reticuloendothelial systems
   - discuss current principles of hemostasis

3. Recognize and Identify Collection Reagents, Supplies, Equipment and Interfering Chemical Substances
   - identify and discuss proper use of appropriate types of equipment needed to collect various clinical laboratory blood specimens by venipuncture
   - explain the special precautions and types of equipment needed to collect blood from a newborn infant
   - identify and discuss proper use of supplies used in collecting microspecimens
   - identify and discuss the proper use of the various types of anticoagulants, preservatives and gels used in blood collection and the vacuum tube color-codes for these additives
   - describe the types of patient's specimens that are analyzed in the clinical laboratory and the collection and the transportation of these specimens to the laboratory
   - describe substances that can interfere in analysis of blood constituents

4. Practice Collection Procedures and Recognize Possible Complications
   - implement established protocol for patient and specimen identification
   - identify five potential sites for venipuncture and name/find the most desirable one(s)
   - identify five appropriate sites for skin puncture and name/find the most desirable one(s)
   - discuss/perform methods for facilitating skin or venipuncture, including to tourniquet, warming the site, palpating, clenching fist and dangling arm
   - discuss/perform appropriate methods for decontaminating a site for skin or venipuncture
   - list four agents useful in decontamination sites for skin/venipuncture - describe when it is appropriate to use each agent
   - perform a venipuncture by evacuated tube and syringe systems, demonstrating appropriate supplies, proper handling of needle, tube and specimen, and patient care
   - perform a skin puncture demonstrating appropriate supplies, proper depth of puncture for adults, children and neonates, proper angle and pressure, etc.
   - describe the appropriate order of drawing additive tubes when using venipuncture and skin puncture
   - describe the most common complications associated with skin/venipuncture, their causes, and preventative and therapeutic techniques
   - determine need for re-collections, utilizing factors described in hospital or clinical protocol
   - determine when to reject specimen utilizing factors described in hospital protocol
   - describe/perform procedures for disposing of used or contaminated supplies
   - describe/perform the appropriate techniques for making a blood smear for hematologic evaluation

5. Practice Effective Infection Control
   - define the term "nosocomial infection"
   - describe/perform procedures for infection prevention
   - discuss/perform isolation procedures
   - identify potential routes of infection
   - identify and label biohazardous specimens

6. Practice Accepted Procedures of Requisitioning, Transporting and Processing Specimens
   - describe routine and special procedures for transporting and processing specimens
   - describe the significance of time constraints for specimen delivery
   - describe scheduling constraints that affect laboratory operational time

- inspect and report properly concerning suitability of specimen for the analysis required
- prepare aliquot(s) or component(s) of specimen for analysis according to specimen type and analysis to be performed
- prepare smears, droplets or mounts of the specimen for analysis according to institutional protocol
- demonstrate knowledge of procedures for accepting verbal test orders
- describe various transportation and communication systems

7. Demonstrate Accepted Professional, Communication and Interpersonal Skills
   - communicate appropriately with the patient
   - explain to patients the procedure to be used in specimen collection
   - demonstrate understanding of patient rights and responsibilities
   - demonstrate understanding of ethical behavior, legal aspects, and the importance of following protocol
   - demonstrate the correct use of the telephone
   - maintain acceptable appearance and grooming

8. Practice Quality Assurance and Safety
   - distinguish and perform methods which ensure quality when collecting blood specimens for the clinical laboratory
   - demonstrate knowledge of appropriate patient safety
   - demonstrate knowledge of first-aid techniques including CPR
   - practice safety in accordance with institutional policy
   - identify documentation procedures for accidents that occur during specimen procurement and handling
   - describe the phlebotomist role in providing quality assurance in laboratory testing, reporting, and use and maintenance of equipment

9. Demonstrate Knowledge of Urinalysis Principles and Procedures
   - perform routine urinalysis testing
   - perform selected special urinalysis testing
   - describe collection procedures for the special tests

10. Demonstrate Knowledge of Hematological Principles and Procedures
    - perform selected manual and automated hematology procedures
    - discuss conditions and diseases related to abnormal white cell morphology
    - discuss conditions and diseases related to abnormal red cell morphology
    - perform selected manual and automated coagulation procedures
    - discuss conditions and diseases related to abnormal hemostasis

11. Demonstrate Knowledge of Microbiological Principles and Procedures
    - discuss microbial taxonomy and classification
    - discuss bacterial metabolism, reproduction, cell parts and the function of those parts
    - discuss disinfection and sterilization techniques
    - discuss media classification and prepare culture media
    - discuss specimen collection, handling, and cultural techniques for urine, stool, wound, throat, body fluids, blood and exudates
    - perform and interpret antibiotic susceptibility tests
    - discuss diseases associated with selected anaerobic and aerobic bacteria
    - identify selected aerobic and anaerobic bacteria through biochemical tests
    - prepare permanent smears, stain and acid-fast and gram stains, and observe bacteria microscopically
    - discuss handling and collection of specimens for fungal isolation
    - discuss handling, collection and identification of mycobacteria
    - discuss collection and handling of specimens for viral studies
    - prepare and examine specimens, and report ova and parasites as indicated

12. Demonstrate Knowledge of Clinical Chemistry Principles and Procedures
    - perform selected renal function tests
    - perform selected tests for carbohydrate, protein and lipid metabolism
    - demonstrate knowledge of principles of automation as related to the clinical chemistry laboratory
    - perform clinical chemistry procedures on selected instruments
    - perform selected liver functions tests
    - discuss electrophoresis
    - perform enzyme procedures
    - perform electrolyte analyses
    - discuss and perform renal clearance procedures
    - discuss therapeutic drug monitoring and related tests

13. Demonstrate Knowledge of Immunohematological Principles and Procedures
    - discuss the ABO, Rh and other blood groups systems
    - perform antigen and antibody testing to establish ABO group and Rh
    - perform immunohematological procedures relating to compatibility testing
    - discuss blood donor processing
    - perform a donor interview and prepare a donor for phlebotomy

- discuss compatibility testing including special tests and transfusion reactions
- discuss aphereses in relation to component collection and therapy
- demonstrate knowledge of specialty immunohematological principles
- perform selected specialty immunohematology tests such as blood components for therapy

14. Demonstrate Knowledge of Immunological/Serological Principles and Procedures
    - perform tests for venereal disease
    - perform selected serological procedures
    - perform pregnancy tests
    - demonstrate knowledge of specialty immunological/serological principles
    - perform selected specialty serological tests such as immunofluorescence assays

15. Demonstrate Knowledge of Miscellaneous Principles and Procedures
    - perform routine laboratory procedures on miscellaneous fluids
    - operate and perform routine maintenance of selected laboratory instruments

16. Demonstrate Knowledge of Specialty Hematological Principles and Procedures
    - identify normal and abnormal molecular structures of hemoglobin and the more common hemoglobinopathies
    - identify normal and abnormal, immature and mature erythrocytes at each stage of maturation
    - perform selected cytochemical staining procedures
    - identify and distinguish between normal, atypical and leukemic leukocytes at each stage of maturation
    - perform selected clinical coagulation procedures

17. Demonstrate Knowledge of Specialty Clinical Chemistry Principles and Procedures
    - perform selected chromatography and electrophoresis procedures
    - perform and calculate results of immunoassay procedures
    - perform, calculate, analyze and interpret selected enzyme assays
    - perform, calculate, analyze and interpret blood lipids
    - perform, calculate, analyze and interpret procedures related to endocrine function
    - perform selected assays for therapeutic and toxic substances

18. Demonstrate Knowledge of Specialty Microbiological Principles and Procedures
    - classify fungi and state their clinical significance
    - perform general and specialized techniques used in identifying fungi
    - identify selected fungi
    - discuss automated microbiological procedures
    - identify life cycles, modes of transmission, prevention and pathophysiology of clinically significant parasites
    - discuss microbial and immunological techniques to identify selected clinically significant viruses
    - discuss classification and related diseases states of clinically significant viruses
    - identify commonly used antibiotics, their usage and mechanisms of activity

19. Demonstrate Knowledge of Operation and Principles of Laboratory Instruments
    - discuss electricity, electronics, electromagnetic radiation and electrochemical techniques
    - discuss principles of clinical laboratory automation
    - operate, calibrate and maintain selected clinical laboratory instruments within predetermined limits
    - perform entry level computer skills

20. Correlate Clinical Laboratory Procedures with Theoretical Knowledge
    - associate laboratory findings and clinical data to assess test results and procedures
    - analyze laboratory findings to recognize common technical/procedural problems
    - evaluate laboratory findings to take predetermined corrective action according to predetermined critieria
    - evaluate laboratory findings to recognize the needs for additional testing

21. Demonstrate Employability Skills
    - conduct a job search
    - secure information about a job
    - identify documents that may be required when applying for a job
    - complete a job application
    - demonstrate competence in job interview techniques
    - identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons
    - identify acceptable work habits
    - demonstrate knowledge of how to make job changes appropriately
    - demonstrate acceptable employee health habits

B. Phlebotomists

1. Discuss Phlebotomy in Relation to the Health Care Setting
   - list, classify and discuss various departments and services within the health care setting in which the phlebotomist must interact to obtain laboratory specimens from patients
   - identify the major departments/sections with the clinical laboratory, the major types of procedures run in each department/section, and their specimen requirements
   - describe roles of the major classifications of clinical laboratory personnel (i.e., pathologist, chief/administrative technologist, CLS, MT, phlebotomist, etc.)
   - define and utilize correct medical terminology and metric measurement needed by phlebotomists
   - describe appropriate and legal usage of patient's medical charts

2. Identify the Anatomic Structure and Function of Body Systems and Services Performed by Phlebotomist
   - describe and define 9 body systems with emphasis on: respiratory system, urinary system, endocrine system and circulatory system
   - list and describe the main superficial veins used in performing venipunctures
   - list blood components and tests performed to identify those components

3. Recognize and Identify Collection Reagents Supplies, Equipment and Interfering Chemical Substances
   - identify and discuss proper use of appropriate types of equipment needed to collect various clinical laboratory blood specimens by venipunctures
   - explain the special precautions and types of equipment needed to collect blood from a newborn infant
   - identify and discuss proper use of supplies used in collecting microspecimens
   - identify and discuss the proper use of the various types of anticoagulants, preservatives and gels used in blood collection and the vacuum tube color-codes for these additives
   - describe the types of patient's specimens that are analyzed in the clinical laboratory and the phlebotomist's role in collecting and/or transporting these specimens to the laboratory
   - describe substances that can interfere in analysis of blood constituents

4. Practice Collection Procedures and Recognize Possible Complications
   - implement established protocol for patient and specimen identification
   - identify five potential sites for venipuncture and name/find the most desirable one(s)
   - identify five appropriate sites for skin puncture and name/find the most desirable one(s)
   - discuss/perform methods for facilitating skin or venipuncture, including tourniquet, warming the site, palpating, clenching fist and dangling arm
   - discuss/perform appropriate methods for decontaminating a site for skin or venipucture
   - list four agents useful in decontaminating sites for skin/venipuncture - describe when it is appropriate to use each agent
   - perform a venipuncture by evacuated tube and syringe systems, demonstrating appropriate supplies, proper handling of needle, tube and specimen, and patient care
   - perform a skin puncture demonstrating appropriate supplies, proper depth of puncture for adults, children and neonates, proper angle and pressure, etc.
   - describe the appropriate order of drawing additive tubes when using venipuncture and skin puncture
   - describe the most common complications associated with venipuncture and skin puncture
   - determine need for re-collections, utilizing factors described in hospital or clinical protocol
   - determine when to reject specimen utilizing factors described in hospital protocol
   - describe/perform procedures for disposing of used or contaminated supplies
   - describe/perform the appropriate techniques for making a blood smear for hematologic evaluation

5. Practice Effective Infection Control
   - define the term "nosocomical infection"
   - describe/perform procedures for infection prevention
   - discuss/perform isolation procedures
   - identify potential routes of infection
   - identify and label biohazardous specimens

6. Practice Accepted Procedures of Requisitioning, Transporting and Processing Specimens
   - describe routine and special procedures for transporting and processing specimens
   - describe the significance of time constraints for specimen delivery
   - describe scheduling constraints that affect laboratory operational time

- inspect and report suitability of specimen for the analysis required
- prepare aliquot(s) or component(s) of specimen for analysis according to specimen type and anlysis to be performed
- prepare smears, droplets or mounts of the specimen for analysis according to institutional protocol
- demonstrate knowledge of procedures for accepting verbal test orders
- describe various transportation and communication systems

7. Practice Quality Assurance and Safety
   - distinguish and perform methods which ensure quality when collecting blood specimens for the clinical laboratory
   - demonstrate knowledge of appropriate patient safety
   - demonstrate knowledge of first-aid techniques including CPR (cardiopulmonary resuscitation)
   - practice safety in accordance with institutional policy
   - identify documentation procedures for accidents that occur during specimen procurement and handling
   - describe the phlebotomist's role in providing quality assurance in laboratory testing, reporting, and use and maintenance of equipment

8. Demonstrate Accepted Professional, Communication, and Interpersonal Skills
   - communicate appropriately with the patient
   - explain to patient the procedure to be used in specimen
   - demonstrate understanding of patient rights and responsibilities
   - demonstrate understanding of ethical behavior, legal aspects, and the importance of following protocol
   - demonstrate the correct use of the telephone
   - maintain acceptable appearance and grooming

9. Demonstrate Employability Skills
   - conduct a job search
   - secure information about a job
   - identify documents that may be required when applying for a job
   - complete a job application
   - demonstrate competence in job interview techniques
   - identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons
   - identify acceptable work habits
   - demonstrate knowledge of how to make job changes appropriately
   - demonstrate acceptaole employee health habits

C. Insurance Technicians -
Medicare Billing Clerk and/or Financial Counselor Technician

1. Process Medicare accounts
   - receive Medicare accounts from discharge clerk
   - audit accounts to ensure all charges in final billing are correct
   - resolve any discrepancies using established procedure
2. Prepare Claim Forms
   - use on-line editing system, direct electronic billing PC system or manually-prepared systems to prepare forms
   - ensure compliance with current Medicare guidelines, policies, procedures and requirements
3. Identify diagnosis and procedure codes
   - obtain diagnosis and procedure codes from medical records
   - ensure codes are appropriately noted on claim forms
4. Initiate and/or Complete Additional Forms
   - obtain any necessary or additional forms required with claims
5. Maintain Account Files
   - monitor an organized file of accounts that are pending completion of processing
6. Forward Completed Claims
   - forward completed claims with appropriate notations to Medicare coordinators after claim is transmitted
7. Assist Processing of Medicare Multiple Payment Paysheet
   - process paysheets and census statistics in rotation with Medicare coordinators
8. Screen Inpatient Accounts
   - verify all necessary billing information with insurance counselor present and complete
   - contact patients, families and guarantors to obtain missing admission information
   - contact agencies, insurance companies and employers to obtain complete coverage information
9. Handle Inpatient Accounts
   - perform pre-admission financial review to ensure adequate coverage is available
   - make payment arrangements with patients and families
   - perform ongoing financial counseling with patients until concrete payment arrangements are completed
   - forward completed account to appropriate billing specialist
10. Report Patient Admission to Various Agencies
   - report admission status to agencies on a timely basis in conjunction with other insurance counselors and/or quality assurance department personnel
11. Assist Patients in Applying for Programs or Coverage
   - identify various programs or agency coverage sources
   - monitor completion of required forms and interviews
   - ensure patient's attendance or necessary personal attendance at specific interviews and appeals

12. Identify Departmental Procedures
    - ensure all accounts are up-to-date and accurate
13. Monitor Status of Accounts
    - maintain a detailed, current knowledge of sizes of bills as related to amount of coverage known to be available
14. Assist Medicaid, Social Services, Patient Care Review staff
    - ensure all required forms and authorizations are attached to accounts for billing
15. Perform routine clerical duties and correspondence

D. Ward Secretary/Clerk

1. Perform duties related to processing and communicate physicians' orders
   - enter appropriate physician's order into computer or log
   - initiate and maintain patient's file
   - communicate verbal laborator reports to appropriate health care providers
   - enter MEDPRO order numbers next to items on order sheet as performed
2. Maintain Patients' Medical Records
   - perform initial labeling of all chart forms and placement of the medical record into chart backs
   - check all charts at the beginning of each shift for orders, needed forms and proper identification and organization
   - thin charts of long-term patients so that no pertinent data is lost
   - carry charts to Medical Records department for copying if patient is trasnferred out-of-house
   - place complete medical records in appropriate areas for return to Medical Records department
3. Maintain duties of Clinical Unit Receptionist
   - answer phone promptly and courteously - identify self and unit in a courteous and pleasant manner
   - relay messages to appropriate personnel promptly
   - place phone calls to other departments, doctor s offices and other facilities to arrange for post-hospital appointments for patient; notify physicians of consult requests; or schedule diagnostic tests or outpatient treatments
   - respond courteously to inquiries of the nursing staff, patients, visitors, medical staff and other departments
   - refer patient condition calls to the appropriate nurse
   - assist in routing patient's mail and flowers to them daily
   - assist physicians by answering questions concerning patient's chart or finding the appropriate nurse to assist them
   - interact with all hospital departments to provide accurate information in a courteous manner
   - communicate census data at designated times in collaboration with head nurse

4. Perform Clerical Functions on the Clinical Unit
   - promptly notify the Nursing Service Staff office of all patient deaths
   - place transfer and admission of patients to appropriate rooms and bed with R.N. approval
   - transport floor-collected lab specimens with clean exterior to lab lift
   - enter all charges into the computer each shift prior to cart exchange times
   - labels all patient charge slips
   - participate in orienting new personnel
   - attend unit meetings

E. Home Health Care Technicians
   (NOTE: Currently, validated task lists for Home Health Care Technicians fall under the certified Nurses' Aide subcluster. Montana's Home Health Care Technicians are trained under specific programs as Nurses' Aides with specialty training for home health care.)

   1. Demonstrate Knowledge of Legal and Ethical Responsibilities
      - explain "Patients' Bill of Rights"
      - describe the role of each team member
      - explain the role of the Home Health Aide in relation to other team members
      - describe the responsibility of the agency to the aides and staff
      - provide health care within the policies of facilities/agencies where he/she works
      - provide health care within the legal framework of his/her job description
      - explain the information which should be included in a written plan of care

   2. Demonstrate Knowledge of Basic Human Needs and Their Relationship to the Home Health Aide
      - identify ways in which people communicate with each other
      - describe the importance of the family to individuals and to society
      - describe behavior which may be observed when basic needs are not met
      - describe the basic needs which home health aide services help to meet
      - identify situations which might need Home Health Aide Services
      - identify common reactions of family members to illness or stress and how they might be handled
        recognize changes or events in a family that the Home Health Aide should report to the supervisor

3. Provide a Safe and Healthy Environment
   - explain methods of infection control
   - wash hands using aseptic technique
   - identify fire/safety hazards and methods of control
   - list causes of accidents
   - use protective devices
   - practice good body mechanics

4. Demonstrate Knowledge of Changes That Occur in the Aging Process
   - describe general characteristics, particular needs and problems of older persons
   - identify attitudes and living habits which promote positive mental and physical health for the elderly
   - distinguish between fact and fallacy about the aging process
   - identify signs and symptoms of common disorders/diseases
   - identify community resources and services available to older persons
   - describe the feelings, reactions, and needs of the dying person, family members and the Home Health Aide

5. Demonstrate Knowledge of Nutritional Needs and Food Management
   - explain regional, cultural, and religious food patterns
   - prepare a food plan including basic 4 food groups
   - list factors which must be considered when purchasing food
   - prepare a meal
   - feed the client
   - describe special and therapeutic diets

6. Provide Personal Care and Hygiene
   - bathe the client
   - give oral hygiene
   - give back rub
   - provide hair care
   - provide nail care
   - shave the client
   - dress the client
   - provide foot care
   - make the bed
   - provide for the clients' elimination needs

7. Perform Special Care Activities
   - measure and record vital signs
   - change unsterile dressings
   - apply support stockings and prosthetic devices
   - give perineal care
   - assist client with a sitz bath
   - collect specimens

- perform sugar and acetone tests
- care for catheters and tubes
- assist client with taking self-administered prescribed medication
- change a colostomy bag
- provide special skin care
- measure and record I and O
- perform CPR
- perform first aid
- perform post-mortem care

8. Assist Client With Meeting Rehabilitation Needs
   - define rehabilitation
   - list the purposes of a rehabilitation program
   - assist the client with meeting optimum activities of daily living (ADL)
   - lift, head, or transfer a client using good body mechanics
   - perform prescribed range of motion
   - assist the client in the use of ambulatory support devices

9. Perform Household Services Essential to the Clients' Health
   - state the role of a Home Health Aide in maintaining a clean environment
   - list ways of establishing an individual work plan with client and family
   - demonstrate the correct procedures for household cleaning tasks
   - identify the methods for proper food storage
   - identify the methods for proper medication storage

10. Record and Report Observations
    - describe the difference between objective and subjective reporting
    - identify methods of observation
    - identify different methods of communicating
    - maintain record of daily care
    - record mileage
    - assist in completing an incident report

11. Demonstrate Employability Skills
    - conduct a job search
    - secure information about a job
    - identify documents that may be required when applying for a job
    - complete a job application
    - demonstrate competence in job interview techniques
    - identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons
    - identify acceptable work habits

- demonstrate knowledge of how to make job changes appropriately
- demonstrate acceptable employee health habits

F. **Perfusionist**

(NOTE: Perfusionists in Montana currently receive specialized validated task lists through on-the-job training exclusively. Because of this specialized training, Montana's low state population and resulting lack of demand, the Technical Committee did not validate a task list for this job title.)

G. **Catherization Technician**

1. Operate all radiographic and physiologic equipment
2. Perform calculations relating to physiologic data
3. Develop films, maintain quality control and clean processor
4. Identify correct views of heart and major vessels
5. Assist with storage of patient records and films
6. Perform specific emergency maneuvers for cardiac arrest
7. Set up sterile tables/sterile technique
8. Scrub in and assist physicians
9. Prepare room prior to case and clean up following case
10. Assist in processing supplies
11. Correctly process charges
12. Assist with patient education
13. Schedule appropriate procedures
14. Demonstrate employability skills

H. **Emergency Medical Technician**

The National Standard Curriculum course guides for Emergency Medical Technicians - Basic, Intermediate and Paramedic - have been validated through the Emergency Medical Services Agency and the Montana Department of Health and Environmental Services. Updated curriculum is available through the Emergency Medical Services Bureau, Helena, Montana.

I. **Histology Technician**

1. Identify the Anatomic Structure and Function of Body Systems in Relation to Disease States and Services Performed by the Histotechnician
   - demonstrate knowledge of human anatomy and physiology
   - demonstrate knowledge of normal histology of human organs
   - demonstrate knowledge of various methods of obtaining histological specimens from patients
   - identify tissue structures and cellular components; relate both to physiological functions
   - demonstrate knowledge of types of histological specimens usually submitted for gross and microscopic examination
   - recognize errors and their sources, and take corrective action

- demonstrate knowledge of chemical hazards within the histopathology laboratory
- demonstrate knowledge of proper disposal methods for all chemical and biological waste within the histopathology

2. Practice Quality Assurance, Safety and Acceptable Communication Skills
   - practice quality control in the histology laboratory as required by the accrediting agency
   - follow institutional policies and procedures related to safety
   - practice acceptable laboratory safety
   - demonstrate knowledge of diagnostic terminology
   - practice appropriate communication skills
   - recognize errors and their sources, and take corrective action
   - demonstrate knowledge of proper disposal methods for all chemical and biological waste within the histopathology laboratory

3. Adhere to Legal and Ethical Principles Related to the Practice of Histotechnology
   - practice discretion and confidentiality in regard to laboratory reports
   - demonstrate knowledge of the histotechnician's role and responsibilities in relation to the health care team
   - demonstrate knowledge of the legal ramifications of clinical practice
   - demonstrate knowledge of patient's rights and responsibilities

4. Receive Tissue Specimens and Perform Preparation Techniques as Indicated
   - evaluate, accept, identify and label histologic specimens
   - perform the most advantageous preparation and staining techniques
   - solve problems in staining and preparation procedures
   - evaluate and implement new preparation and staining procedures
   - distinguish between well-prepared and stained and poorly-prepare and stained histologic specimens
   - identify tissue structures and their staining characteristics

5. Assist With Frozen Section Procedures
   - demonstrate cryostat cutting
   - demonstrate rapid hemotoxylin and esoin staining
   - process consultation report, slides and tissue

6. Maintain Equipment
   - perform preventive and corrective maintenance of equipment and instruments within specified limits
   - refer to appropriate person(s) for complex repairs
   - demonstrate knowledge of laboratory management

7. Perform Office Activities
   - originate files
   - maintain files
   - close out-dated files
   - maintain confidentialities of office records
   - process incoming/outgoing mail
   - prepare reports and correspondence
   - use reference materials
   - implement appropriate policies and procedures

The Health Care Advisory Committee developed a systematized overview of vocational training needs for Montana's future workforce. The overview contains two key segments - a basic health care core curriculum and specialized training programs for vocational-technical educators and students. The basic health care core curriculum should serve as a general education program for future health care workers, with areas of specialized instruction left to the discretion of the program/course planners. For example, while knowledge of basic electronics may be regarded as a core curriculum requirement for those vocational-technical students whose career fields require an entry-level knowledge of those particular skills, electronics would not necessarily be required for every health care student.

S U M M A R Y

The Health Care Technical Committee was unanimous in their recommendations for improvement for vocational-technical education in Montana as it relates to the marketability and training of health care personnel.

The next ten years have been designated 'the years of technicians,' and vo-tech education will come to fruition nationally. According to committee members, "it is our hope that vocational-technical education in Montana will assume its rightful role in the total educational system within the Regents' governance and that it will no longer be considered 'the stepchild of post-secondary education.'"

Based on market and employment needs, the training programs for specific job titles mentioned in this text, could be activated and/or modified at vocational-technical centers. A substantive core curriculum would provide the base for all occupations associated with the health care industry.

Additionally, the Committee recommended the vocational-technical centers continue to build a strong alliance between themselves and business and industry.