

Clinical Lab Sciences Program

APRC 1999-2000

Section 1 of 3

**CLINICAL LABORATORY SCIENCES PROGRAM
COLLEGE OF ALLIED HEALTH SCIENCES
FERRIS STATE UNIVERSITY**

PROGRAM REVIEW REPORT

Due September 15, 1999

PROGRAM REVIEW PANEL:

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**Clinical Laboratory Sciences Programs
Academic Program Review Report
Table of Contents**

Section 1:	Overview of Programs	Page 1
Section 2:	Surveys of Program Graduates	Page 12
Section 3:	Surveys of Employers of Program Graduates	Page 32
Section 4:	Student Satisfaction Surveys	Page 35
Section 5:	Faculty Perceptions of the CLS Programs	Page 41
Section 6:	Advisory Committee Surveys	Page 51
Section 7:	Labor Market Analysis	Page 61
Section 8:	Program Facilities and Equipment	Page 64
Section 9:	Program Curriculum	Page 68
Section 10:	Enrollment Trends, Last Five Years	Page 69
Section 11:	Program Productivity/Cost	Page 70
Section 12:	Conclusions	Page 72
Section 13:	Recommendations	Page 76
Appendix One:	Curriculum Vita for Department Head	Page 80
Appendix Two:	Curricula Vitae for Program Faculty	Page 83
Appendix Three:	Administrative Program Review Reports	Page 97

SECTION ONE: OVERVIEW OF THE PROGRAM

Introduction and Description of the Curricula

The Clinical Laboratory Sciences programs at Ferris State University include three separate curricula. The Medical Laboratory Technician program leads to an AAS degree and eligibility for national certification as a Medical/Clinical Laboratory Technician. The 2+2 Integrated Medical Technology program combines two years of general education with two years of professional course work, including off-campus clinical experience. This program leads to a BS degree in Medical Technology and eligibility for national certification as a Medical Technologist/Clinical Laboratory Scientist. The 2+2 Career Mobility Medical Technology program is designed for certified (or certification eligible) MLTs who want a baccalaureate degree and MT/CLS certification. This program builds on their education as MLTs and adds advanced course work in the clinical laboratory sciences, natural sciences, liberal arts, and management.

The programs are revising their curricula. The proposed new curricula will: incorporate the core curriculum requirements of the College of Allied Health Sciences; reflect changes in current laboratory practice; and ease the burden on clinical affiliates by adjusting the schedules of when students are sent out for experience. The curriculum in place now (Summer, 1999) is unchanged from that described in the programs' APR report of March, 1996. The proposed new curricula, which we hope to have in place for Summer/Fall 00 semesters, will have the following changes:

Medical Laboratory Technician Program

1. Inclusion of the CAHS core curriculum
2. Addition of COMM 221, to facilitate participation in group learning in CLS courses
3. Inclusion of Introduction to Clinical Immunology. Many complex immunological procedures remain beyond the scope of MLT practice. However, immunological reagents and reaction systems are routinely in use throughout clinical chemistry, clinical microbiology, and hematology laboratories. Most MLT programs nationwide now include introductory immunology. With this change, CLLS 228, which combined classical serology with immunohematology, will drop one credit and become Immunohematology 1.
4. Rescheduling the MLT clinical experience. Students in the new curriculum will begin their clinical experience in mid March (after spring break) and finish in mid June. This will enable small laboratories with limited staffing to continue to accept students, while allowing staff to take summer vacations.
5. Combining Applied Clinical Hematology, Applied Clinical Coagulation, and Applied Clinical Body Fluid Analysis into one course, to reflect laboratory practice.

2+2 Integrated Medical Technology Program

1. Requiring CHEM 114 and 124, to reflect current laboratory practice, where less basic chemistry is applied. For those very rare Ferris students who plan to go to medical/dental school, individual advising and summer school can enable them to meet entrance requirements.
2. Adding PHYS 130.
3. Changing the requirement for COMM 105 to COMM 221, as above.
4. Replacing STQM 260 with CAHS 410, because the STQM course no longer includes material which our students need.
5. Replacing CLLS 358 with CLLS 228 and CLLS 459, so that there is Immunohematology 1, for both two and four year students, and Immunohematology 2 for four year students.
6. Changing the clinical chemistry sequence. Both two and four year students will take CLLS 215. CLLS 355 will become a redesigned Clinical Chemistry 2, which will cover topics such as predictive value theory, procedural evaluation, and meeting regulatory requirements.

7. Adding a course in instrumentation/robotics.
8. Adding a management project to clinical internship (1 credit), combined with shortening the clinical experience from 22 to 17-8 weeks (winter semester plus finals week plus spring break). The proposed new Essentials of an Accredited Program in Clinical Laboratory Science clearly state that medical technologists should be prepared to do less laboratory testing at the bench, and more planning, evaluating, and management functions.

2+2 Career Mobility Program

Adding PHYS 130, the CLLS instrumentation/robotics courses, changing the statistics and chemistry requirements, changing the clinical chemistry sequence, and adding the clinical management course, as described above.

Existing and proposed curriculum check sheets are included below.

Mission and Goals

The Clinical Laboratory Sciences programs fit well into the overall mission of Ferris State University and the College of Allied Health Sciences

Mission of Ferris State University: Ferris State University will be a national leader in providing opportunities for innovative teaching and learning in career-oriented, technological and professional education.

Mission of CAHS: The College of Allied health Sciences will be a national leader in quality education preparation for health-related careers.

Excerpts from the vision of the CAHS: "...The preparation of our students will increasingly merge technical content with computer, communication, critical thinking, and collaborative skills. Our graduates will be nationally known and recruited for the excellence of their preparation... the programs will be known and respected throughout the country for the teaching/learning approaches utilized, the caliber of the graduates, and the strength of the faculty... there will be a close collaboration with health care providers, industry, and government to assure curriculum relevance and maximum utilization of resources."

Mission of the CLS programs: The mission of the Clinical Laboratory Sciences programs at Ferris State University is to prepare graduates who are ready for career entry level employment in a variety of clinical laboratory settings: hospitals, blood banks, independent and physicians' office laboratories, clinics, health maintenance organizations, urgent care centers, and industry. All graduates should be:

- Able to follow all safety policies of the workplace, and recognize and correct unsafe practices
- Ready to work as a member of the health care team
- Capable of professional advancement
- Able to maintain technical competence under the normally stressful conditions of the clinical laboratory
- Able to integrate theory and practice effectively
- Able to generate data to be used in patient care, evaluate the validity of data, and to assure reliability before reporting test results
- Able to recognize the importance of quality control and quality assurance programs
- Able to collect and process samples of blood and other body fluids, and evaluate the suitability of these samples for analysis

- Able to perform routine tests and appropriate additional follow-up tests where needed
- Able to maintain instrumentation and identify and correct malfunctioning systems
- Able to communicate effectively with coworkers, patients, their families, and others
- Able to perform professionally by respecting the confidentiality of laboratory data; maintaining neatness in personal habits, work areas, and laboratory reports; performing to the best of their abilities; following established employment policies; and assuming responsibility for their conduct and their work.

In addition, baccalaureate graduates should:

- Be capable of professional advancement and study, in laboratory and health care management and education positions
- Understand, promote, and participate in total quality management and continuous quality improvement programs
- Manage and supervise other laboratory professionals, providing clinical instruction and continuing education where appropriate
- Develop and implement new methodologies and tests systems as the need arises;
- Be aware of, comply with, and monitor external regulatory requirements. . .
- Correlate results for all areas of the laboratory and relate these results to the clinical condition of the patient.

Program History

A traditional 3+1 Medical Technology program at Ferris State University began in 1968. Students completed three years at Ferris, and then applied for a one-calendar-year clinical experience at an affiliated hospital to complete degree requirements and become eligible for national certification. When accepted into such a program, the students remained enrolled at Ferris, earned academic credit, and graduated after completing the hospital program. In the 1970s, there were 2-3 applicants for the approximately 150 "slots" in hospital based MT programs in Michigan. Ferris students had difficulty competing with students from other Michigan universities. As a result, Ferris began investigating alternative educational approaches that would be cost effective and would allow more students to complete the program successfully.

In 1978, the 2+2 Medical Technology program began. Ferris State University, rather than the hospital-based internship program, holds the external national accreditation. The program requires completion of a shortened clinical experience at a laboratory affiliated with Ferris. Students prepare for career entry by completing courses on campus taught by faculty who are experienced medical technologists. They then complete their undergraduate education with an assigned clinical experience.

In 1972, the Medical Laboratory Technician program began. The explosive growth of clinical laboratory testing, combined with advances in automated technology, has offered opportunities to associate degree graduates. These students also combine on-campus courses with clinical experience in affiliated laboratories. Ferris State University holds the national accreditation.

Impact of the Program on the University, the State, and the Nation

The CLS programs offer Ferris students the opportunity to complete a science-based health care program with excellent employment potential. Students who want a career in health care that does not involve extensive patient contact are attracted to this field. Many of our students transfer from the pre-pharmacy, pre-optometry, and pre-medical curricula. These students might otherwise leave Ferris. Through the Clinical Laboratory Sciences, they can stay at Ferris, finish a degree, and gain well-paid employment after graduation.

The Medical Laboratory Technician program is one of five in Michigan. There were eleven such programs in the 1970s. Other programs include Baker College, Kellogg Community College, Highland Park Community College, and Northern Michigan University. We estimate that Ferris supplies the state with about 40% of the annual MLT graduates in the state, and our numbers are well below the number of employment opportunities available.

Twenty years ago, there were more than 30 hospital-based Medical Technology programs in Michigan. That number has now declined to six (St. John's Hospital, Detroit; DMC University Laboratory, Detroit; Hurley Hospital, Flint; Spectrum Health, Grand Rapids; William Beaumont Hospital, Royal Oak; and St. Mary's Hospital, Saginaw). These remaining sites have all reduced the number of students accepted each year. In the face of declining reimbursement, laboratories can no longer afford to hire, schedule, and dedicate technical staff and pathologists to administering and teaching in a Medical Technology program. Genesys Medical Center in Flint and Munson Medical Center, Traverse City, have discontinued their hospital-based programs within the past year.

Other university-based MT programs in Michigan include Andrews University, Wayne State University, Michigan State University, Northern Michigan University, and Eastern Michigan University. We estimate that we provide about one fourth of the MT graduates in Michigan, and a much higher percentage of graduates who plan to stay in Michigan and work in a clinical laboratory. Employment prospects continue to be excellent.

The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) names Ferris State University as a model for university-based clinical laboratory education. Universities which are considering establishing programs are routinely referred to Ferris for consultation. Many hospital-based MT programs in Michigan have given up their own accreditation and affiliated with Ferris: Bronson Methodist Hospital in Kalamazoo; Hackley Hospital in Muskegon; North Oakland Medical Center in Pontiac; St. Mary's Hospital in Grand Rapids; the east campus of Spectrum Health in Grand Rapids (formerly Blodgett); and Munson Medical Center in Traverse City. These laboratories have learned that they can still prepare students, whom they consider as potential employees, with less time and cost involved, by accepting Ferris interns.

In addition to teaching students at Ferris, the CLS faculty present educational programs at meetings of various local, state, and national professional organizations. We have also presented continuing education at some of our affiliated laboratories. Mrs. Ross served as a consultant to the laboratory at Spectrum Health-Reed City campus, writing competency evaluation exams and recommending revisions to their manual of SOPs. Mr. deRegnier and Mr. Landis have worked with students at the Mecosta-Osceola Math/Science/Technology Center. Mr. Landis has provided training for technical and sales staff of Abbott Diagnostics. See individual curricula vita for details.

The CLS program is in the first stages of implementing an innovative program of online communication with affiliated laboratories. We plan to put a dedicated personal computer in the laboratory of each affiliate, providing internet access if the laboratory does not already have it (they provide the phone line). We will then provide training and technical support for the system, which will enable students and clinical instructors to communicate with us via e-mail. This will help ease problems with our current cumbersome system of telephone tag communication, fax, and snail-mail. Within 1-2 years, we hope to be able to send course objectives, student evaluations, exams, review lessons, and other documents via the web. Further plans include providing continuing education to staff in the affiliates via this route. This should be especially helpful in smaller laboratories, who find it difficult to send staff to distant, expensive professional meetings.

Expectations

Paying for health care remains an issue in the United States. Health care organizations are continuing their emphases on diagnosing and treating patients as rapidly as possible, avoiding hospitalization (or shortening stays), and preventing disease. It has been estimated that about 70% of diagnostic decisions are based on the results of laboratory testing. Despite local re-engineering and reorganizing of existing laboratories, jobs for graduates continue to be created. The program faculty are called weekly by employers looking to hire our graduates. Ferris has a reputation as one of the most forward looking, finest CLS programs in the country. Students, graduates, and employers express a high degree of satisfaction with the program. The remainder of this document will discuss the information gathered by the Program Review Committee, enrollment trends, program productivity costs, conclusions, and recommendations.

Plans for Improvement

Our plans for improvement include:

- Implementing the proposed curriculum revision
- Establishing online communication with our affiliated clinical laboratories
- Using our Faculty Development Grant to develop and utilize a laboratory information system in our on-campus simulated clinical laboratories. If this project is successful, we may be able to market the LIS to other CLS programs across the country.
- Renew our external accreditation. Our self-study will be submitted by June 1, 2000, and our expected site visit will occur in the Fall of 2000.
- Continue to campaign for relocation within the VFS building, where laboratories other than those we are currently using would allow us to reconfigure our instrumentation, establish a core laboratory (in keeping with current laboratory practice), and enroll more students in fewer laboratory sections.
- Use available resources, such as the Exeter Plan, to organize recruiting efforts and increase enrollment.

**FERRIS STATE UNIVERSITY
COLLEGE OF ALLIED HEALTH SCIENCES
Medical Laboratory Technology – Associate in Applied Science Degree**

NOTE: Meeting requirements for graduation is the responsibility of the student. Your advisor is available to assist you.

FIRST YEAR

1st Semester

CHEM 114 ^a Intro. to Gen. Chem. OR	4 _____
CHEM 121 General Chemistry 1	5 _____
MATH 115 ^b Intermediate Algebra	0 _____
ENGL 150 English 1	3 _____
MRIS 102 Orient. to Med. Vocab.	1 _____
CLLS 101 Clin. Lab. Science Orient.	1 _____
BIOL 108 Medical Microbiology	3 _____
	<u>12-13</u>

2nd Semester

CHEM 124 Intro. to Organic & Biochemistry	3 _____
Cultural Enrichment Elective	3 _____
BIOL 205 Human Anat. & Physiology	5 _____
ISYS 105 Microcomputer Applications	3 _____
	<u>14</u>

SECOND YEAR

1st Semester

Social Awareness Elective	3 _____
CLLS 228 Immunology & Immunohematology	4 _____
CLLS 230 Hematology 1	3 _____
CLLS 235 Clinical Microbiology 1	4 _____
	<u>14</u>

2nd Semester

CLLS 215 Clin. Chem. & Instrumentation	5 _____
CLLS 224 Body Fluid Analysis & Hemostasis	3 _____
CLLS 225 Medical Mycology, Parasitology & Virology	2 _____
CLLS 256 Simulated Clinical Lab.	3 _____
ENGL 250 English 2	3 _____
	<u>16</u>

Summer Semester

CLLS 270 Appl. Clin. Chem. & Instrument.	3 _____
CLLS 271 Appl. Clin. Body Fluid Analysis	1 _____
CLLS 272 Appl. Clinical Microbiology	3 _____
CLLS 273 Appl. Clinical Hematology	2 _____
CLLS 274 Appl. Clinical Immunohematology	2 _____
CLLS 275 Appl. Clinical Coagulation	1 _____
CLLS 276 Appl. Clinical Serology	1 _____
	<u>13</u>

^aCHEM 114 – For students not planning to continue in the Medical Technology program.

CHEM 121 – For students planning to continue in the Medical Technology program.

^bMATH 115 equivalency or proficiency (Math ACT subscore of 24 or better) required for graduation.

69 - 70 semester hours required for graduation

FERRIS STATE UNIVERSITY
COLLEGE OF ALLIED HEALTH SCIENCES
Medical Technology (Career Mobility) – Bachelor of Science Degree
(Following Successful Completion of an Associate Degree
Medical Laboratory Technology Program)

⚠: Meeting requirements for graduation is the responsibility of the student. Your advisor is available to assist you.

THIRD YEAR		FOURTH YEAR	
<u>Semester</u>	<u>Grade</u>	<u>1st Semester</u>	<u>Grade</u>
121 General Biology 1	4 _____	ENGL 321 Advanced Composition	3 _____
1105 Interpersonal Comm.	3 _____	Cultural Enrichment Elective	3 _____
214 Fund. of Organic Chemistry	4 _____	Social Awareness Elective	3 _____
351 Basic & Clin. Immunology	3 _____	MGMT 301 Applied Management	3 _____
260 Intro. to Statistics	3 _____	CLLS 459 Adv. Problem Solving in	
	17	Immunoematology	1 _____
		CLLS 463 Clin. Lab. Mgt. Supervision &	
		Education	3 _____
		CLLS 499 Clinical Lab. Science Seminar	1 _____
			17
<u>Semester</u>		<u>2nd Semester</u>	
122 General Biology 2	4 _____	CLLS 488 Clinical Lab. Science Practice	8 _____
286 General Microbiology	3 _____		8
Awareness Elective	3 _____		
324 Fund. of Biochemistry	3 _____		
Cultural Enrichment Elective	3 _____		
	16		
<u>3rd Semester</u>			
300 Pathophysiology	3 _____		
355 Clin. Chem. & Instrument. 2	4 _____		
430 Hematology 2	3 _____		
435 Clinical Microbiology 2	4 _____		
	14		

⚠ H 115 equivalency or proficiency (Math ACT subscore of 24 or better) required for graduation.

Students must meet the following University requirements:

Cultural Enrichment – Select two courses with one at the 200 level or above.

Social Awareness - Two courses, at least one at the 300-400 level, and one fulfilling race, ethnicity and/or gender requirement.

One Cultural Enrichment **OR** Social Awareness course must fulfill Global Consciousness requirement.

72 semester hours are required in the third and fourth years of this Bachelor's program

FERRIS STATE UNIVERSITY
COLLEGE OF ALLIED HEALTH SCIENCES
Medical Technology (Integrated) – Bachelor of Science Degree

NOTE: Meeting requirements for graduation is the responsibility of the student. Your advisor is available to assist you.

FIRST YEAR

1st Semester

	<u>Grade</u>
BIOL 121 General Biology 1	4 _____
CHEM 121 General Chemistry 1	5 _____
*MATH 115 Intermediate Algebra	0 _____
Cultural Enrichment Elective	3 _____
CLLS 101 Clin. Lab. Science Orientation	<u>1</u> _____
	13

2nd Semester

BIOL 122 General Biology 2	4 _____
CHEM 122 General Chemistry 2	5 _____
ENGL 150 English 1	3 _____
Social Awareness Elective	3 _____
MRIS 102 Orientation to Med. Vocabulary	<u>1</u> _____
	16

SECOND YEAR

1st Semester

CHEM 214 Fund. of Organic Chemistry	4 _____
BIOL 205 Human Anatomy & Physiology	5 _____
COMM 105 Interpersonal Communication	3 _____
ISYS 105 Microcomputer Applications	3 _____
Cultural Enrichment Elective	<u>3</u> _____
	18

2nd Semester

CHEM 324 Fund. of Biochemistry	3 _____
BIOL 286 General Microbiology	3 _____
ENGL 250 English 2	3 _____
STQM 260 Intro. to Statistics	3 _____
MGMT 301 Applied Management	<u>3</u> _____
	15

THIRD YEAR

1st Semester

	<u>Grade</u>
CLLS 230 Hematology 1	3 _____
CLLS 235 Clinical Microbiology 1	4 _____
CLLS 351 Basic & Clinical Immunology	3 _____
Social Awareness Elective	3 _____
Cultural Enrichment Elective	<u>3</u> _____
	16

2nd Semester

CLLS 215 Clin. Chem. & Instrumentation 1	5 _____
CLLS 224 Body Fluid Analysis & Hemostasis	3 _____
CLLS 225 Med. Mycology, Parasitology & Virology	2 _____
CLLS 358 Immunohematology	4 _____
Social Awareness Elective	<u>3</u> _____
	17

Summer Semester

BIOL 300 Pathophysiology	3 _____
CLLS 355 Clin. Chem. & Instrumentation 2	4 _____
CLLS 430 Hematology 2	3 _____
CLLS 435 Clinical Microbiology 2	<u>4</u> _____
	14

FOURTH YEAR

1st Semester

ENGL 321 Advanced Composition	3 _____
CLLS 456 Clinical Lab. Practicum	3 _____
CLLS 463 Clin. Lab. Management, Supervision, & Education	3 _____
CLLS 481 Clin. Chem. & Instrum. Practice	4 _____
CLLS 482 Clin. Body Fluid Analysis Prac.	1 _____
CLLS 499 Clin. Lab. Science Seminar	<u>1</u> _____
	15

2nd Semester

CLLS 483 Clinical Microbiology Practice	4 _____
CLLS 484 Clinical Hematology Practice	3 _____
CLLS 485 Clin. Immunohematology Prac.	3 _____
CLLS 486 Clinical Coagulation Practice	1 _____
CLLS 487 Clinical Serology Practice	<u>1</u> _____
	12

*MATH 115 equivalency or proficiency (Math ACT subscore of 24 or better) required for graduation.

Students must meet the following University requirements:

Cultural Enrichment – Select three courses with one at the 200 level or above.

Social Awareness - Three courses in two different areas, including one "Foundation" course, at least one at the 300-400 level, and one fulfilling race, ethnicity and/or gender requirement.

One of the Cultural Enrichment **OR** Social Awareness course must fulfill Global Consciousness requirement.

136 semester hours are required for graduation

PROPOSED MLT CURRICULUM

Year 1

108	Medical Microbiology	3 Cr.
102	Safety, etc.	1 Cr.
114	Intro. to General Chemistry	4 Cr.
221	Small Group Decision Making	3 Cr.
100	Ferris State University Seminar	1 Cr.
117	Contemporary Mathematics	<u>3 Cr.</u>
	Total	15 Cr.

Winter, Year 1

BIOL 205	Human Anatomy & Physiology	5 Cr.
CCHS 103	Clinical Skills for Allied Health (CPR, Venipuncture, Vital Signs, etc.)	1 Cr.
CCHS 101	Intro. to the Health Care System	3 Cr.
CHEM 124	Intro. to Organic & Biochemistry	3 Cr.
CLLS 101	Clinical Lab Science Orientation	1 Cr.
ENGL 150	English 1	<u>3 Cr.</u>
	Total	16 Cr.

Spring, Year 1

115	Clinical Chemistry 1	4 Cr.
124	Body Fluid Analysis & Hemastasis	3 Cr.
151	Intro. to Clinical Immunology	3 Cr.
	Special Enrichment Elective	<u>3 Cr.</u>
	Total	12 Cr.

Year 2

228	Immunohematology	3 Cr.
230	Hematology 1	3 Cr.
235	Clinical Microbiology 1	4 Cr.
250	English 2	3 Cr.
	Foundation Elective	<u>3 Cr.</u>
	Total	16 Cr.

Winter, Year 2

CLLS 225	Medical Mycology, Parasitology & Virology	2 Cr.
CLLS 256	Simulated Clinical Laboratory	3 Cr.
	Internship – TBD; 16 weeks	<u>10 Cr.</u>
	Total	15 Cr.

(C only.)

TOTAL CREDITS FOR AAS: 74

PROPOSED MT CURRICULUM

Fall, Year 1

BIOL 121	General Biology 1	4 Cr.
CCHS 102	Safety, etc.	1 Cr.
CHEM 114	Intro. to General Chemistry	4 Cr.
*FSUS 100	Ferris State University Seminar	1 Cr.
MATH 117	Contemporary Mathematics	3 Cr.
	Social Awareness Elective	<u>3 Cr.</u>
	Total	16 Cr.

Winter, Year 1

BIOL 122	General Biology 2	4 Cr.
CHEM 124	Intro. to Organic & Biochemistry	3 Cr.
CLLS 101	Clinical Laboratory Science Orient.	1 Cr.
ENGL 150	English 1	3 Cr.
	Cultural Enrichment Elective	<u>3 Cr.</u>
	Total	14 Cr.

Fall, Year 2

BIOL 205	Human Anatomy and Physiology	5 Cr.
CAHS 410	Epidemiology and Statistics	3 Cr.
COMM 221	Small Group Decision Making	3 Cr.
PHYS 130	Concepts in Physics	<u>4 Cr.</u>
	Total	15 Cr.

Winter, Year 2

BIOL 286	General Microbiology	3 Cr.
BIOL 300	Pathophysiology	3 Cr.
CCHS 103	Clinical Skills for Allied Health (CPR, Venipuncture, Vital Signs, etc.)	1 Cr.
ENGL 250	English 2	3 Cr.
	Social Awareness Elective	<u>3 Cr.</u>
	Total	13 Cr.

Summer, Year 2

CLLS 215	Clinical Chemistry 1	4 Cr.
CLLS 224	Body Fluid Analysis & Hemostasis	3 Cr.
CLLS 251	Intro. to Clinical Immunology	3 Cr.
	Cultural Enrichment Elective	<u>3 Cr.</u>
	Total	13 Cr.

Fall, Year 3

CLLS 228	Immunohematology	3 Cr.
CLLS 230	Hematology 1	3 Cr.
CLLS 235	Clinical Microbiology 1	4 Cr.
**CLLS 355	Clinical Chemistry 2	2 Cr.
MGMT 301	Applied Management	<u>3 Cr.</u>
	Total	15 Cr.

Winter, Year 3

CLLS 225	Clinical Mycology, Parasitology & Virology	2 Cr.
CLLS 430	Hematology 2	3 Cr.
CLLS 435	Clinical Microbiology 2	3 Cr.
CLLS 459	Advanced Problem Solving in Immunohematology	1 Cr.
CCHS 101	Intro. to the Health Care System	3 Cr.
ENGL 321	Advanced Composition	3 Cr.
**CLLS XXX	Instrumentation/Robotics	<u>2 Cr.</u>
	Total	17 Cr.

Fall, Year 4

CLLS 456	Clinical Laboratory Practicum	3 Cr.
CLLS 463	Clinical Laboratory Management, Supervision and Education	3 Cr.
**CLLS 4XX	Procedural Eval., Regulatory Issues, Predictive Value, etc.	3 Cr.
CLLS 499	Clinical Lab. Science Seminar	1 Cr.
	Cultural Enrichment Elective	3 Cr.
	Social Awareness Elective	<u>3 Cr.</u>
	Total	16 Cr.

Winter, Year 4

***Internship		15 Cr.
Internship Management		<u>1 Cr.</u>
	Total	16 Cr.

TOTAL CREDITS FOR BSMT: 132

*FTIAC only.

**CLLS 355 is redesigned to be 2 credit "Clinical Chemistry 2" (no lab). CLLS XXX is new 2 credit instrumentation/robotics course. CLLS 4XX is unnamed as yet, to cover procedural evaluation, regulatory issues, predictive value, etc.

***Internship becomes 18 weeks: 4 weeks of hematology/coag/body fluids; 3 weeks of blood bank; 1 week of immunology; 5 weeks of microbiology; 4 weeks of chemistry; 1 week (equivalent) of a management project.

PROPOSED MT CAREER MOBILITY CURRICULUM

<u>Year 3</u>			<u>Winter, Year 3</u>		
BIOL 121	General Biology 1	4 Cr.	BIOL 122	General Biology 2	4 Cr.
BIOL 355	Clinical Chemistry 2	2 Cr.	BIOL 300	Pathophysiology	3 Cr.
CLLS 3XX	Epidemiology and Statistics	3 Cr.	CLLS XXX	Instrumentation/Robotics	2 Cr.
PHYS 130	Concepts in Physics	4 Cr.	CLLS 430	Hematology 2	3 Cr.
	General Enrichment Elective	<u>3 Cr.</u>	CLLS 435	Clinical Microbiology 2	3 Cr.
	Total	16 Cr.	CLLS 459	Advanced Problem Solving in Immunohematology	<u>1 Cr.</u>
				Total	16 Cr.

<u>Summer, Year 3</u>		
ENGL 321	Advanced Composition	3 Cr.
MGMT 301	Applied Management	3 Cr.
	General Awareness Elective	<u>3 Cr.</u>
	Total	9 Cr.

<u>Year 4</u>			<u>Winter, Year 4</u>		
BIOL 4XX	Procedural Eval., Regulatory Issues, Predictive Value, etc.	3 Cr.	Internship		3-4 Cr.
BIOL 463	Clinical Laboratory Management, Supervision, and Education	3 Cr.	Internship Management		<u>1 Cr.</u>
BIOL 499	Clinical Lab. Science Seminar	1 Cr.			4-5 Cr.
	General Enrichment Elective	3 Cr.			
	General Awareness Elective	<u>3 Cr.</u>			
	Total	13 Cr.			

TOTAL CREDITS BEYOND AAS: 58-59

NOTE: Students who are not graduates of FSU MLT will have to take the CCHS core or demonstrate competence (CCHS 101, 102, 103, COMM 221, Computer Skills, Medical Terminology).

SECTION 2: SURVEY OF PROGRAM GRADUATES

Medical Technology Graduates

Consolidation of Survey Results: A total of 55 surveys were sent out to the graduates of the 1996, 1997, and 1998 graduating Medical Technologists. Address labels for most graduates were provided by the Ferris State University Annual Giving/Development Services Office. When the CLS Faculty had a more up-to-date address for a graduate, the survey was sent to that address.

Four of the graduates live outside of North America (one in Israel and three in Botswana). We mailed one survey to the business address of the graduate in Israel, and three surveys to the Embassy of Botswana in Washington, D.C., asking for their assistance in delivery. None of these surveys were returned.

A total of 19 surveys were returned for a response rate of 35%. A summary of their responses is listed below:

1. Where are you currently working?

Of the 19 graduates, 15 reported working in clinical laboratories in Michigan, one is employed out of state, one is on active duty in the military, and two answered "yes" to this question. We assume that means that they are employed in a clinical laboratory.

• Central Michigan Community Hospital:	2
• Metropolitan Hospital:	2
• Yes!!!:	2
• Bronson (Methodist) Hospital:	1
• Gratiot Community Hospital:	1
• Hackley Hospital:	1
• Helen Newberry Hospital:	1
• Ingham Regional Med. Center:	1
• Kent County Health Dept.:	1
• Lab Corp-Norton Hospital:	1
• Mecosta County General Hospital:	1
• Mercy Hospital (Grayling):	1
• North Ottawa Community Hospital:	1
• Sheridan Community Hospital:	1
• University of Michigan Hospitals:	1
• 2 nd Lt. US Army-Ft. McClellan:	1
• No response:	1

2. How long have you been employed here?

• Less than one year:	10
• One to three years:	6
• More than three years:	3 (these are career mobility program graduates, with long employment experience as MLTs).

3. What is your present position?

- 15 responded: Bench Technologist
- 3 responded: Medical Technologist/Technical Supervisor
- 1 responded: Chemical Branch Officer

4. What was your starting salary?

- \$5/ hour: 2 (these are career mobility graduates who began as MLTs circa 1980)
- <\$13/hour: 2
- \$13-15/hour: 12
- \$15+/hour 3 (the highest starting salary for these graduates was \$16.74/hour)

6. What hours do you currently work?

- Day shift: 6
- Second shift: 9
- Third shift: 1
- Some other shift: 2

Do you work weekends?

- 18 responded Yes: including every sixth saturday, every other weekend, every third weekend, every fourth weekend, every sunday, or it varies.
- 1 responded No

7. Do you take Call?

- 10 responded Yes: Always on call, when needed, every other saturday, 2 nights a week, 3-4 times a month, or holidays.
- 9 responded No

8. To which departments are you usually assigned? Check all that apply.

- Blood Bank: 15
- Chemistry: 15
- Coagulation: 15
- Hematology: 15
- Urinalysis/Body Fluids: 15
- Serology/Immunology: 13
- Microbiology: 11
- EKG: 1
- Cytology: 0
- Histology: 0
- Other (indicate)
 - Phlebotomy: 3
 - Accessioning: 1
 - Environmental Water Testing: 1
 - Special Chemistry: 1
 - STAT Laboratory: 1

9. Where else have you worked as a MT?

- Nowhere else: 9
- Bay Medical Center: 1
- Butterworth Hospital: 1
- Carson City Hospital: 2
- Doctors office: 2
- Jewish Hospital, Shelbyville, KY: 1
- Mecosta County General Hospital: 1
- USML of Saginaw: 1
- West Michigan Clinical Labs: 1

10. Was it difficult to find a job when you graduated? Explain.

- No, I was hired by my internship site: 7
- No: 3
- No, I had a lot of calls for MT positions: 1
- No, (about 3 mos. In an area that had an MT program: 1
- No, I had three offers: 1
- No, already employed here as an MLT: 1

Was it difficult to find a job when you graduated? Explain. (continued)

- No, 6wks after taking boards: 1
- No. (Didn't start looking for a job right away): 1
- No (worked here previously at front desk of lab): 1
- Yes, not many full time jobs available (1996): 1

11. Which areas of you on-campus education best prepared you for your work in the clinical laboratory? Explain: Several graduates included multiple responses.

On-campus simulated laboratory: 13 responses. Comments included:

- It helped you get ready for the sometimes crazy lab workload
- (It) helped me to understand the process as a whole, commit things to memory, learn to properly prioritize and organize things.
- Gave exposure to the real world especially how to work efficiently and logically. These experiences made the transition into working go very smoothly.
- (It) was just set up the same way I do things now, just different instrumentation
- Sim Lab was very helpful. The people at WMCL mentioned how nice it was that we knew what we were doing when we got there.
- Sim Lab following all of the "hands on" labs
- Sim Lab was an excellent preparation for the laboratory because that is how things really happen with extra STATs and other interruptions besides normal lab settings.
- Everything came together and really started to make sense.
- Sim Lab practical experience.
- Sim Lab helps put it into perspective.

Student laboratories: 4 responses. Comments included:

- Helped prepare me for all that I might see out in the "real world"
- All of the CLS Core classes were helpful. Covered all concepts needed for the field.
- All of the Lab Practice

Theory: 4 responses. Comments included:

- Theory, it comes in handy
- For me it was a question of updating my education. It was a great experience to see what is out in the medical field that I had not experienced. I especially enjoyed Mark and chemistry and performing chromatography. I'd never done them before. I loved the immuno class. Dan explained the concepts very well. I think the instructors are first rate.
- Case Studies because it forces you to think about the lab results and if they make sense (valid) to the patients presentation.
- Classroom is necessary for education.

Internship experience: 2 responses. Comments included:

- Instrumentation because anyone can process the results but you need to know how to get them.
- Internship is a MUST.

Other comments:

- All areas EXCEPT Statistics and all of the Humanities.
- Small class size allowed for closer instructor instruction.

12. What areas of you on-campus education need (s) improvement? How can they be improved?

Specific courses/subjects mentioned:

- Chem classes (pre-program) need better teachers.
- Micro needs more time on MIC's

13. Which areas of you on-campus education best prepared you for your work in the clinical laboratory? Explain:

Specific courses/subjects mentioned, continued:

- Maybe more computer experience. LIS
- Needs a class devoted to QA/QI
- The only area I had a real problem with was Immunology. However, I think it was just that the topic is a difficult one. The staff did everything possible to make sure we understood the material to the best of our abilities.
- Stress management, time management
- Could you work in some Management Classes involving QA/QI and Strategy Planning
- Clinical Chemistry is too much to learn in such short times

13. Which areas of you on-campus education . . . (con't)

General responses:

- I don't think that a lot needs to be changed at all, but what would help some is to teach students how to work efficiently and logically. The knowledge is already there. In my experience as a student on internship and recent graduate and MT, I knew what to do, and I knew why certain things were done but the order that I did my work in needed some changing.
- I have given some thought to this question. I believe you are doing a great job preparing students for the work place. You have instructors that are helpful and concerned and that means a lot.
- I found it easier to learn in the Lab/Sim Lab setting than in classroom, but, that's my opinion. My educational experience with the program was excellent.
- No double paced classes. Granted everybody likes extra "play" time especially summer, But, taking more time to absorb complex information is much better important.
- Is there any way to help prepare someone to make the transition from student to employee? Curriculum was great. Many people are impressed with how much I knew.

14. As a regular part of your assigned duties, which of the following do you perform? (One responded that none of these duties applied to current job).

	Often	Sometimes	Never
Routine Phlebotomy	6	10	2
Specimen Processing	11	7	0
Using a laboratory information system	18	0	0
Instrument maintenance	10	7	1
Instrument calibration	8	8	2
Instrument troubleshooting	5	13	0
Problem solving (difficult antibody ID, unusual organisms, etc.)	5	11	2
Proficiency testing	9	8	1
Evaluation of instruments/procedures	1	10	7
Training employees	2	11	5
Teaching students	0	4	12 (N/A-2)
Supervising employees	3	2	13
Scheduling personnel	3	1	14
Ordering supplies/maintaining inventory	4	2	12
Drawing donors	0	0	18
Preparing blood components	4	6	8
Drawing arterial samples	2	1	15
Outreach (cholesterol screening programs etc.)	0	11	7
Point of care testing	0	8	10
Quality assurance teams/projects	3	5	10
Calibration of instruments	5	10	3
Competency assessment (having yours assessed)	4	13	1
Competency assessment (assessing others)	1	5	12
Consultation with physicians, nurses, etc.	7	9	1 (N/A-1)
Outcomes assessment	1	7	9
Design of critical paths/clinical paths	0	5	13

15. At what laboratory did you acquire your clinical experience (internship)?

- Metropolitan Hospital: 5
- CMCH: 3
- Bay Medical Center: 2
- Gratiot Community Hospital: 2
- Mecosta County General Hospital: 1
- Caritas in Louisville, KY: 1
- Bronson Methodist Hospital: 1
- West Michigan Clinical Labs: 1
- Alpena General Hospital (a great experience): 1
- Muskegon General Hospital: 1
- Ingham Medical Center: 1

16. Which areas of your clinical experience best prepared you for your current position? Explain. Should any part of the clinical experience be changed? Explain.

- Being able to work with techs and instrumentation allowed me to learn how to get along with others and how to organize myself. I don't think any part of the clinical experience should be changed. Overall I think it was a good experience.
- Current position in the service N/A. As far as change to the clinical experience, some rotations feel as if they were long but I know it can be hard to fill up the amount of time allotted for clinicals.
- All areas except Micro helped prepare me. I guess the length of time in micro served its purpose, however, had I tried to take a position in micro, the internship would have been quite sufficient. Also, spent too much time in Hematology, could be 1 week less.
- Working as an MLT, I had worked in all areas, but my clinicals at Caritas allowed me to see how a larger hospital functioned.
- My clinical experience was very good. One thing that should be done is updating of tests given by the supervisors who were training us. Our chemistry supervisor at our internship site had not updated his test in years. We were being asked questions about instruments that the lab had replaced.
- The internship at Bronson was all very good. I was disappointed in the lack of phlebotomy practice that I received during internship.
- Most all prepared me, due to being a generalist on 2nd shift.
- I only did a micro internship. Both hospitals were excellent. The techs and supervisors were very helpful. Bay Med was especially helpful. The staff is very knowledgeable and I was able to experience the more "unusual".
- Sim-Lab and Internship onsite at the Hospital best prepared me. This gave me the experience of what I am currently doing as an MT and helped greatly.
- Working with the state-of-the-art analyzers.
- I think that my whole internship prepared me best. Having to work with real patients and reporting real results made everything make sense for me. Update the Exams (change).
- Microbiology, Special Chemistry, Serology best prepared me. Currently we do O&P's, GC cultures, Genprobes for GC and Chlamydia and cultures for foodborne pathogens. On the environmental side, we do surface H₂O (rivers, ponds, etc.) for E. coli and Fecal Strep. We do all the HIV testing for MI. We do it by EIA and confirmation with Western Blots. As far as changes, I wouldn't change any part. I thought it was very well rounded.

16. Which areas of your clinical experience best prepared you. . . (con't)

- Most helpful-Microbiology. Micro is kind of its own little world compared to the general lab the only way to prepare is to be there. No changes are really necessary.
- I believe all of my training was good. And the employees were extremely helpful.
- (No longer relevant to my case)
- The internship was really a great finish to tie everything we had learned together. We learned instruments, work flow, problem solving, prioritizing, along with being quizzed about things we learned from Ferris.
- Beaumont was a great educational institution but as far as bench work, you don't really get a sense of work flow. This was a great place because I was returning to school to get the MT degree. As for those who went straight to work I am sure the transition was difficult.
- Sim Lab helped with the technical area but the supervisory portion has been a learn as I go experience.
- My training in BB was most helpful since I now work in a Blood Bank. It's hard for me to answer this question because I hired in at my internship site.

17. Comment on the amount of venipuncture practice you acquired before your clinical experience. How could your skills in this area have been improved?

Need more practice: 12 responses. Comments include:

- More practice. When I got to my clinicals and had to draw actual patients, I was a little apprehensive.
- My skills could only have been improved by more practice. On internship, it probably would have been helpful to do phlebotomy on a daily or weekly basis.
- I was only allowed to draw outpatients and only for part of the internship. I believe my skills would improve if I had more practice on inpatients and more time at phlebotomy, in general.
- Plenty, and the experience of actually doing it increases the skill. Could be improved if you could practice more than 5 draws a day. That seems to inhibit the confidence building.
- I believe the best way to learn phlebotomy is practice. Ferris gives students the information and practice, but skill can only be acquired over time. The more you draw the better you get. Practice, practice, practice.
- I didn't do much phlebotomy on campus...but there was ample opportunity to train/learn at the hospital where I interned and when I worked midnights I am the only one in the whole lab and drew about 5-10 per night. That helped me to do it n-site at my place of internship.
- Practice. Practice. Practice.
- Just by performing them more, which is up to the individual students.
- Practice-Practice with an I can do attitude!!!
- I think getting the basics at FSU was great. As for difficult draws that comes with practice and sick people-at school the victims!! Are healthy for the most part.
- "More is better" We had quite a bit of practice but more could never hurt.
- More draws! More! More! Cannot practice too much.

Need a greater variety of patients: 6 responses. Comments include:

- I think I had 3 semesters of practice altogether. If there was a fake child size arm or baby's foot to practice on that would be good, or if they could insert smaller veins in the fake arm, that would be good too. I love to draw all kinds of people.
- Needed to see more of a variety of patients instead of just young veins
- I thought our venipuncture experience was as good as it could be. The problem is we get used to drawing healthy, young people who have good veins, so it's a challenge when you draw your first baby or your first 80 year old.
- The amount was adequate. The variety of positions should have been done more (specifically lying down). Most of the patients in the hospital setting are lying down. It would have been easier to do draws if there were sized gloves to use.
- The only way to improve would be to have old people and children volunteer to be drawn, but that is unrealistic unfortunately.
- We had a lot of experience at school, however they were all healthy people with descent veins, not dehydrated people with no where left to poke. If they have a baby like the fake arm, he's pokes are much more difficult than finger-due to positioning and squeezing of the little foot.

N/A: 1 response. Comments:

- N/A since I had been a MLT for many years.

18. Have you continued your education since leaving Ferris? What are your plans in this area?

- No. To work for a couple years and go back to school
- Not yet. My first 4 years in the Army are going to be busy without a lot of time for school. However, after that I plan on getting at least a Masters in Microbiology or even Epidemiology.
- Not yet. I do plan to pursue a masters degree in business administration or management. I hope to work my way into a management position someday.
- Not yet. As soon as I establish residency here in KY, I plan to go back to school.
- No. I have not continued my education since leaving Ferris. I am undecided at this point as to what my future plans are in this area.
- Not formally. I have participated in continuing education through seminars in the field only.
- No. Possibly classes part time starting in July or August of 1999 either in Business or Pharmacy.
- No. I have attended a few seminars but that's about all. I do plan on continuing my education. I live in a rural area and this is difficult. I was just about to give up on obtaining my B.S. degree until someone informed me about Ferris' program. I contacted Dr. Webster and she told me it was possible. I was very excited. You all were wonderful.
- I've just recently been certified by ASCP. As for continuing Education...I am going to get more involved in CMAMT later this year but, as for going back to school/college, I have no further plans. Just a seminar here or there for CE credit.
- I already returned as an MLT to receive by B.S. in Medical Technology.
- Not yet. I have applied to grad school (pathologist asst. program) at Quinnipiac College in Connecticut. I probably won't hear from them until winter.
- I have continued my education by making use of various CLS magazines and in-house continuing education at my places of employment. However, I have not pursued any graduate work or anything of that sort. At this point in my life, I don't plan to. Eventually, I would like to go into research and development.

18. Have you continued your education since leaving Ferris? (con't)

- Nothing official except extended training for work in microbiology and seminars for breath alcohol testing and ANA testing. But I have been tossing around the idea of P.A. school
- Some continuing education teleconference workshops. But that is really what I prefer. I really enjoy my career choice but I have no desire to be "management"
- * "I am always learning"
- A little. Took a few classes. No plans at the moment- If I continue it will not be in the medical field.
- No. I plan to go back but I am not sure yet what I want to study.
- I have not taken classes at a University per say, but I am involved in in-house management training classes and will take advantage of any outside opportunities. I would like to use my managerial experience to promote my career outside of the laboratory.
- Only required CE for my institution. If I gain enough experience and I am still in Blood Bank, I would get my SBB (ASCP)

19. Please make any additional comments which you believe would help us to evaluate and improve the CLS programs.

- Contract with nursing homes to train students in phlebotomy (if possible). Have a shadowing program where students get to watch other techs work at hospitals.
- I think Ferris has an excellent program. We were well informed in most areas of the lab and had more lab and class experience than other schools that offer this program.
- I hope you were able to make the CLS Chem a full semester course. The summer session just isn't long enough. Mark is such a knowledgeable man and it is a shame not to utilize him. There was too much information to get across during the summer session.
- I thought the educational experience I received with the CLS program was exceptional and I want to thank the staff personally for everything they have done for me. I couldn't be happier right now than what I am today, job-wise. I like this field and I am glad I got into this program.
- Last year we had a Med Tech right out of his internship. He really knows computers. He is a valuable member of our team. Especially since we just recently put into use a LIS. The rest of us don't have the background.
- I would like to say that I am very proud to have completed and graduated from the FSU CLS program. I have encouraged many people to pursue CLS and to do it at Ferris. I really feel it is the best CLS education you can receive.
- Possibly, having the interns work some of the off shifts towards the end of the internship. That's when all of the exciting and unusual happenings occur. I would also give them a better idea as to what is expected of them when they are hired since that's where most new graduates start out.
- I must admit I always recommend Ferris to anyone interested in Medical Technology. We by far seem to have a better "grip" on things than some others as new graduates.
- *Although, I can't answer for the program itself, there is something I would like to comment on. "Attitude is important – Be pleasant, Always do more than what has been asked of you, Want to become part of a team, then become a team player. Ultimately remember the patient is why you are there."

19. Please make any additional comments. . . (con't)

- I just think you guys as a group do an excellent job of preparing us for real life situations. By working together so well, as well as the extra time you all take to help when there were problems. I think Ferris has the best program in the state and I definitely recommend this program to everyone who wants to be a medical professional.
- Stress normal ranges-that was something I struggled with and relied too much on the LIS to point out abnormal results.

Medical Laboratory Technology Graduates

A total of 40 surveys were sent out to the graduates of the 1996, 1997, and 1998 graduating Medical Laboratory Technicians. A total of 25 surveys were returned for a response rate of 62%. A summary of their responses are listed below:

1. Where are you currently working?

- Bronson Methodist Hospital: 3
- Carson City Hospital: 2
- Dickenson County Hospital: 2
- Iron County Community Hospitals: 2
- Northern Michigan Hospital: 2
- William Beaumont Hospital: 2
- Hackley Hospital: 1
- LabCorp: 1
- Mecosta County General Hospital (also student in MT program): 1
- Mercy General Health Partners: 1
- Michigan Community Blood Center: 1
- Mid-Michigan Regional Medical Center: 1
- Spectrum Health: 1
- St. Mary's Hospital: 1
- West Shore Hospital: 1
- Culberson Hospital (Van Horn, TX): 1
- Memorial Hospital, Easton, MO: 1
- Not working (still at Ferris): 1

2. How long have you been employed here?

- Less than one year: 15
- 1-2 years: 8
- > 2 years: 2

3. What is your present position?

- 21 responded: Bench Technologist
- 1 responded: MLT Assistant Director
- 1 responded: Lab Secretary
- 1 responded: Medical Assistant or Lab Assistant
- 1: no response

4. What was your starting salary?

- < \$10/hour: 3 (including one who is earning \$5.25/hour as a lab secretary)
- \$10-12/hour: 13
- > \$12/hour: 8
- Not applicable: 1

5. What hours do you currently work?

- Day shift: 3
- Second shift: 9
- Third shift: 5
- Other combination: 8

6. Do you work weekends?

- 21 responded Yes: Including every sixth saturday, every other weekend, every third weekend, every fourth weekend, every sunday, or it varies.
- 4 responded No

7. Do you take Call?

- 11 responded Yes: Including always on call, when needed, every other saturday, 2 nights a week, 3-4 times a month, or holidays.
- 14 responded No

8. To which department are you usually assigned? Check all that apply.

- Chemistry: 21
- Urinalysis/Body Fluids: 21
- Coagulation: 19
- Hematology: 19
- Serology/Immunology: 17
- Microbiology: 16
- Blood Bank: 15
- EKG: 2
- Histology: 2
- Cytology: 1
- Other (indicate)
 - Phlebotomy: 5
 - Accessioning: 1
 - Manufacture of Blood Products: 1
 - X-ray, Immunization: 1

9. Where else have you worked as a MLT?

- Nowhere else: 18
- William Beaumont Hospital: 4
- American Red Cross: 1
- United Memorial Hospital: 1

Was it difficult to find a job when you graduated? Explain

No: 20 responses. Comments:

- No, I was hired by my internship site (13 responses)
- Not really after I decided to take my boards...I think it was good timing too...New laboratory
- No, I was hired at Mercy General during my internship
- No, I got a few offers but couldn't accept because I was moving out of Michigan (including internship site)
- No. I was on my internship and had looked in the local papers for a job opening in the area but there weren't. So I called 2 local hospitals and asked if there were positions open. There were and I got a job.
- It took me about 5 months to get into the hospital. They were going through a merger so I just kept calling periodically to let them know I was still interested.

Yes: 3 responses. Comments:

- Yes, I moved up north to Petoskey in Nov 96 and didn't get my MLT job until Mar 97. So I worked in a doctor's office until that time and still only got hired as a contingent.
- Yes, no positions open (96)
- I had a difficult time finding anyplace that was hiring near my home.
- Yes. Graduation was in May. Hospitals were looking for grads in May not Sept when Internship was completed. Most of the jobs were shagged in May. Most of the available jobs in Sept. Were for call positions.

10. Was it difficult to find a job when you graduated?, continued:

Not applicable: 2 responses

11. Which areas of you on-campus education best prepared you for your work in the clinical laboratory? Explain:

CLS clinical/laboratory courses: 9 responses. Comments:

- Mostly the clinical courses, and also Phlebotomy since we did a lot of drawing.
- All of the CLS classes were relevant to what I am doing in the lab.
- Hands on experience in the labs.

Simulated lab: 8 responses Comments:

- Sim Lab-running patients in a lab setting.
- All lab course work. Clinical simulation was a real help. Not afraid to fix instrumentation (scared the co-workers on the job). Learned to manage own work for day-able to work well alone on job. Know how to organize work flow (routines) and able to adjust to STATs, ASAPs etc.
- Sim Lab-hands on is best but its nice to have learned backgrounds in all these areas with classroom time.
- Sim Lab-I think it prepared me to handle the work load and work as a team.
- Sim Lab. It prepared me for real work in a lab environment.
- Sim Lab- We learned more organization skills which helped the transition into a "real" lab smoother, comparing us to other fresh employees, others find themselves struggling to organize a workload.
- The labs and Sim Lab definitely! Our field is very hands on and there is no better way to learn these skills than by doing them.

Blood bank: 2 responses Comments:

- Blood bank was the same on-campus as in the clinical lab.

Other: Comments:

- Urinalysis, Hematology, Chemistry, Blood Bank (Micro was reserved for only a few people in my hospital and I wasn't one of them)
- No class in particular really best prepared me-what was really good was being mixed with so many different personalities.
- The clinic rotation part. The ability to put knowledge to use. A person may be book smart but their ability to handle work flow may not compare well to their book smart. Doing the clinical rotations gave the chance to develop technique and skill.
- Hematology. Mr. Landis did an excellent job teaching this course. The class experience closely paralleled the work outside of class. All labs were very good.
- Instrumentation-manual methods - older instruments- and newer instruments. My advisor also gave me a lot of great insight.
- Micro and Hematology. Judging by internship.

12. What areas of you on-campus education need (s) improvement? How can they be improved?

Clinical Chemistry: 5 responses Comments:

- Chemistry-Dr. Kellogg was not available very much therefore limiting the help I needed when I had questions.
- Chemistry-I think the class concentrated on the in depth of topics and missed the overall basic things.
- Clinical Chemistry-I found it hard to follow.
- Clinical Chemistry. Get instruments that actually work more than 5-10% of the time.

Simulated lab: 2 responses Comments:

- Sim Lab-Less maintenance and trouble shooting. More patients and instrumentation training.
- Sim Lab-work in all areas of lab instead of focusing on one at a time.

Other comments (nine graduates had no response):

- General Chem/Bio-Organic Chem teachers need improvement (not CLS), but the teachers before taking CLS core classes. Most only know what book says. Hard pressed to apply what they are teaching.
- Coag -Modernization of instrumentation
- Phlebotomy. I didn't feel comfortable when I began my internship. I think I could've used more practice on campus.
- More time for microbiology, virology, parasitology and mycology. So much information.....didn't stick in as well as other areas.
- There is a lot of information thrown out at you in such a short time. I think that the education is pretty good. I feel that the instructors are pretty up-to-date and know their staff. I feel that the clinical on-campus rotations could be rotated as hospitals rotate departments on a generalist level. That way you retain old info and new at the same time.
- More work in dilutions-it seems like in class. It was made much more difficult than it actually is. Immunology lab didn't seem very useful. The class was good though. Chemistry lab-nothing ever seemed to work, although, maybe this in itself helps us learn to troubleshoot.
- My book knowledge needs more work, but that was probably due to my poor study skills. Maybe study sessions would help.
- Although we had labs with equipment and instrumentation, they often weren't working especially the chemistry department. It's very hard to learn when things aren't working properly or if we are using out of date technology (ex. Fibrometers) Half of my sim lab chemistry rotation was wasted because the instruments were down, the teacher was gone and know one knew where anything was. Also, as a 2+2 student coming back from internship and currently working, I think taking the Immunology lab was a waste of time. By that time we already knew how to do Rock and Roll agglutination tests...the lecture was important though.

13. As a regular part of your assigned duties, which of the following do you perform?

	Often	Sometimes	Never
Routine Phlebotomy	12	7	5
Specimen Processing	16	6	1
Using a laboratory information system	21	3	0
Instrument maintenance	15	6	3
Instrument calibration	13	5	6
Instrument troubleshooting	10	11	3
Problem solving (difficult antibody identification, unusual organisms, coagulation work-ups etc)	4	12	17
Proficiency testing	5	14	5
Evaluation of instruments/procedures	3	10	10
Training employees	0	11	12
Teaching students	0	3	21
Supervising employees	1	0	23
Scheduling personnel	0	1	23
Ordering supplies/maintaining inventory	2	12	10
Drawing donors	1	0	23
Preparing blood components	4	3	17
Drawing arterial samples	6	2	15
Outreach (cholesterol screening programs etc.)	1	10	10
Point of care testing	2	4	18
Quality assurance teams/projects	2	9	13
Calibration of instruments	10	6	7
Competency assessment (having yours assessed)	6	16	2
Competency assessment (assessing others)	1	5	18
Consultation with physicians, nurses, etc.	13	6	4
Outcomes assessment	3	7	12
Design of critical paths/clinical paths	0	5	14

- 1 responded that none of these duties applied to current job status.

14. At what laboratory did you acquire your clinical experience (internship)?

- William Beaumont Hospital: 7
- Bronson Methodist Hospital: 4
- St. Mary's Hospital: 4
- Carson City Hospital: 2
- Huron Memorial Hospital: 2
- Memorial Medical Center: 1
- Mercy Health Services: 1
- United Memorial Hospital: 2
- Universal Standard Medical Laboratory: 1
- West Shore Hospital: 1

15. Which areas of your clinical experience best prepared you for your current position? Explain. Should any part of the clinical experience be changed? Explain (two graduates did not respond)

- We have some of the same instruments that St. Mary's had, so that made it easy. I didn't have to train as much.
- My current position does not really use anything from my clinical experience. While in the clinical experience, the chemistry rotation seemed too long, and the phlebotomy experience too short.
- Bench work with techs. Less responsibility for work load. It was sometimes forgotten that we were students.
- All areas of my clinical experience prepared me (except micro because I don't work in micro since I am working at the same place that I did my internship)
- Some of the dept. were better at teaching than others. Since internship, many employees jobs have changed and would expect that many of the teaching problems were corrected.
- Sim Lab-good hands on experience. I found I lacked the idea of paper flow. There was a lot more paper to track. Best use of time-flow of work.
- Chemistry/Hemo/Nurse Consultation areas I use the most at the present time.
- Generalizing is the best!!! At least where I work...Ferris does a good job with this.
- Hands on is the best way to learn.
- I basically had to become proficient in all areas of the lab.
- I feel I was well prepared, no a whole lot needs to be changed.
- Sim Lab
- Urinalysis-we got to see a lot of different things. Casts, RBC, WBC, Trich, etc.
- Change nothing.
- I was allowed to train in the area for a few days and then be in charge of it. This helped me learn how to organize and plan my time.
- All-the work flow at the Hospital was a good pace for learning. During clinical rotation you were able to see work ethics and develop your own skill. No. It was a good balance between book work and bench work.
- All of the areas were helpful because they gave me hands on learning. Do not change the "hands on" areas. Other than that there were not much weak areas.
- All areas were very good preparation.
- Hematology/Coag. Very thorough. Nothing to change that I can think of.
- I guess all of it helped. There wasn't anything that didn't help. The specimen processing part. We just emptied tubes, we didn't do much real processing.
- Actually since I work at the lab where I did my intern(ship), I was already very familiar with this labs setting. More lecture during intern by a senior tech or a pathologist would be helpful in our pathophysiology knowledge.
- I think that my Hematology rotation could have been shortened, the last week there wasn't much "new" to do. That time could have been spent in micro or blood bank. Just the fact that I was able to actually do the work was the best part of my internship and that my supervisors were very helpful in any questions.
- The sim-lab for micro should try to do more volume, to get more experience reading plate.

16. Comment on the amount of venipuncture practice you acquired before your clinical experience. How could your skills in this area have been improved?

Good/very good preparation: 7 responses. Comments:

- Very Good-we draw a lot and I feel I was educated very well with this subject.
- Good. Maybe doing more blood cultures
- It was a good amount, the only way to get better is more practice.

Adequate preparation: 11 responses. Comments:

- Adequate. I have found out that our program had the most training in talking with Alumni from other Universities.
- Venipuncture practice was adequate at Ferris. There really was no way to offer the difficult draws in a school setting-such as babies and elderly.
- I think we had a sufficient amount. It just wasn't for me though. Others had no problem.
- I thought I had enough to get started. At school you drew usually the same people throughout the semester. Work offered a great variety, especially working alone on midnights. Better instruction on techniques to think about when drawing people who are on thinners, have cancer or kids.
- I think it was Okay....The people who utilize the time given will do just fine.. Don't procrastinate and the learning seems easier. In clinicals I received a lot of blood drawing experience. I have yet to miss a person!!!
- I think I had adequate venipuncture experience. On internship I drew one lab employee and started drawing patients right away.
- Venipuncture training at Ferris was adequate. I needed more training for drawing the elderly in my situation.

NA: 1 response

Others:

- I still wasn't comfortable with venipuncture when I began my internship.
- No, had large amount of practice prior to leaving university.
- I felt confident doing venipuncture. The phlebotomist we trained with at Beaumont were impressed with our phlebotomy skills.
- The only thing that improves blood draw techniques is practice. The more experience you gain, the better you get at it.
- Could of had a little bit more with more strangers and hard draws.
- I feel like it was good, if you only deal with doing outpatient sticks. There were no real chance to deal with sick people, cancer patients, infants, children and old people. Usually all the people stuck were easy sticks. Improved by taking time to go to a hospital or nursing home and stick them.
- Before my internship, we had to wear gloves all the time and to me this inhibited me of finding small veins to poke. When I was on intern, they told me that it would be okay if I were to break the tip of my glove off so I could feel the veins better.
- I was a phlebotomist for 5 years before I came back to school. N/A At my present job, I did have to be trained in how to draw blood gases.
- I worked as a phlebotomist prior. I needed to learn how to draw arterial blood gases.
- Quite a bit at FSU and three days at WBH

Others: (con't)

- I felt comfortable drawing at Ferris, but drawing a sick patient laying down with tubes everywhere is quite different.
- I had practice on a fake arm for one semester and then I had practice on patients for another semester. I am really glad that we got to use the fake arms first and then the patients. I think we could use maybe a little more practice doing patients, but no matter what we do there is a big difference between drawing a fairly healthy patient verses an ill inpatient.
- A lot at FSU. No improvement needed

17. Have you continued your education since leaving Ferris? What are your plans in this area?

Yes, MT program at Ferris State University: 5 responses Comments:

- Yes, MT program at Ferris with plans to continue my education in Physical Therapy.
- Yes, I am still here at Ferris and I plan to become a MT
- I have not yet left Ferris! I complete my BS in November of this year-and then I look forward to just working.
- Still at Ferris. Continuing education to get my Masters.
- I have been and am currently enrolled in the 2+2 program. I think this 2+2 program is a great idea and I am looking forward to my clinical classes in the summer. I plan to get my Bachelors Degree in Med Tech and work for 3-5 yrs to get a good foundation and then possibly branch off somewhere other than a hospital setting.

Yes: 1 response

- Plan to attend NMU for fall semester 99 for B.S.

No: 11 resposnes Comments:

- No. I recently got married and have not had time to continue my ed., maybe later. We plan on staying in the Harbor Spring area for 5-10 years and then heading toward Manistee.
- I have not continued my education (for now I'm schooled out!) I am uncertain at this point of future plans. Although my current position is not what I was looking for, the hours are great.
- No. I plan to go back to school eventually.
- No. I reduced to on-call at Carson, and getting plenty of hours with that. I am looking at getting a captains license and maybe have a fishing charter one day. Otherwise, I am just enjoying myself.
- No. I would like to but haven't done so seriously yet.
- No. I am not sure of future plans.
- No. Not at this time
- No. I'm not sure yet. I would like to work in a lab for a little bit. I do know that I want to remain a generalist and not go to be a specialist in any area.
- I will eventually go back for my MT when we live closer to a University and I plan to go back for X-ray.
- No. I plan to return to Ferris in the fall of 2000

Not yet: 8 responses Comments:

- I have not furthered my education in the lab field, but I do plan to receive my certificate for Medical Assistant. This is now my second job as a M.A. and I love it. I get paid more and work no weekends and have hours of 9-5. Its pretty bad when you go to college for two years, receive a degree, work in a hospital. For two years and leave to start a job where you make more money as a receptionist/MA. In my location, there was no competition so very poor pay for MLTs.
- Not yet, not sure what I will do.
- I have been doing a lot of reading of articles for continuing ed if health allows, I would like to continue with Molecular bio/DNA probing education.
- Plan to go back to school for a Bachelors either in Biology or Chemistry. I have attended CE seminars.
- No. I plan on going back to take a few classes here and there to continue my education.
- I am planning on returning for MT but in the mean time I am checking into CE credits through the ASCP.

18. Please make any additional comments which you believe would help us to evaluate and improve the CLS programs.

- Get a list of the pay scale in various areas of Michigan so students know where to go to get better pay.
- Go over more on blood cultures and blood gases
- Keep the excellent, dedicated faculty. You are all great!! As always, the more modern the better, as far as instruments, for the hands on experience.
- I think Ferris has an excellent program. I had a hard time on internship though because it was an entirely different setting than what I'm used to. Not much you can do for that.
- I would include a course in preparing a resume, how to interview, some ideas of where to look for jobs, how to network. I was surprised at the number of people in my grad. Class that could barely put together a resume let alone knew how to dress or what questions to expect on an interview. The rest of the program is well structured. Only other thing would be to split micro into two sections. Too much info to remember it well and apply it. More would sink in with more time spent on the material. That would be helpful with chem too- discuss in more depth over longer time or 2 classes instead of one. Continue to have as much hands on analyzer work as possible. I am still amazed at the number of people that are terrified to tear into an analyzer to fix a problem-they rather leave it for someone else. FSU is the only program that has Sim Lab and analyzer work/maintenance before internship. Thanks for a great education! Hope funding allows to improve on a great program. No regrets on my career choice or education with CLS program at FSU.
- There's nothing like real life experience, I feel everything I received at Ferris was as close to real life as possible: Have the phone ring more often, have people (out-patients) show up for blood draws, and more interruptions of any kind will give an idea of a few hours on the job...paper work.
- I think the CLS program at Ferris prepared me very well for working in a clinical lab.
- I thought that all of you at Ferris did an excellent job.

18. Please make any additional comments. . . (con't)

- I think it would have helped me to be able to get to an area hospital and "shadow" a tech for a bit. This would have given me an feel for the hospital setting, situations and the atmosphere. I have seen other colleges MT programs and do not like their setup. They do not work with specimens but do only case studies. This kind of program gives no experience for work ethics, teamwork, emergency situations or being able to work efficiently as FSU does.
- The professors in CLS are all very dedicated and very good at what they do. I can't complain.
- Do more recruiting. Get better instruments (chemistry)

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Section Three: Surveys of Employers of Graduates

A total of forty four graduates returned surveys (19 MT and 25 MLT graduates). Forty consented to having their employer surveyed. Of the four who refused, two were full time college students not working in a clinical laboratory, one was on active duty in the military and NOT assigned to a clinical laboratory, and one simply didn't want her employer surveyed.

Forty surveys were mailed to employers of graduates; twenty replies were received, for a response rate of 50%. Responses from employers of MTs and MLTs were combined for the purposes of this report. Results are shown graphically in the following pages.

Most Ferris State University graduates are employed in multiple areas of the clinical laboratory, including chemistry, hematology, urinalysis, coagulation, blood bank, microbiology, and serology. Many do phlebotomy as a routine part of their duties. Of those employers responding (7), two had Ferris State University graduates on their day shift, six had Ferris State University graduates on their afternoon shift, and one had a graduate assigned to the midnight shift.

The graduates perform a variety of tasks on the job: quality control, using a laboratory information system, specimen collection and processing, instrument maintenance and trouble shooting, proficiency testing, and consulting with other health care professionals. Fewer graduates perform complex problem-solving procedures, blood component preparation, teaching students or training personnel, evaluating new test procedures, participating in facility-wide QA teams, and maintaining supply inventories. These employers reported no Ferris State University graduates performing management tasks such as scheduling of employees or marketing lab services.

When asked if the Ferris State University graduate was prepared to assume these duties, sixteen of the 20 responses said yes, and none said no. Four employers did not respond.

When asked for areas of strength or weakness of Ferris State University graduates, survey responders listed eight areas of strength and seven areas of weakness. NOTE: each was mentioned by only one employer, except for basic fundamentals, which was listed as a strength twice. So these responses may not be indicative of the Ferris State University CLS program as much as they are reflections of individual graduates.

Areas of Strength mentioned by employers	Areas of weakness mentioned by employers
Complex tasks	"physiology of metabolism"
Computer literacy	Blood bank theory
Organizational skills	Phlebotomy
Decision making	Decision making
Charge technologist	Professional behavior
Natural curiosity	Teamwork
Basic fundamentals	Abnormal cell identification
Unusual findings	

Employers were asked to rate the following specific characteristics of the Ferris State University graduates:

1. Speed (rate at which assigned tasks are completed).
 - a. Completed assigned tasks quickly: 13
 - b. Slow to begin with, but progressed: 7
 - c. Seldom finished in reasonable time: 0

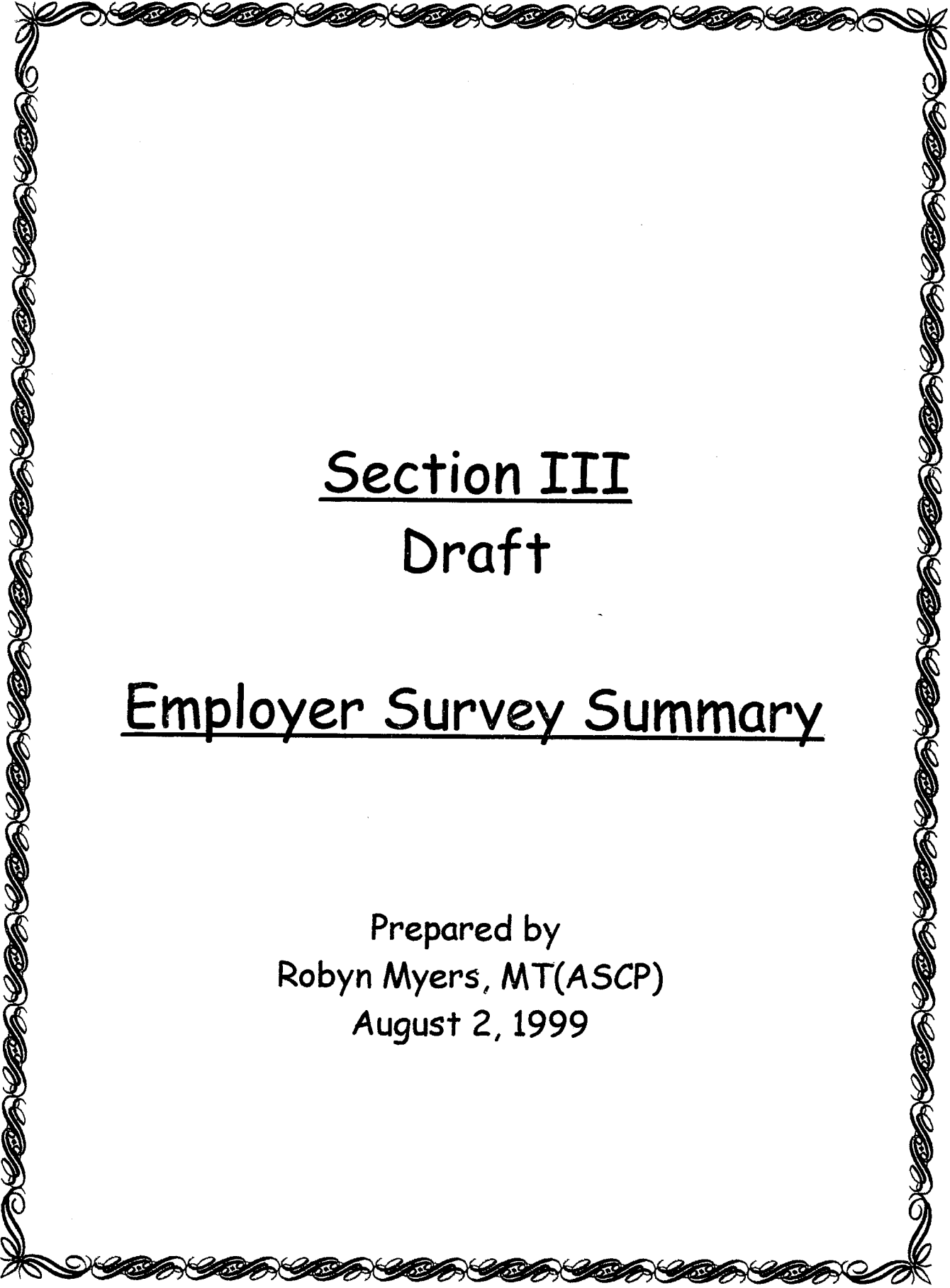
2. Organization:	
a. organizes well:	17
b. some difficulty with two or more tasks:	2
c. wastes motion, neglects to think ahead:	1
3. Attitude toward change:	
a. willingly learns new procedures:	20
4. Skills:	
a. uses equipment with ease and confidence:	14
b. unsure, but develops ease:	6
5. Orientation time:	
a. moved along quickly after initial training:	13
b. needed some repeat training:	7
6. Relationships with colleagues:	
a. sensitive and considerate:	17
b. pleasant, but rarely offers help:	3
7. Leadership qualities:	
a. potential leader:	14
b. too timid to offer suggestions:	4
c. "know it all" attitude:	1
d. no response:	1
8. Confidence:	
a. has confidence in work:	16
b. overconfident:	2
c. lacks confidence:	1
d. no response:	1
9. Initiative:	
a. acts without specific directions:	14
b. asks for additional assignments:	3
c. takes responsibility for own work only:	2
d. no response:	1
10. Judgment:	
a. recognizes and corrects problems:	10
b. notes problems and refers to supervisor:	9
c. no comment:	1

11. Problem-solving skills:
- a. organized and purposeful in problem solving: 15
 - b. uses "shotgun" approach: 3
 - c. no response: 2
12. Interest in professional development:
- a. regular participant 15
 - b. no comment: 5
13. Tidiness:
- a. extremely neat: 16
 - b. sloppy, but cleans up: 2
 - c. no response: 2
14. Adherence to safety regulations:
- a. adheres strictly: 15
 - b. sometimes careless: 5

Employers were asked if they would hire another Ferris State University graduate, based on their experience to date. All twenty employers said yes to this question. When asked to estimate their need for employees, the twenty responses predicted a need one FTE employee within six months, two within one year, and 1.5 within two years. Sixteen of the twenty responses indicated no plans to increase staff in the near future. Interestingly, one employer who claimed not to have had any need for technical staff for several years completed surveys for TWO Ferris State University graduates hired within the past year!

When asked for minimum educational requirements for technical personnel, responses were mixed: nine would hire either two year or four year graduates with certification, four required a minimum of a BS degree with certification, and three required a minimum of an AAS degree with certification. Of those reporting a change in the mix of staff within their laboratory, three reported hiring more AAS graduates, while one reported hiring more BS graduates.

When employers were asked if they had any interest in hiring graduates with multiple competencies, only three answered yes. Additional skills mentioned were: biomedical engineering, respiratory care, radiography, and sonography.

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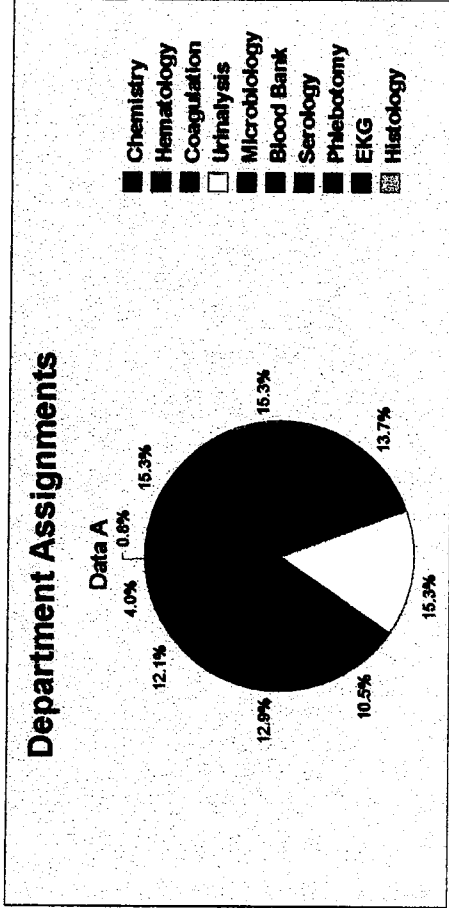
Section III
Draft

Employer Survey Summary

Prepared by
Robyn Myers, MT(ASCP)
August 2, 1999

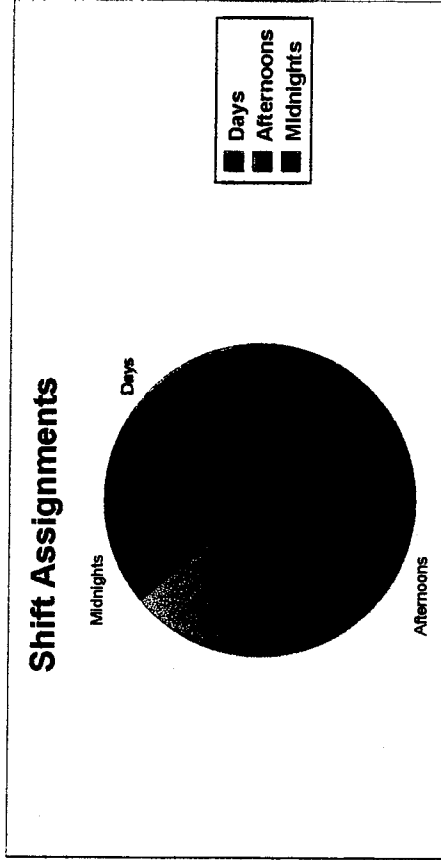
Depts. Assigned

Total Amt. of Surveys	20
Chemistry	19
Hematology	19
Coagulation	17
Urinalysis	19
Microbiology	13
Blood Bank	16
Serology	15
Phlebotomy	5
EKG	1
Histology	



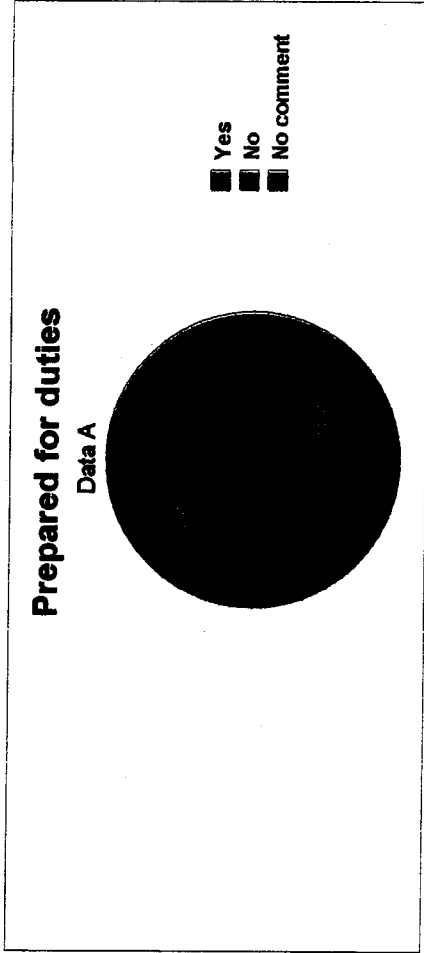
Shift Assignments

Total Surveyed	20
Total Response	7
Days	2
Afternoons	6
Midnights	1



Was the tech prepared to assume their duties assigned?

Yes 16
 No 0
 No comment 4
 Total respondents 20



Areas not prepared for or weak

Physiology of metabolism 1
 Blood Bank theory 1
 Phlebotomy 1
 Decision Making 1
 Professional Behavior 1
 Teamwork 1
 Abnormal Cell Identification 1

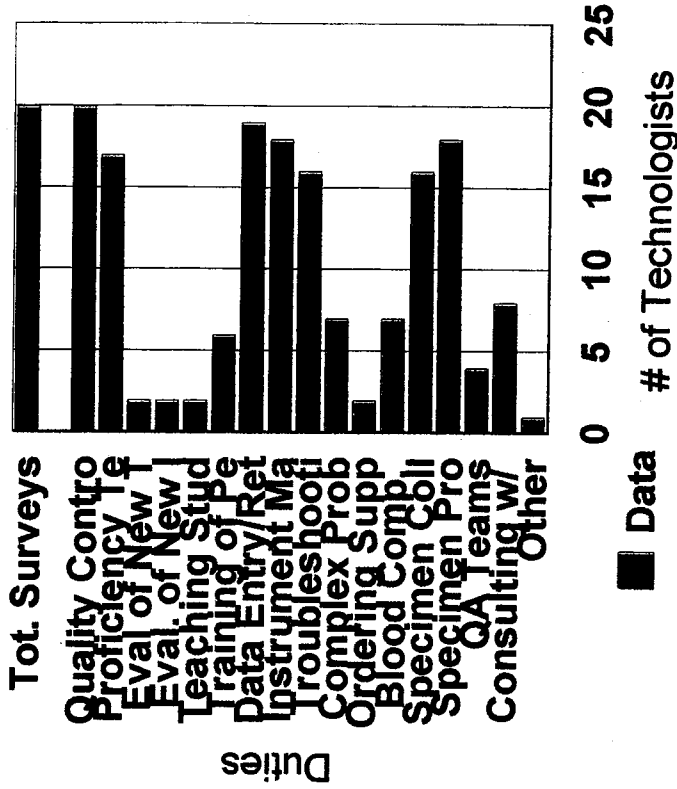
Areas of Strength

Complex tasks 1
 Computer Literate 1
 Organizational Skills 1
 Decision Making 1
 Natural Curiosity 1
 Basic Fundamentals 2
 Charge Technologist 1
 Unusual Findings 1

Duties Performed

Tot. Surveys	20
Quality Control	20
Proficiency Testing	17
Eval of New Test Proced.	2
Eval. of New Instruments	2
Teaching Students	2
Training of Personnel	6
Data Entry/Retrieval from LIS	19
Instrument Maintenance	18
Troubleshooting	16
Complex Prob. Solving	7
Ordering Supplies	2
Blood Comp. Prep.	7
Specimen Collection	16
Specimen Processing	18
QA Teams	4
Consulting w/ Alld. Hlth Personnel	8
Other	1
Scheduling	0
Drawing of Donors	0
Marketing Lab Services	0

Duties Performed



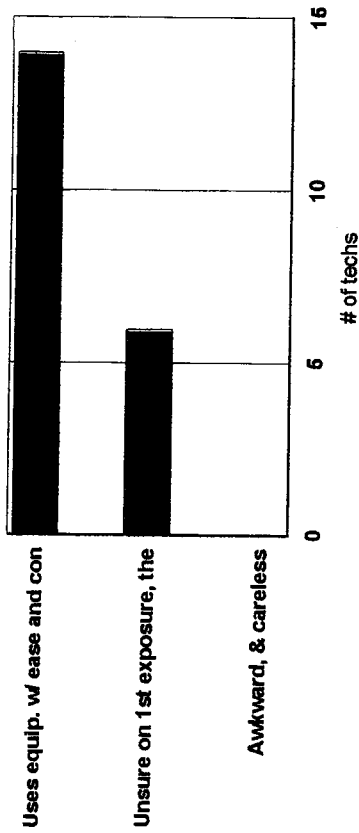
Manual Skills

Uses equip. w/ ease and confidence 14

Unsure on 1st exposure, then developed confidence 6

Awkward, & careless 0

Manual Skills



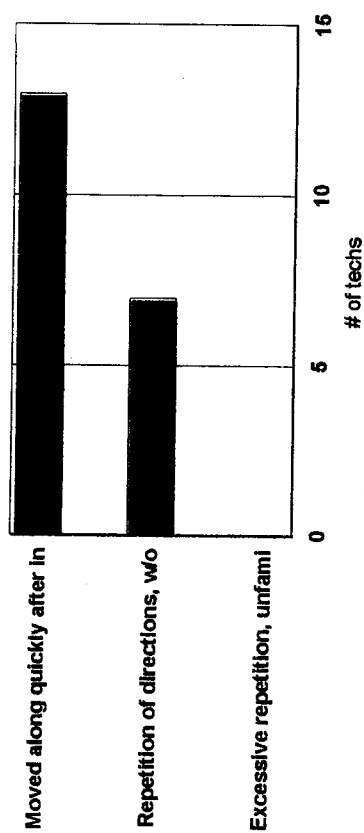
Orientation/ Training Time

Moved along quickly after initial training 13

Repetition of directions, w/ occasional lapses 7

Excessive repetition, unfamiliar w/lab setting 0

Orientation/Training Time



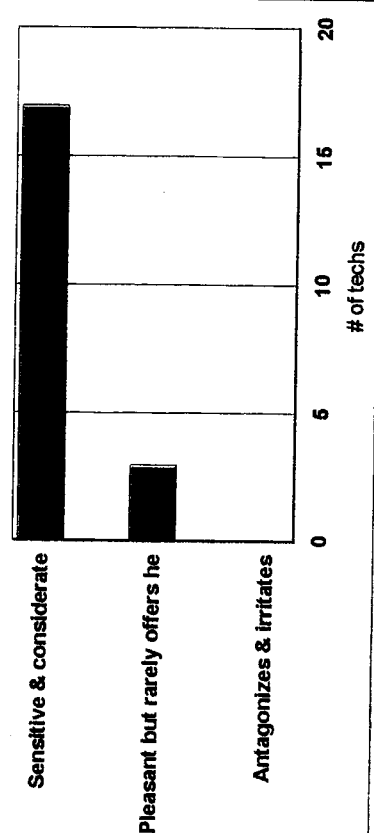
Relationship w/coworkers

Sensitive & considerate 17

Pleasant but rarely offers help 3

Antagonizes & irritates 0

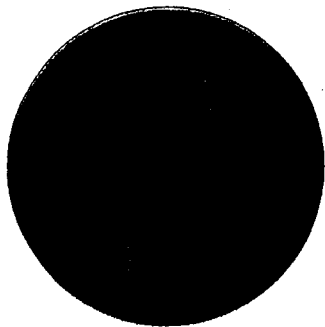
Relationship w/ coworkers



Speed

- Quick & offers assistance 13
- Began slow, now OK 7
- Seldom finishes tasks 0

Speed of Performance

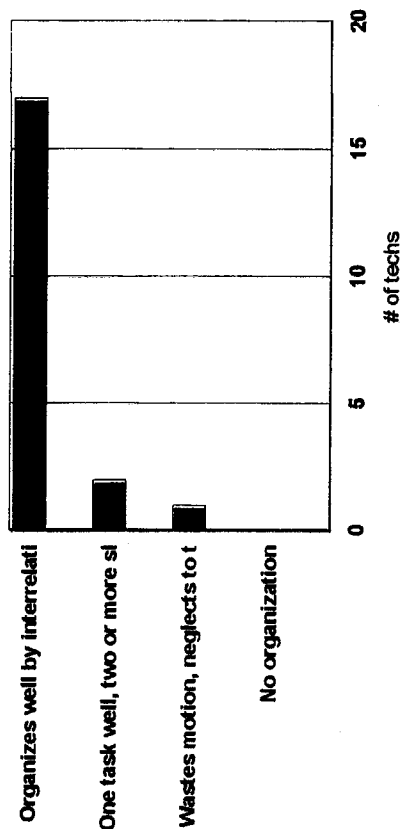


- Quick & offers assistance
- Began slow, now OK
- Seldom finishes tasks
- Slice 4

Organization

- Organizes well by interrelating tasks 17
- One task well, two or more slowly 2
- Wastes motion, neglects to think ahead 1
- No organization 0

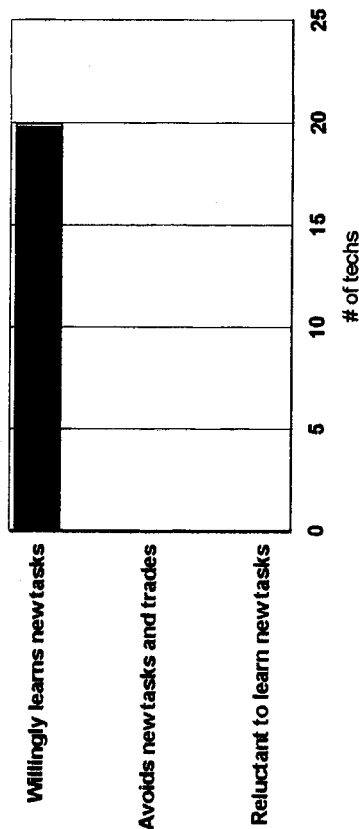
Organizational Skills



Attitude towards change

- Willingly learns new tasks 20
- Avoids new tasks and trades to avoid contact 0
- Reluctant to learn new tasks 0

Attitude towards change



Judgement

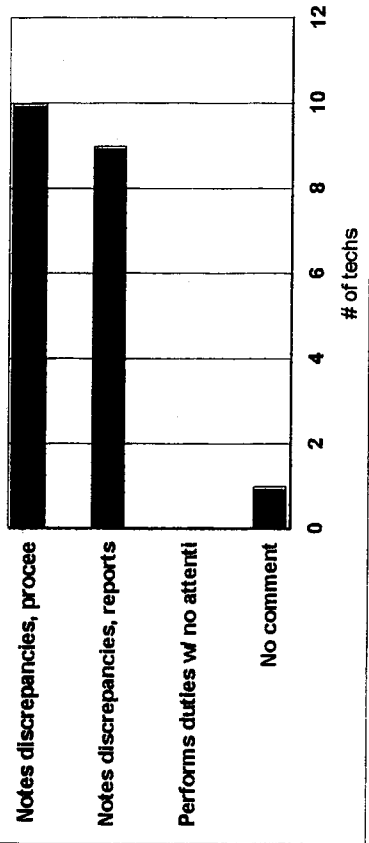
Notes discrepancies, proceeds to correct 10

Notes discrepancies, reports to supervisor 9

Performs duties w/ no attention to quality 0

No comment 1

Judgement



Problem Solving Skills

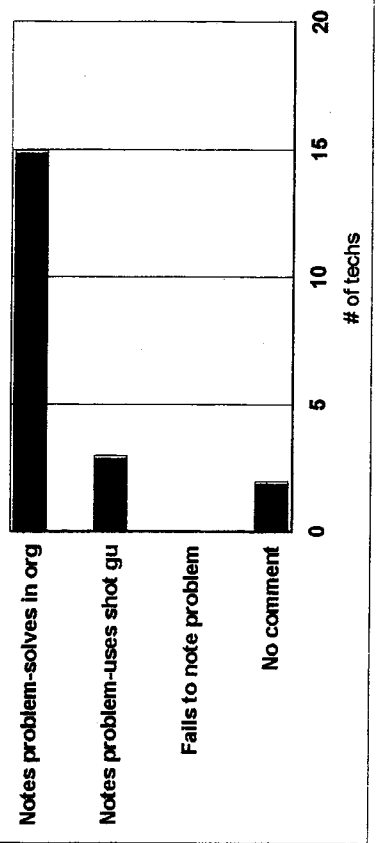
Notes problem-solves in organized & purposeful manner 15

Notes problem-uses shot gun approach 3

Fails to note problem 0

No comment 2

Problem Solving Skills



Interest in Continuing Ed.

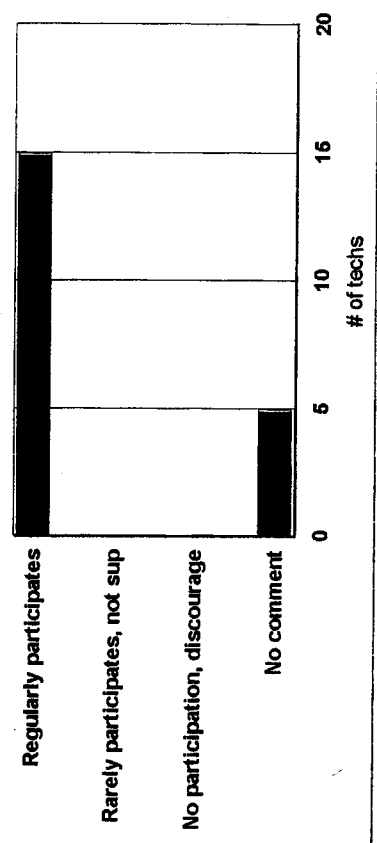
Regularly participates 15

Rarely participates, not supportive 0

No participation, discourages others 0

No comment 5

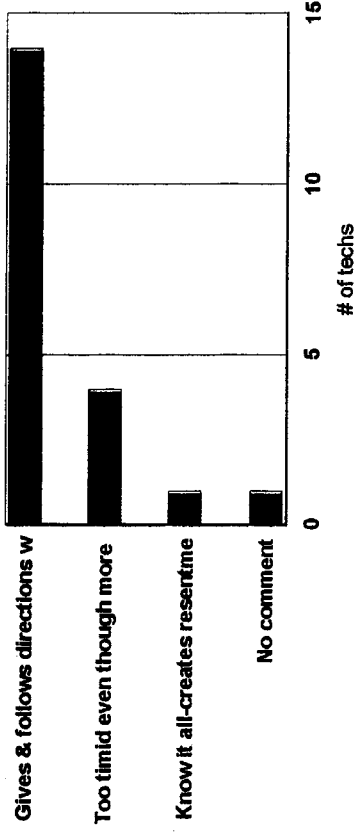
Interest in Continuing Education



Leadership Qualities

- Gives & follows directions well. Potential leader 14
- Too timid even though more capable than others 4
- Know it all-creates resentment 1
- No comment 1

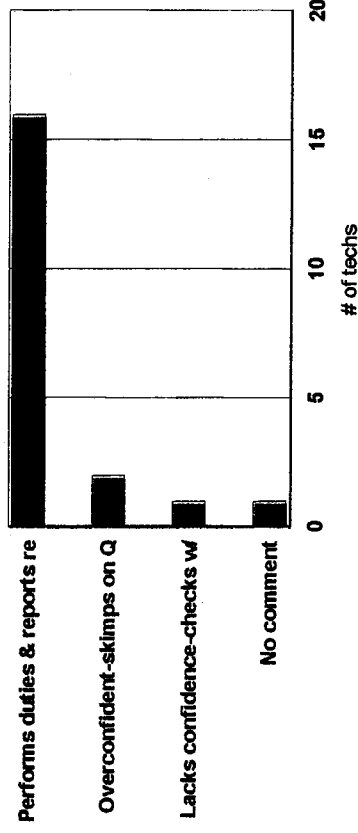
Leadership Qualities



Confidence

- Performs duties & reports results with confidence 16
- Overconfident-skimps on QC procedures 2
- Lacks confidence-checks w/ others constantly 1
- No comment 1

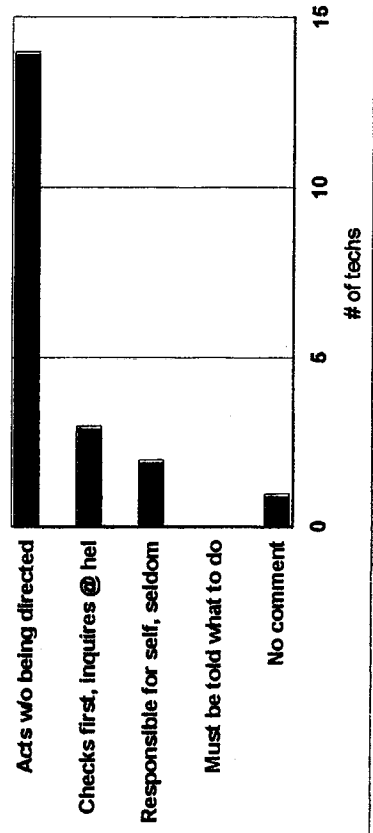
Confidence Level



Initiative

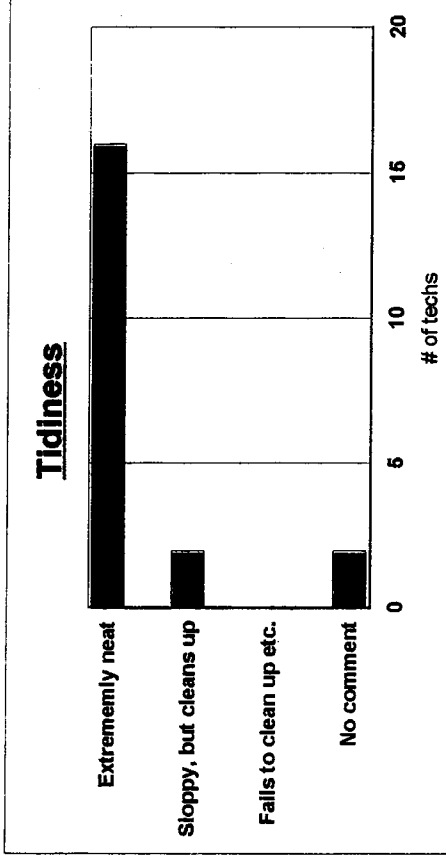
- Acts w/o being directed 14
- Checks first, inquires @ helping 3
- Responsible for self, seldom for others 2
- Must be told what to do 0
- No comment 1

Initiative



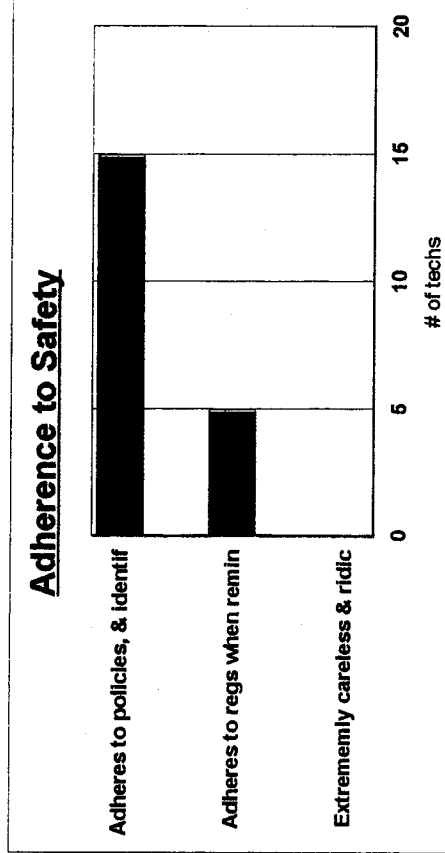
Tidiness

Extremely neat 16
Sloppy, but cleans up 2
Fails to clean up etc. 0
No comment 2



Adherence to safety regs

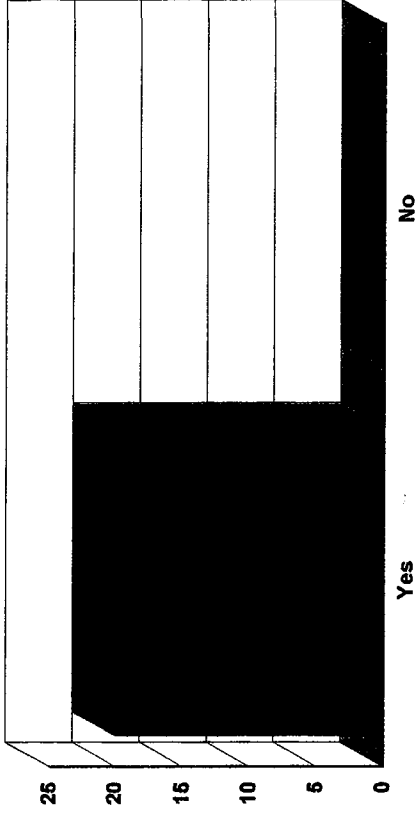
Adheres to policies, & identifies hazards 15
Adheres to regs when reminded, careless 5
Extremely careless & ridicules those who adhere 0



Would you hire another graduate of FSU?

Yes 20
No 0

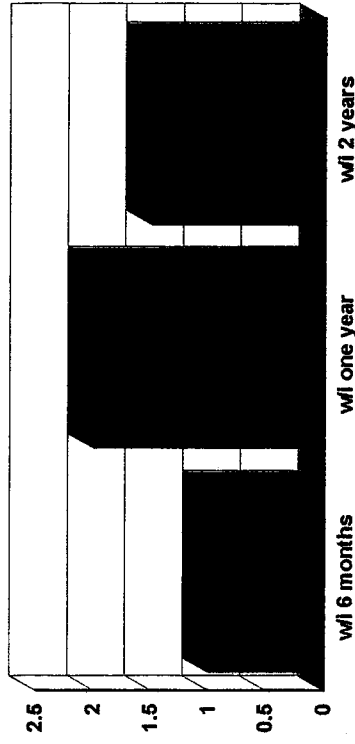
Hire another FSU grad?



Projected employment needs (in FTE's)

w/i 6 months 1
w/i one year 2
w/i 2 years 1.5

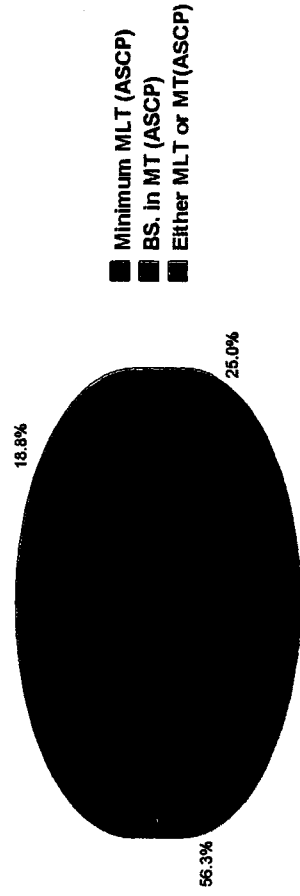
Employment Needs in FTE's



Mandatory educational requirements

Minimum MLT (ASCP) 3
BS. in MT (ASCP) 4
Either MLT or MT(ASCP) 9

Mandatory Educational Requirements



Educational Topics for successful employees

Correlating results w/ disease states

Case studies in chemistry

Case studies body fluids, hematology

Advanced BB antibody ID

Confidentiality/telephone skills

Difficulty in last 2 yrs. hiring capable employees?

Yes 11
No 9

Skills needed for the future

Safety/disaster training

Instrument troubleshooting

Computer skills- Windows, Excel, Internet experience

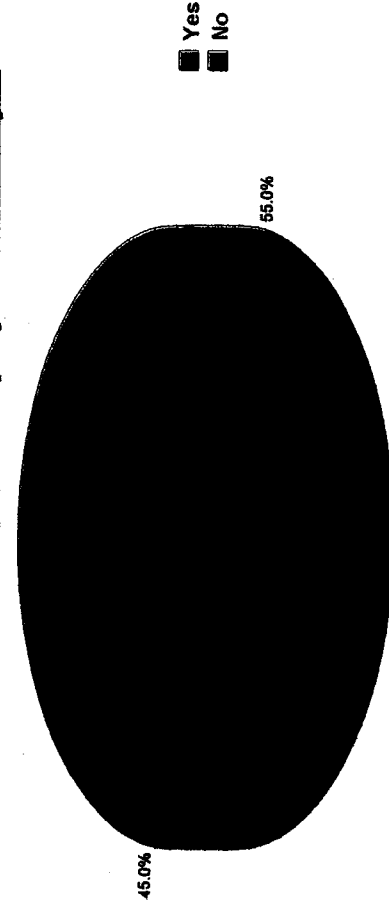
Multitasking

Lab design

Molecular biology-PCR

Professionalism skills

Difficulty hiring capable employees in last 2 yrs



Changing mix of MLT's/
MT's

Yes 4
No 13
No comment 3

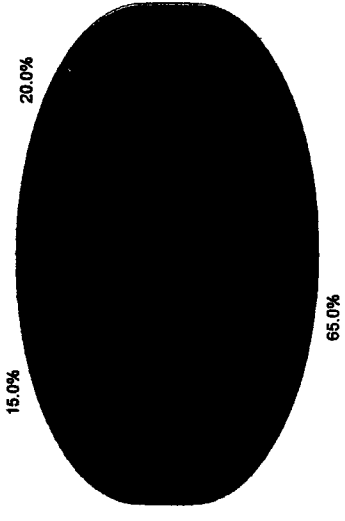
If "yes" from above, how?

Hire more MLT's 3
Hire more MT's 1

Does lab intend on
increasing staff?

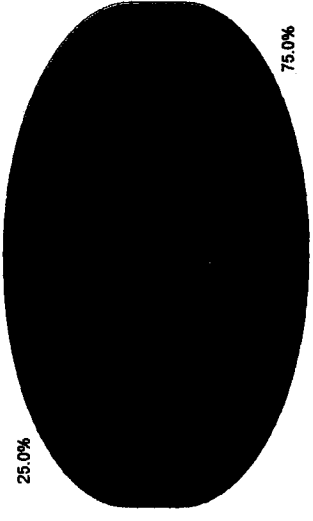
Yes 4
No 16

Changing mix of MLT'S & MT'S



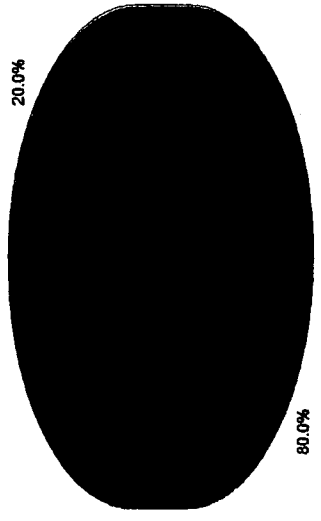
■ Yes
■ No
■ No comment

If changing mix, how?



■ Hire more MLT's
■ Hire more MT's

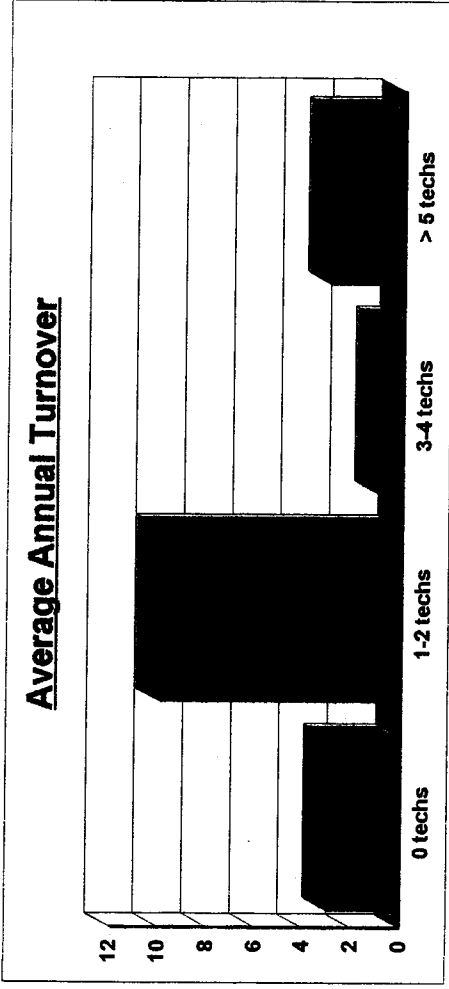
Plan on increasing staff?



■ Yes
■ No

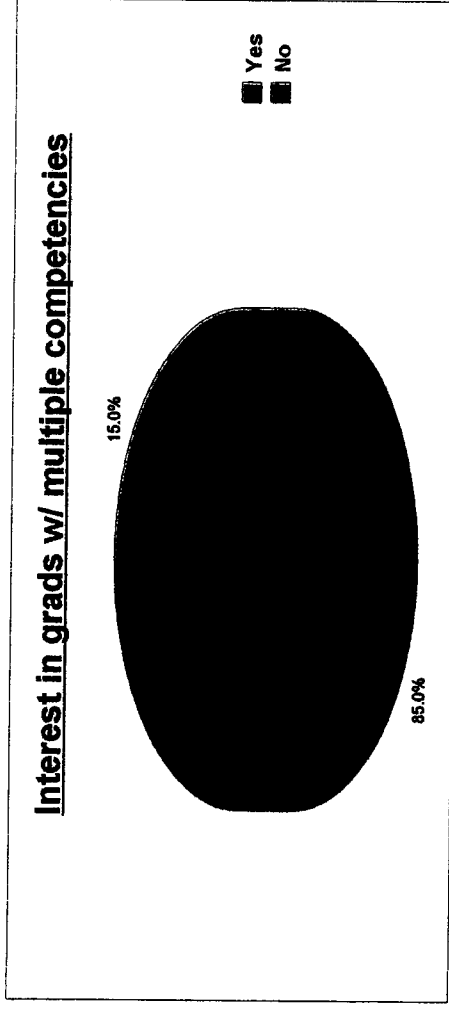
Average annual turnover

- 0 techs 3
- 1-2 techs 10
- 3-4 techs 1
- > 5 techs 3



Interest in grads w/ multiple competencies

- Yes 3
- No 17



If "yes" from above, in what?

- BioMedical Engineering
- Respiratory Therapy
- X-ray
- Sonography

Clinical Lab Sciences Program

APRC 1999-2000

section 2 of 3

SECTION 4: STUDENT SATISFACTION SURVEYS OF THE CLS PROGRAMS

Survey

The attached survey was distributed to all second year MLT and third year MT students in on-campus courses at the end of the Winter Semester, 1999. The forms were sent to the fourth year MT students at their clinical sites and mailed back to campus. Twenty-one (21) of 24 (87.5%) of the on-campus students returned the survey, and 14 of 16 (87.5%) senior MT students returned the survey.

The survey form was designed to evaluate the students' satisfaction with their education at FSU to date. The form requested responses for several areas of concern: advising, quality of CLS instruction, quality of College of Allied Health staff and administrators, course policies, computer support, quality of general education courses, and the perception of the effects of general education courses on their preparing them for the future.

Results

The mean value by student type for all responses were calculated. The attached report shows a breakdown of the responses.

The items concerning CLS program resources, instruction, and support (items 1-26) show responses above an average of Good (range of 3.5 – 4.7). Exceptions include the quality of library holdings (#7) and internship experiences (#12). In both, there were significant responses of "Not Applicable or Unknown". The senior MT students (currently in the clinical experience) rated #12 with an average of 4.3. The other students had not yet begun clinical experience, so a response of "not known" is quite reasonable for them.

Averages of less than 4.0 (Good) were found in items 23-25. All three deal with computer resources.

Responses concerning preparation for life experiences by general education courses (items 27-44) showed a range of scores between 3.7 and 4.0. Responses about the required science and math courses also were mostly between 3.7 and 4.5, which indicated that these courses helped "quite a bit".

**FERRIS STATE UNIVERSITY
CLINICAL LABORATORY SCIENCE PROGRAMS
STUDENT SATISFACTION SURVEY**

Please complete the following survey as part of the Academic Program Review process at FSU. The results of this survey will be used to better understand student perceptions of the CLS program and, hopefully, to improve any areas identified as problems.

	Not Applicable Unknown	Poor	Fair	Good	Excellent	Mean Ratings	
	1	2	3	4	5		
1. Availability of my program advisor.	*0 0 0	0 0 0	3 1 1	10 4 2	3 9 4	4.0 4.6 4.4	4.3
2. Willingness of my program advisor to help me.	0 0 0	1 0 0	2 1 0	6 3 3	7 10 4	4.2 4.3 4.6	4.3
3. Quality of career advising in the program.	0 1 0	0 0 0	3 0 0	7 6 2	6 6 5	4.2 4.4 4.2	4.4
4. Quality of curricular advising in the program.	0 0 0	0 0 0	2 3 0	9 5 2	5 6 4	4.2 4.2 4.7	4.3
5. Quality of instruction in my program courses.	0 0 0	0 0 0	0 0 0	11 8 4	5 6 3	4.3 4.4 4.4	4.4
6. Opportunities for interaction with faculty in my program.	0 0 0	0 0 0	0 0 0	7 5 2	9 9 5	4.6 4.6 4.7	4.6
7. Quality of library holdings in my major area.	1 5 3	1 0 0	8 3 2	6 3 2	0 3 0	3.7 4.0 3.5	3.8
8. Availability of professional activities or clubs in my program.	0 0 1	0 1 0	5 4 2	10 5 3	1 4 1	3.75 3.9 4.3	3.9
9. Helpfulness of the College of Allied Health Sciences office staff.	0 1 1	0 0 0	1 2 2	13 8 3	2 3 1	4.1 4.1 4.3	4.1
10. Quality of courses for providing a good general education.	0 0 0	0 0 0	3 2 0	8 6 3	5 6 4	4.1 4.3 4.7	4.3
11. Course sequencing in the program.	0 0 0	0 0 0	2 1 0	10 6 5	4 1 2	4.1 4.4 4.3	4.2
12. Practicum or internship experiences in the program.	0 4 3	1 0 0	4 0 0	7 5 1	4 5 3	3.9 4.5 4.7	4.3
13. Laboratory facilities related to the program.	0 0 0	0 0 0	4 0 0	7 9 4	5 5 3	4.1 4.4 4.4	4.3

***MT Senior
MT Junior
MLT**

	Not Applicable Unknown	Poor	Fair	Good	Excellent	Mean Ratings
	1	2	3	4	5	
14. Quality of the students in the program.	0 0 0	0 0 0	1 1 0	9 12 3	6 1 4	4.3 4.0 4.6 4.3
15. Classroom facilities related to the program.	*0 0 0	0 0 0	5 0 0	8 11 5	3 3 2	3.9 4.2 4.3 4.2
16. Quality of courses in preparing me for employment.	0 0 0	0 0 0	0 0 0	8 5 3	8 9 4	4.5 4.6 4.6 4.6
17. Fairness of grading in my courses.	0 0 0	0 0 0	1 0 0	13 7 5	2 7 2	4.1 4.5 4.3 4.3
18. Clarity of the degree requirements.	0 0 0	0 0 0	1 0 0	10 6 4	5 8 3	4.3 4.5 4.4 4.4
19. Opportunities for formal student evaluation of instruction in the program.	0 0 0	0 0 0	2 1 1	11 7 4	3 6 2	4.1 4.4 4.1 4.2
20. Professional competence of the program faculty.	0 0 0	0 0 0	0 0 0	8 4 2	8 10 5	4.5 4.7 4.8 4.7
21. Quality of my initial contacts with the program.	0 0 1	0 0 0	2 1 0	12 5 5	2 8 1	4.0 4.5 4.2 4.3
22. Attitude of the departmental chairperson towards students.	0 2 1	1 0 1	3 2 2	8 7 3	4 5 0	3.9 4.1 3.3 3.9
23. Quality of computer support for student work in my program.	1 1 0	0 0 0	7 1 0	8 6 6	4 6 1	3.5 4.4 4.1 3.9
24. Quality of computer facilities.	0 0 0	0 0 0	11 1 2	5 9 4	0 4 1	3.3 4.2 3.8 3.7
25. Availability of computer facilities.	0 0 0	3 0 1	10 2 2	3 8 2	0 4 2	3.0 4.1 3.7 3.5
26. Overall quality of my CLS program.	0 0 0	0 0 0	1 0 0	10 8 3	5 6 3	4.3 4.4 4.7 4.4

***MT Senior
MT Junior
MLT**

How helpful has your general education coursework (MATH, ENGL, SOCY, PSYC, HUMN type courses) been in preparing you in the following areas?

	Not a Goal of Mine 1	Very Little 2	Some 3	Quite a Bit 4	Very Much 5	Mean Ratings	
27. Communicating my ideas clearly and simply in correct English.	*0 0 0	0 0 0	5 3 1	7 9 5	4 2 0	3.9 3.9 3.8	3.9
28. Reading and interpreting what I read.	0 0 1	0 0 0	6 3 2	8 7 3	2 4 1	3.8 4.1 3.8	3.9
29. Writing and speaking clearly and effectively.	0 0 1	0 0 0	6 3 1	6 10 5	2 1 1	3.8 3.8 4.0	3.8
30. Identifying values and responding ethically.	0 0 0	0 0 0	6 4 2	7 8 4	3 2 1	3.8 3.8 3.8	3.8
31. Meeting the responsibilities of citizenship.	0 0 0	0 1 1	7 7 2	6 5 2	3 1 1	3.8 3.4 3.7	3.7
32. Respecting the uniqueness and worth of each individual.	0 1 0	0 2 1	6 3 0	8 5 4	2 3 2	3.7 3.7 4.0	3.7
33. Calculating and interpreting data.	0 0 0	0 1 0	4 4 1	9 3 5	3 6 1	3.9 3.9 4.0	3.9
34. Understanding myself – abilities, interests, and personality.	1 0 0	0 1 1	6 5 1	6 8 3	3 0 2	3.8 3.5 3.8	3.7
35. Improving my ability to think analytically and logically.	0 0 0	0 1 0	5 2 2	8 9 4	3 2 1	3.8 3.8 3.8	3.8
36. Gaining a broad general education about different fields of knowledge.	0 0 0	0 0 0	6 3 2	8 7 3	2 4 2	3.8 4.1 4.0	4.0
37. Ability to learn on my own, pursue ideas, and find information I need.	0 0 0	0 0 0	5 3 2	7 8 3	4 3 2	3.9 3.9 4.0	3.9
38. Accepting the responsibility of preparing for the future.	0 0 0	0 2 0	3 3 1	8 5 3	5 5 3	4.1 3.8 4.3	4.0

***MT Senior
MT Junior
MLT**

How helpful have each of the following courses been in helping you to understand the principles and concepts of each of the following subject areas:

	Not a Goal of Mine 1	Very Little 2	Some 3	Quite a Bit 4	Very Much 5	Mean Ratings	
39. General Chemistry	0 1 0	2 1 1	7 2 1	6 4 3	1 6 2	3.6 4.1 3.8	3.8
40. Organic and Biochemistry	0 0 0	0 1 1	7 1 0	6 7 5	3 5 1	3.8 4.1 3.8	3.8
41. General Biology	0 1 0	1 3 0	7 1 2	3 5 2	5 4 3	3.8 3.8 4.1	3.9
42. General Microbiology	0 0 0	0 0 0	1 2 0	7 4 2	8 8 5	4.4 4.4 4.7	4.5
43. Anatomy and Physiology	0 0 0	0 0 0	1 1 2	7 5 2	8 8 3	4.4 4.5 4.1	4.4
44. Math 115	4 2 0	2 2 1	3 3 3	5 5 3	2 2 0	3.6 3.8 3.3	3.7

***MT Senior
MT Junior
MLT**

Please write any constructive comments below about your CLS program that might be helpful for revising and improving the program.

MT SENIOR

- Provide more lab equipment to ensure each student has the opportunity to be all they can be in this course.
- Good instruction once the professional phase is entered in the program. The basic courses are lacking in areas such as English, chemistry, and biology.
- Keep the program at the size it is; there is great one-on-one with students!
- Maybe offer a schedule for students that want to go on to grad school. Involve the higher science classes. The student would be here for 5 years instead of 4, but they will be able to go on without having to take more classes.
- Take the whole semester before leaving for intern instead of half. Then you can spend more time in sim. lab.
- All is well!

MT JUNIOR

- I would like better test scheduling so that there wouldn't be 3 or more exams on the same day.
- I am very pleased with the CLS program. I would have more internship sites available.
- I was not thrilled with the initial advising when I first came to Ferris as I had to go from a trig. Class back to algebra??? Maybe I should have gone to the Dean and over-rode that decision, but I took that course over. My current advisor is good, but we have had to work on a few problem areas. I may have been admitted prematurely, and my course load is not what I would prefer, but I have to do it to graduate in 4 years. As far as lab facilities, they could be better, but we need more money. I don't understand how the University can charge every student athletic fees (even though I don't attend or use anything) and yet we don't have enough good timers for each person to use. This is not the faculty's fault, but they have to hear about it. Also, how can a new student recreational center be built for millions, and we can't even get basic supplies? The monetary problems lie in offices, not in our faculty. I just wish that someone would wake up and figure out that the educational needs of students come before leisure time. Who cares about a new u-rec place if we can't have functioning equipment and basic supplies. I sure don't! I came here to learn, not watch people work out. I can run, jog, walk, or roller blade for free all over Big Rapids and I don't need my tax and tuition money wasted on garbage. Please feel free to show this to anyone. It probably won't do any good, but at least I voiced my opinion and I believe it is constructive!

MLT

- Try to get newer working instruments if possible, or at least working instruments.
- Most of my general education classes I did not take from Ferris, and I was presented with this evaluation before I have gone on internship.
- Computer lab needs to be open later.
- I believe that the CLS program is a very well-rounded program that prepares a student very well!

SECTION FIVE: FACULTY PERCEPTIONS OF THE CLS PROGRAMS

Survey

The survey form for determining faculty perceptions was provided by the APRC. The three current faculty members (a fourth faculty position is currently not occupied) of the CLS programs completed the survey. The results have been compiled on a representative survey form (attached) and are summarized below.

FACULTY PERCEPTIONS OF PROGRAMS

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
GOALS AND OBJECTIVES 1. Participation in Development of College Occupational Education Program Plan <i>Excellent</i> – Administrators and/or other supervisory personnel involved in developing and revising the college plan for this occupational program seek and respond to faculty, student, and community input. <i>Poor</i> – Development of the plan for this program is basically the work of one or two persons in the college.			2	1			
2. Program Goals <i>Excellent</i> – Written goals for this program state realistic outcomes (such as planned enrollments, completions, placements) and are used as one measure of program effectiveness. <i>Poor</i> – No written goals exist for this program.				3			
3. Course Objectives <i>Excellent</i> – Written measurable objectives have been developed for all occupational courses in this program and are used to plan and organize instruction. <i>Poor</i> – No written objectives have been developed for courses in this program.				1	2		
4. Competency Based Performance Objectives <i>Excellent</i> – Competency based performance objectives are on file in writing, consistent with the employment standards, and tell students what to expect and help faculty pace instruction. <i>Poor</i> – Competency based performance objectives have not been developed for courses in this program.			1		2		
5. Use of Competency Based Performance Objectives <i>Excellent</i> – Competency based performance objectives are distributed to students and used to assess student progress. <i>Poor</i> – Competency based performance objectives are not used with students for progress evaluation nor are students aware that they exist.			1		2		
6. Use of Information on Labor Market Needs <i>Excellent</i> – Current data on labor market needs and emerging trends in job openings are systematically used in developing and evaluating this program. <i>Poor</i> – Labor market data is not used in planning or evaluation.				3			
7. Use of Information on Job Performance Requirements <i>Excellent</i> – Current data on job performance requirements and trends are systematically used in developing and evaluating this program and content of its courses. <i>Poor</i> – Job performance requirements information has not been collected for use in planning and evaluating.			2		1		

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
Use of Profession/Industry Standards <i>Excellent</i> – Profession/industry standards such as licensing, certification, accreditation) are consistently used in planning and evaluating this program and content of its courses. <i>Poor</i> – Little or no recognition is given to specific profession/industry standards in planning and evaluating this program.				2	1		
Use of Student Follow-Up Information <i>Excellent</i> – Current follow-up data on completers and leavers (students with marketable skills) are consistently and systematically used in evaluating this program. <i>Poor</i> – Student follow-up information has not been collected for use in evaluating this program.			1	2			
ASSESSMENT Adaptation of Instruction <i>Excellent</i> – Instruction in all courses required of this program recognizes and responds to individual student interests, learning styles, skills, and abilities through a variety of instructional methods (such as small group or individualized instruction, laboratory or "hands-on" experiences, open entry/open exit, credit by examination). <i>Poor</i> – Instructional approaches in this program do not consider individual student differences.				2	1		
Relevance of Supportive Courses <i>Excellent</i> – Applicable support courses (such as anatomy and physiology, technical communications, technical mathematics) are closely coordinated with this program, and are kept relevant to program goals and current to the needs of students. <i>Poor</i> – Supportive course content reflects no planned approach to meeting needs of students in this program.			2	1			
Coordination with Other Community Agencies and Educational Programs <i>Excellent</i> – Effective liaison is maintained with other programs and educational agencies and institutions (such as high schools, other community colleges, four year colleges, area vocational schools, proprietary schools, CETA) to assure a coordinated approach and to avoid duplication in meeting occupational needs of the area or community. <i>Poor</i> – College activities reflect a disinterest in coordination with other programs and agencies having impact on this program.			1	2			
Provision for Work Experience, Cooperative Education or Clinical Experience <i>Excellent</i> – Ample opportunities are provided for related work experience, cooperative education, or clinical experience for students in this program. Student participation is well coordinated with classroom instruction and employer supervision. <i>Poor</i> – Few opportunities are provided in this program for related work experience, cooperative education, or clinical experience where such participation is feasible.					3		

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
<p>14. Program Availability and Accessibility</p> <p><i>Excellent</i> – Students and potential students desiring enrollment in this program are identified through recruitment activities, treated equally in enrollment selection, and not discouraged by unrealistic prerequisites. The program is readily available and accessible at convenient times and locations.</p> <p><i>Poor</i> – This program is not available or accessible to most students seeking enrollment. Discriminatory selection procedures are practiced.</p>			1	2			
<p>15. Provision for the Disadvantaged</p> <p><i>Excellent</i> – Support services are provided for disadvantaged (such as socioeconomic, cultural, linguistic, academic) students enrolled in this program. Services are coordinated with occupational instruction and results are assessed continuously.</p> <p><i>Poor</i> – No support services are provided for disadvantaged students enrolled in this program.</p>			1	2			
<p>16. Provision for the Handicapped</p> <p><i>Excellent</i> – Support services are provided for handicapped (physical, mental, emotional, and other health impairing handicaps) students enrolled in this program. Facilities and equipment adaptations are made as needed. Services and facilities modifications are coordinated with occupational instruction and results are assessed continuously.</p> <p><i>Poor</i> – No support services or facilities and equipment modifications are available for handicapped students enrolled in this program.</p>			1	1	1		
<p>17. Efforts to Achieve Gender Equity</p> <p><i>Excellent</i> – Emphasis is given to eliminating sex bias and sex stereotyping in this program: staffing, student recruitment, program advisement, and career counseling; access to and acceptance in programs; selection of curricular materials; instruction; job development and placement.</p> <p><i>Poor</i> – Almost no attention is directed toward achieving sex equity in this program.</p>				2	1		
<p>18. Provision for Program Advisement</p> <p><i>Excellent</i> – Instructors or other qualified personnel advise students (day, evening, weekend) on program and course selection. Registration procedures facilitate course selection and sequencing.</p> <p><i>Poor</i> – Instructors make no provision for advising students on course and program selection.</p>				1	2		
<p>19. Provision for Career Planning and Guidance</p> <p><i>Excellent</i> – Day, evening, and weekend students in this program have ready access to career planning and guidance services.</p> <p><i>Poor</i> – Little or no provision is made for career planning and guidance services for students enrolled in this program.</p>			1	2			

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
<p>Quality of Career Planning and Guidance</p> <p><i>Excellent</i> – Instructors or other qualified personnel providing career planning and guidance services have current and relevant occupational knowledge and use a variety of resources (such as printed materials, audio-visuals, job observation) to meet individual student career objectives.</p> <p><i>or</i> – Career planning and guidance services are ineffective and staffed with personnel who have little occupational knowledge.</p>				2	1		
<p>Provision for Employability Information</p> <p><i>Excellent</i> – This program includes information which is valuable to students as employees (on such topics as employment opportunities and wage potential, starting salary, benefits, responsibilities and rights).</p> <p><i>or</i> – almost no emphasis is placed on providing information important to students as employees.</p>				2	1		
<p>Placement Effectiveness for Students in this Program</p> <p><i>Excellent</i> – The college has an effectively functioning system for locating jobs and coordinating placement for students in this program.</p> <p><i>or</i> – The college has no system or an ineffective system for locating jobs and coordinating placement for occupational students enrolled in this program.</p>			1	1	1		
<p>Student Follow-Up System</p> <p><i>Excellent</i> – Success and failure of program completers and completers are assessed through periodic follow-up studies. Information learned made available to instructors, students, advisory committee members, and others concerned (such as counselors) and is used to modify this program.</p> <p><i>or</i> – No effort is made to follow up former students of this program.</p>				2	1		
<p>Promotion of this Occupational Program</p> <p><i>Excellent</i> – An active and organized effort is made to inform the public and its representatives (such as news media, legislators, board, business community) of the importance of providing effective and comprehensive occupational education, and specific training for this occupation to gain community support.</p> <p><i>or</i> – There is no organized public information effort for this program.</p>		1	2				
<p>RESOURCES</p> <p>Provision for Leadership and Coordination</p> <p><i>Excellent</i> – Responsibility, authority, and accountability for this program are clearly identified and assigned. Administrative effectiveness is achieved in planning, managing, and evaluating this program.</p> <p><i>or</i> – There are no clearly defined lines of responsibility, authority, and accountability for this program.</p>			1	2			

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
<p>26. Qualifications of Administrators and/or Supervisors</p> <p><i>Excellent</i> - All persons responsible for directing and coordinating this program demonstrate a high level of administrative ability. They are knowledgeable in and committed to occupational education.</p> <p><i>Poor</i> - Persons responsible for directing and coordinating this program have little administrative training, education, and experience.</p>			1	2			
<p>27. Instructional Staffing</p> <p><i>Excellent</i> - Instructional staffing for this program is sufficient to permit optimum program effectiveness (such as through enabling instructors to meet individual student needs, providing liaison with advisory committees, and assisting with placement and follow-up activities).</p> <p><i>Poor</i> - Staffing is inadequate to meet the needs of this program effectively.</p>				2	1		
<p>28. Qualifications of Instructional Staff</p> <p><i>Excellent</i> - Instructors in this program have two or more years in relevant employment experience, have kept current in their field, and have developed and maintained a high level of teaching competence.</p> <p><i>Poor</i> - Few instructors in this program have relevant employment experience or current competence in their field.</p>					3		
<p>29. Professional Development Opportunities</p> <p><i>Excellent</i> - The college encourages and supports the continuing professional development of faculty through such opportunities as conference attendance, curriculum development, work experience.</p> <p><i>Poor</i> - The college does not encourage or support professional development of faculty.</p>					3		
<p>30. Use of Instructional Support Staff</p> <p><i>Excellent</i> - Paraprofessionals (such as aides, laboratory assistants) are used when appropriate to provide classroom help to students and to ensure maximum effectiveness of instructors in the program.</p> <p><i>Poor</i> - Little use is made of instructional support staff in this program.</p>					3		
<p>31. Use of Clerical Support Staff</p> <p><i>Excellent</i> - Office and clerical assistance is available to instructors in this program and used to ensure maximum effectiveness of instructors.</p> <p><i>Poor</i> - Little or no office and clerical assistance is available to instructors; ineffective use is made of clerical support staff.</p>		2	1				
<p>32. Adequacy and Availability of Instructional Equipment</p> <p><i>Excellent</i> - Equipment used on or off campus for this program is current, representative of that used on jobs for which students are being trained, and in sufficient supply to meet the needs of students.</p> <p><i>Poor</i> - Equipment for this program is outmoded and in insufficient quantity to support quality instruction.</p>				2	1		

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
Maintenance and Safety of Instructional Equipment <i>Excellent</i> – Equipment used for this program is operational, safe, and well maintained. <i>Poor</i> – Equipment used for this program is often not operable and is unsafe.		1	1	1			
Adequacy of Instructional Facilities <i>Excellent</i> – Instructional facilities (excluding equipment) meet the program objectives and student needs, are functional, and provide maximum flexibility and safe working conditions. <i>Poor</i> – Facilities for this program generally are restrictive, dysfunctional, or overcrowded.			3				
Scheduling of Instructional Facilities <i>Excellent</i> – Scheduling of facilities and equipment for this program is planned to maximize use and be consistent with quality instruction. <i>Poor</i> – Facilities and equipment for this program are significantly under- or over-scheduled.			2	1			
Adequacy and Availability of Instructional Materials and Supplies <i>Excellent</i> – Instructional materials and supplies are readily available and in sufficient quantity to support quality instruction. <i>Poor</i> – Materials and supplies in this program are limited in amount, generally outdated, and lack relevance to program and student needs.			1	2			
Adequacy and Availability of Learning Resources <i>Excellent</i> – Learning resources for this program are available and accessible to students, current and relevant to the occupation, and selected to avoid sex bias and stereotyping. <i>Poor</i> – Learning resources for this program are outdated, limited in quantity, and lack of relevance to the occupation.				3			
Use of Advisory Committee <i>Excellent</i> – The advisory committee for this program is active and representative of the occupation. <i>Poor</i> – The advisory committee for this program is not representative of the occupation and rarely meets.		3					
Provisions in Current Operating Budget <i>Excellent</i> – Adequate funds are allocated in the college operating budget to support achievement of approved program objectives. Allocations are planned to consider instructor budget input. <i>Poor</i> – Funds provided are seriously inadequate in relation to approved objectives for this program.		1		2			
Provisions in Capital Outlay Budget for Equipment <i>Excellent</i> – Funds are allocated in a planned effort to provide for needed new equipment and for equipment replacement and repair, consistent with the objectives for this program, and based on instructor input. <i>Poor</i> – Equipment needs in this program are almost totally unmet in the capital outlay budget.		2	1				

	Poor 1	Below Expectations 2	Acceptable 3	Good 4	Excellent 5	Don't Know	Comments
ADDITIONAL STANDARDS IDENTIFIED BY COLLEGE							
41. Qualifications of Administrators and Supervisors <i>Excellent</i> - All persons responsible for directing and coordinating this program demonstrate a high level of administrative ability. <i>Poor</i> - Persons responsible for directing and coordinating this program have little administrative training and experience, or demonstrate little administrative ability.		1	2				
42. Adequacy of Support Courses <i>Excellent</i> - Students bring appropriate preparation from support courses and can apply knowledge gained to technical courses in curriculum. <i>Poor</i> - Students experience difficulty completing support courses and often fail to recall or apply content in other settings.		2		1			
44.							
45.							

Results

Faculty perceptions tended to differ slightly on each item. Most items on the faculty perception survey were rated as *acceptable*, *good*, *excellent*, or some mixture thereof.

Several items were rated *excellent* by all three faculty members.

- Item 13. Provision for Work Experience, Cooperative Education or Clinical Experience
- Item 28. Qualifications of Instructional Staff
- Item 29. Professional Development Opportunities
- Item 30. Use of Instructional Support Staff

Several items were rated *below expectations* by at least one faculty member.

- Item 24. Promotion of this Occupational Program
- Item 31. Use of Clerical Support Staff
- Item 39. Provisions in Current Operating Budget
- Item 40. Provisions in Capital Outlay Budget for Equipment
- Item 41. Qualifications of Administrators and Supervisors
- Item 42. Adequacy of Support Courses

"Item 38. Use of Advisory Committee" was rated *below expectations* by all faculty members

Comments from Faculty

<u>Question</u>	<u>Comments</u>
1.	Not much movement on curriculum revision.
2.	Finally!
7.	We are good at responding within courses—slow to change curriculum to reflect in practice.
8.	We don't have enough info on leavers. We collect and use data on grads—no info on "leavers."
11.	We are not asked for input—classes are imposed upon us.
12.	Good liaison with CCs. Without a central governing body this isn't likely to happen.
13.	Occasionally we have trouble getting adequate clinical facilities for clinical experience. If enrollment increases significantly we will have a problem.
14.	Prerequisites are difficult for some students.
15.	SLA courses very helpful.
16.	Not sure about assessment.
17.	Not a problem.

19. Career planning services not often used by our students.
22. Employers of MLT and MTS rarely use our services so our students don't.
24. We are still an unknown profession.
We talk about doing things more than we do them.
27. We could improve our effectiveness through better scheduling.
29. Excellent support.
30. Life savers!
31. Even the clerical work-studies have disappeared.
32. We need better video projection equipment.
33. Hard to keep old analyzers working.
Safe, but some not operable.
34. New space with move to 4th floor should help.
Move to larger labs will help.
35. Small labs → lots of sections → long days.
37. Library holdings inadequate.
Library could use more support. Increasing amount of on-line resources.
38. We don't have one. Only have clinical instructor group that meets rarely.
Clinical instructors only—no outside voices, rare meetings.
Need to meet with the committee.
40. Sporadic equipment money available. When we get some it's great, but inadequate
planning to replace equipment.
41. Better at planning than completing projects.
42. Students have poor recall of prior courses + difficulty applying knowledge.
43. Some support courses or/and instructors demoralize students, often causing them to
rethink their choice of profession & drop out.

SECTION SIX: MT ADVISORY COMMITTEE SURVEY RESULTS

Survey

Traditionally, the CLS programs at Ferris State University have used their adjunct clinical instructors as their advisory committee. Therefore, when preparing this report, the surveys were sent to clinical affiliates. Laboratory personnel who have worked with Ferris students were asked to complete and return the survey. Five copies were sent to each of ten sites used by the Medical Technology program, and six sites used by the Medical Laboratory Technology program:

<u>Site</u>	<u>Program(s)</u>
Alpena General Hospital, Alpena	MT
Bay Medical Center, Bay City	MT
Bronson Methodist Hospital, Kalamazoo	MT and MLT
Carson City Hospital, Carson City	MLT
Central MI Community Hospital, Mt. Pleasant	MT
Gratiot Medical Center, Alma	MT
Huron Memorial Hospital, Bad Axe	MLT
LabCorp, Livonia	MT
Mercy Health Systems, Cadillac	MLT
metropolitan Hospital, Grand Rapids	MT
Munson Medical Center, Traverse City	MT
Spectrum East, Grand Rapids	MT
St. Mary's Hospital, Grand Rapids	MLT
United Memorial Hospital, Greenville	MLT
West MI Clinical Laboratory, Holland	MT
William Beaumont Hospital, Royal Oak	MLT

The coordinators at the clinical sites were asked to distribute, collect, and return the surveys. They were authorized to make additional copies if needed. Approximately 100 people serve as adjunct instructors at these sites.

A survey form was completed and returned by 78 advisory committee members. Items 1-4 were rated using the following guide:

- 5 = EXCELLENT means nearly ideal, top 5 to 10%
- 4 = GOOD is a strong rating, top one-third
- 3 = ACCEPTABLE is average, the middle-third
- 2 = BELOW EXPECTATIONS is only fair, bottom one-third
- 1 = POOR is seriously inadequate, bottom 5 to 10%

The survey questions given to the MT and MLT advisory committees are reproduced below. The number of responses, the mean response, and the error about the mean at the 95% confidence interval are listed below each question. Comments received follow each group of questions, and are categorized by committee. Responses to Items 5 and 6 are listed (without grammatical correction) and summarized.

Results

1. Instructional program content is:

Based on performance objectives that represent job skills and knowledge required for successful entry level employment.

Program	Number responding	Mean response
MT	53	4.17 ± 0.16
MLT	25	3.76 ± 0.28

Designed to provide students with practical job application experience.

Program	Number responding	Mean response
MT	52	4.27 ± 0.16
MLT	25	3.82 ± 0.27

Periodically reviewed and revised to keep current with changing job practices and technology.

Program	Number responding	Mean response
MT	50	4.10 ± 0.16
MLT	24	3.92 ± 0.26

Comments from MT Advisory Committee

- Need to update some of the courses offered. They no longer apply.
- Internship is very necessary to be ready for the new world.
- Unable to comment based on current knowledge.
- Has been sort of hectic during our "transitional" phase here at LabCorp, but feel that students are getting a working knowledge of lab.
- The students come to the field with a very good knowledge base.
- Dan updates his lecture notes in accordance to the subtle changes that occur in the real world – organism name changes, new testing methods, emergence of new concerns. E.g., Methicillin Resistant Staphylococcus or Vancomycin Resistant Enterococcus.
- I can't answer this.
- She rarely make[s] mistakes in this field.

Comments from MLT Advisory Committee

- I feel the students come to this field with a very good knowledge base.
- Need more instruction on why's & when's of therapeutic drug monitoring. Always need more blood drawing experience.
- Dan updates his lecture notes on a regular basis. Listens to the clinical site personnel regarding what they're doing and incorporates this information into his presentations.

2. Instructional equipment is:

Current and representative of that used on the job.

Program	Number responding	Mean response
MT	47	4.13 ± 0.18
MLT	23	3.59 ± 0.27

Comments from MT Advisory Committee

- Very good in hematology.
- Has access to a Vitek—has instructed the students sufficiently to prepare them for clinical rotation. Certainly makes the short time in micro go smoother because he's helped to give them a good foundation. He demos proper technique in other aspects of necessary bench skills as well.
- Do not know what equipment you have.
- Never been on site so can't grade. [Members who did not rate this item frequently commented that they had not visited the FSU MT labs]
- Don't know.
- From what I'm told [item rated 3].

Comments from MLT Advisory Committee

- Micro is not very automated. However, Dan has made good use of what he can access—FA scope, Vitek.
- This rating [3] is not based on my knowledge of what equipment you have. It is based on my perception of the reactions I get from students during teaching.
- I think you do well with donations of equipment. I don't expect universities to buy state of the art equipment.
- Have never seen facilities.

3. Instructional facilities:

Allocate sufficient space to support quality instruction.

Program	Number responding	Mean response
MT	41	4.27 ± 0.17
MLT	19	3.66 ± 0.35

Comments from MT Advisory Committee

- Nice labs.
- Labs can always be longer.
- Don't know.
- Never been on site so can't grade.

Comments from MLT Advisory Committee

- Have been at FSU only once—space seemed adequate both for lecture and lab.
- Never been on site so can't grade.
- Can't respond—I have no idea of the space your labs have.
- I've not been there to see it.
- I don't feel I can answer this since I've never visited Ferris.

4. Placement:

Job opportunities exist for students completing the program or leaving with marketable skills.

Program	Number responding	Mean response
MT	53	4.08 ± 0.18
MLT	25	3.74 ± 0.37

Comments from MT Advisory Committee

- Use of the internet is helpful.
- Job may not be full time [or have] benefits.
- [Item rated 5] Particularly if they demonstrate a strong work ethic, positive attitude and adaptability to a stressful (at times) work environment.
- [Item rated 4] If there were a lot of job[s] available to them.
- Students should be able to market skills learned here.
- Mid-Michigan Regional Medical Center – 2 openings, 1-30 hr midnight, 1-16 hr days/per diem no benefits.

Comments from MT Advisory Committee

- SMHS is always looking to hire qualified MLTs.
- [Item rated 5] Especially if they display good bench skills.

5. From your perspective, what are the major strengths of the Medical (Laboratory) Technology program?

Summary of MT Advisory Committee Members Responses to Item 5 (number of responses).

Ferris students were characterized as enthusiastic, motivated, willing to take initiative, and to learn (9). FSU students were considered to be well prepared for their clinical experience. FSU students enter the clinical phase of their studies with good or excellent practical experience (20), and with sufficient, good or excellent knowledge of the theoretical aspects of medical technology (18). In addition, FSU students displayed good management and/or communication skills (2).

The success of the CLS program has been credited in part to the ambition and intelligence of the FSU CLS instructors, and to their readiness to maintain up to date instruction in a rapidly changing field (4). The instructors are respected by their students, and continue to counsel students, and to monitor student progress into the clinical experience (3). Instructional equipment is good. The simulated laboratory provides good integration of theory and practice, assisting in the transition from class to internship and job (3). The internship program helps to reinforce learning, provides job training, and improves students chances of finding employment (3).

Summary of MLT Advisory Committee Members Responses to Item 5.

The responses of the MLT Advisory Committee members generally ran parallel to those of the MT Advisory Committee member. Several additional points were made. Students exit the MLT program at FSU with a good understanding of their expected role as an MLT. It is sometimes difficult for employers to find qualified laboratory technicians, and FSU provides students who are well prepared for registry.

MT Advisory Committee Responses to Item 5.

- Preparation of students for the hospital lab setting.
- The technical skill of the interns from this program has been improved dramatically during the last 5 years.
- Practical job application for student and staff.
- Good basic knowledge of tests and their applications. Familiarity with equipment.
- Well prepared students—academically/practically (dexterity, etc.). Students open minded and willing to learn—also perhaps prepared for a hospital environment.
- Good theoretical background for the students plus adequate bench work in SIM-lab. They are getting a good background from FSU about Med Tech but the “real world” is significantly different.
- Lot of diverse areas of learning—lot of hands on practical experience.
- Students are well—prepared, focused, willing to learn.
- Instructional equipment is excellent. Knowledge is outstanding.
- Prepares future technologists for entry into today's changing environment.
- Initiative—ask for assistance when needed. Working independently. Background current.
- Students seem to have background necessary to learn/catch on to learn day to day operations.
- Provides good, basic theory.
- The program does a very good job on didactic preparation of the students.
- Choices of students. Review of programs, and institution of changes if required.
- The students have all had excellent theoretical background.
- Each student that has come to us has been enthusiastic and willing to learn. They seem well prepared for the lab setting.
- Students' knowledge base.
- Adequate theory to prepare for career in microbiology (bacteriology). Careful attention to detail in developing acceptable bench skills.
- The students are well prepared to begin their clinical training.
- Good “hands-on” preparation.
- Their background knowledge is excellent—especially in coag. & hematology. Also, all our students have been very self-motivated.
- Student[s] come with some ideas of how instrumentation works.
- I think this depends on the individual student. Some arrive pretending they know nothing and others we reinforce what they know.
- Proactive attitude toward a changing field and your ability to instill the same vision in your students. This is great.
- The students I have come in contact with over the last few years have been very well prepared & have in a short period of time developed into well rounded techs. I can only assume that FSU's MT program must have a large influence on that.
- Extremely well prepared students.
- SIM lab experience integrates text & practical skills. Allows students to practice prioritizing work and doing more than on task at a time.
- Six month internship—graduates with real experience. Allows a good length of time to apply some practical use outside of 'SIM lab'. SIM lab—ideal. Helps in the transition from class work to internship/job.
- Students seem to have had sufficient theoretical background.
- I was impressed that the students were already very familiar with the tests that we perform. Differentials usually take an enormous amount of time from a teaching perspective and these students were already proficient at them.
- Students have good working habits, jump in and help. Evidence of actual experience with various procedures.

MT Committee responses to item 5, continued:

- Well versed in Blood Bank—know what Med. Techs do.
- From my brief experience (5 months) with the MT students at the downtown campus, the Ferris students seem to compare favorably with the students from Grand Valley & MSU in regards to their knowledge of blood bank theory and clinical experience.
- Up to date instruction of rapidly changing technology.
- Closely working with the students to get them placed into a clinical internship so it will be a positive experience. Stressing importance of the internship with regards to job training, leading to a job. Good communication with affiliates.
- It is focused on teaching functional job skills and technique. They keep up to date on new procedures. They teach management skills as well as bench skills.
- The student has a wonderful advantage by receiving theory & practical experience together (and a lot of it). Their internship then, just reinforces this and puts it all together for them. This is a great advantage compared to other programs that leave a lot of clinical theory until the internship.
- The students were well prepared for lab experience. The students were very excited and interested in learning and using the skills they had learned. Students have a good work ethic. Knowledge base of the students was very good and current. An area to place some change is showing students work flow planning and streamlining tasks. I appreciated the school counselor keeping in contact with me regarding students progress and concern of any problems.
- Definitely the clinical experience the students receive while at Ferris. In addition to the onsite educational lab, they provide instructors with ambition and intelligence. The students have respect for the staff which allows them to concentrate on excelling in the program.

MLT Advisory Committee Responses to Item 5.

- The students seem ready for internship so you must be doing good to get them ready!
- Adequate theory to prepare for career in microbiology (bacteriology). Careful attention to detail in developing acceptable bench skills.
- Students' knowledge base.
- Experience they receive in "sim lab."
- The students leave Ferris with a good understanding of their role as an MLT.
- Great practical skills preparation. Very good theory background.
- The simulated laboratory course(s) at the university—the students have well developed bench skills (for students) when they come to the clinical sites.
- Good program at FSU.
- Consistency of program. Knowledgeable & motivated instructors. Reputation.
- Simulated lab experience so the students get a feel for real life labs.
- The lecture program is excellent, all students knew the theory and principle of the tests very well.
- Students seem to be academically prepared for continued enhancement at the live laboratory level.
- The instrumentation training Ferris gives their students is good. I feel students come in to the clinical setting not afraid to use and learn the ever changing instruments.
- Students seem comfortable in lab—good preparation (not timid with procedures or instruments). Most of the students we have had work hard at the bench and also studying at home. Take tests seriously and prepare for them. Tests sent by Ferris were very well done. Very good preparation for registry. All areas in microbiology covered.

MLT Committee Responses to Item 5, continued:

- Good knowledge base. Some instrumentation experience.
- Background knowledge seems pretty good, they just need practice in doing the tasks and theory that they've learned. And that's what we're here for.
- Students seem to have good basic knowledge in all areas.
- The major strength from my perspective is the fact that it exists. I have had problems recently finding technical staff.

6. From your perspective, what are the major needs for improvement in the Medical (Laboratory) Technology Program?

Summary of MT Advisory Committee Members Responses to Item 6 (Number of Responses).

It was suggested that students might be better prepared for clinical rotations if the curriculum upgrades were continued. Coursework suggestions included: less emphasis on hard sciences (org. chem./genetics) (1), keeping up to date with the "real" practice (1), including a course or training in statistics in the clinical setting (1), providing a stronger background in chemistry principles to improve adaptability to changing or different environments (1), and placing more emphasis on disease states/diagnostic test relationships, and on the relationships between tests (1). Courses could make frequent use of case studies to assist in the development of problem solving skills (2), or employ other methods to improve critical thinking and data analysis skills (1).

It was suggested that certain basic skills (pipetting, dilutions, titers, phlebotomy) need improvement (2), and a warning was issued against shortening the time of the internship (1). Preparation for clinical rotations might be improved by subjecting students to a coursework review session prior to starting rotations, and/or by remediation (i.e., study sheets for coagulation theory) to during the internship. Workshops or seminars at FSU or at appropriate on site locations (such as Michigan Department of Community Health) to enhance specific program areas (parasitology, mycology, preparing and reading direct gram stains on patient specimens) (1).

It was suggested that students should be prepared to properly answer telephones in the laboratory, making sure to correctly interpret the requests of the calling party and to appropriately answer the questions of doctors, nurses and patients (2). It was noted that MTs are called upon to perform supervisory and management duties (2), and suggested that courses (at FSU) or formal training (during internship) in laboratory or financial management might assist MTs in this transition (2). Questions such as how to lead a group of MLT's, phlebotomists, lab assistants, and clerks could be addressed, with emphasis on cost containment, productivity, and conflict resolution. Also, considering changes in the medical technology field, such as the employment of MLTs in place of MTs, it was suggested that students be prepared for job opportunities outside of the hospital setting (1). There was some concern (4) that students need a deeper sense of "the big picture", and that a greater sense of responsibility for the overall functioning of the laboratory be fostered (multitasking, taking a problem from start to finish, completing the workload, replacing items used).

It was suggested that the final exams supplied by FSU CLS instructors are inappropriate to the clinical "courses" (1), and that more frequent (weekly checks) assessment of student progress in the clinical rotations by FSU CLS instructors would improve accuracy of the assessments (1). Lastly, it was suggested that the program has no major needs for improvement (6).

Summary of MLT Advisory Committee Members Responses to Item 6.

The comments of the MLT Advisory Committee members were similar to those offered by the MT Advisory Committee members. In addition, it was suggested that MLT students would benefit from a better understanding of normal lab values, and of abnormal and immature white blood cells. Students should be encouraged to continue studying during their clinical rotations. Blood drawing and computer skills (including understanding of laboratory information systems) were thought to need improvement. More emphasis should be placed on the development of professional behavior and attitudes.

MT Advisory Committee Responses to Item 6.

- Update the curriculum, which I know is in progress. Many prerequisite classes ex. chemistry (org.) and some genetics may not need to be so strongly emphasized. The curriculum is still a good one but a lot is changing in the world of medicine and frequent updates are necessary.
- Shortening the internship will only hurt the students. They barely are ready to work in the "real world" as it is now—soon the time will decrease & more work (learning) will need to be stuffed into a shorter time!
- Have a workshop/seminar on preparing and reading direct gram stains on patient specimens—a solid introduction/preparation for the clinical rotation. Invite Sue Shiflett from Michigan Department of Community Health [(517) 335-9644] to do a day-long presentation on parasitology; this would strengthen this area of micro. Might consider doing something similar for mycology only maybe have the class go to MDCH for hands-on experience because they would have access to a hood, etc.
- Keeping up to date with what is important for actually performing duties as a MT in today's changing health care!
- Because of the changes in the medical technology field (i.e. using techs with less than a bachelor's degree) I think employment opportunities outside the hospital setting need to be pursued.
- The focus should be on multi-tasking and learning more than one discipline.
- Multiple tasks. Responsible for completing workload. Putting items back where they are found.
- The one major improvement would be the ability to allow students to go through from start of job to results end.
- A big sense of responsibility for the total operation.
- Stronger emphasis on the specific relationships between individual tests and disease states, and interrelationship between various tests. Students lack pipetting skills, have problems with dilutions and titers.
- More phlebo experience.
- For microbiology it is just a burden to recreate a true patient specimen and how they are different from each other on a daily basis.
- Coag theory was a little weak over the years. Would it be possible to give the students study sheets for coag to do during their internship?
- Perhaps formal training (at FSU or in internship) on how to lead a group of MLT's, phlebots, lab assistants, clerks with emphasis on cost containment, productivity and conflict resolution.
- The changing of responsibility as MT, it is now more emphasized in management & supervisory duties. It may be helpful to incorporate courses of laboratory management or financial management into the MT program.
- A little more "phone" experience—answering calls or getting the info so as to be able to return calls with answers.

MT Advisory Committee Responses to Item 6, continued:

- Client service skills—i.e., how to answer phone questions from doctors, patients, nurses.
- I feel more emphasis should be placed on case studies. This would help the student develop their problem solving skills. I also feel that more attention should be given to chemistry principles. Instrumentation can vary from institution to institution, however a strong knowledge of chemistry can prepare the student to adapt to any system being used in a facility whether a hospital or physician office lab.
- If possible provide more opportunities for students to develop problem solving skills. Provide problem situations, what-if scenarios, etc. to help develop ability to use theory in practical ways.
- Analytical skills/critical analysis. Data-based decision making.
- Statistics in the clinical setting.
- It would be nice if the students could get a mini-review (maybe two weeks) on all specialties just prior to starting rotations. The students seem to "forget" basic course work done the first year of their didactic education.
- Weekly checks by the program director would be helpful since we are busy each and every day and a problem/incident may be better recalled if we were contacted each week or every other week. At times, the State convention or other activities take away from their learning time and we cram a little to cover everything.
- The final exams that we receive from FSU are not a good match to what is taught in our "clinical courses." They are not based enough on procedures and applications, too much on theory and some not particularly useful.
- Hard to say—student we had was exceptional—quickly learned workload flow and any knowledge that was lacking was immediately resolved. Didn't have to explain theory but rarely. [The student] had a rare mix of knowledge & common sense and reasoning. Was a great student to have.
- Hard to tell, as we had an exceptional student.
- Program appears good. Good base.
- I think it is a good program.
- None noted.
- None at this time.
- None.
- None.

MLT Advisory Committee Responses to Item 6.

- I would like the program more structured for the clinical sites. With less staffing available in hospitals, it is very difficult to find time to adequately prepare tests and practicals for students. It becomes a major inconvenience for staff who are facing many time constraints.
- The last student seemed excellent at the practical—very poor with knowledge needed for tests. Perhaps this was an individual problem.
- More emphasis needed on acquiring blood drawing skills. Also, they should be forewarned that they may have to answer the phone & replace a waste container now and then.
- Stress to students that they need to continue studying during their clinical rotations. Also, they should take advantage of every learning opportunity, especially phlebotomy.
- Need more "case studies" lab results related to patient's clinical condition. More knowledge of "normal lab values," more knowledge of laboratory information systems.

MLT Advisory Committee Responses to Item 6, continued:

- Computer work.
- Longer time in the internship. It's hard for us to train in every area with the given time. More experience with reading gram stains (direct from specimens). Most students commented that computer programs on gram stains were available but most had not completed them.
- I believe the instructors need to stress more the confidentiality and medical ethics as well as dedication to profession. It's not just a job. Also, need more instruction in abnormal & immature WBC, as in leukemic states.
- They need practice drawing blood.
- The time in the hospital lab is so short, but I don't know how to get the background info and lab time in 2 years. Clinical correlations—lab results→disease/condition.
- Have internships other than summer months.
- Expose students to other areas of healthcare, i.e., nursing, radiology, or view their procedures and practices and how they may correlate with lab.
- Clarify student 'expectations' vs. real work/lab experience opportunities. Professional behavior.
- Stress the necessity of professional attitude toward work and behavior.
- Have a workshop/seminar on preparing and reading direct gram stains on patient specimens—a solid introduction/preparation for the clinical rotation.
- Have the student interview at several internship sites. This will give them more interview experience. Plus, it may open some eyes to other possibilities for internship. I don't think a student should limit themselves to one, two or three choices. When I did my internship interviewing we were told to have at least 10 interviews.
- None at this time.
- None

SECTION SEVEN: LABOR MARKET ANALYSIS

Recently, Laboratory Medicine conducted surveys of laboratory personnel vacancy and pay rates. In the Laboratory Medicine (February 1999) survey of medical laboratory managers (Table 1), the vacancy rate was computed by dividing the number of vacant positions by the budgeted numbers of full-time equivalent employees. The results are summarized in the table below. Michigan is in the East North Central area.

Table 1: Average Vacancy Rates for Laboratory Personnel by Region

% FTE Vacancy Rate	Region					
	Northeast	East North Central	South Central Atlantic	West South Central	West North Central	Far West
MT (staff)	11.4	12.2	11.6	11.2	6.0	7.8
MT (supervisor)	10.4	10.9	7.5	10.0	0.0	4.8
MT (manager)	13.3	20.0	15.4	16.7	8.3	15.4
MLT (staff)	15.4	9.1	9.0	21.6	11.5	5.4

Reference: Castleberry, Barbara and L. Wargelin, 1998 Wage and Vacancy Survey of Medical Laboratories. *Laboratory Medicine*. March 1999; 30(3): 174 - 178.

Table 2: Vacancy Rate Percentages from 1996 - 1998

Position	1996	1998	% change
Medical technologist: staff	8.2	10.2	+ 2.0
Medical technologist: supervisor	8.6	9.3	+ 0.7
Medical technologist: manager	7.7	15.4	+ 7.7
Medical laboratory technician	9.4	11.1	+ 1.7

Reference: Castleberry, Barbara and L. Wargelin, 1998 Wage and Vacancy Survey of Medical Laboratories. *Laboratory Medicine*. March, 1999; 30(3): 174 - 178.

Although the profession may be near the end of a shortage of lab personnel, it has been shown by these same surveys that the pay rates continue to climb. The following table was taken from the March, 1999, issue of Laboratory Medicine. It shows the average median hourly pay rates for a variety of lab workers and is broken down by region. Michigan is in the East North Central region.

Table 3: Hourly Median Pay Rates for Laboratory Personnel by Region

Average Hourly Rate	Region					
	Northeast	East North Central	South Central Atlantic	West South Central	West North Central	Far West
MT (staff)	16.60	16.00	16.00	15.40	15.70	19.00
MT (supervisor)	19.60	18.50	19.60	18.80	19.50	22.00
MT (manager)	24.60	23.00	24.80	23.80	23.00	26.10
MLT (staff)	13.60	13.00	12.10	12.60	12.50	13.00

Reference: Castleberry, Barbara and L. Wargelin, 1998 Wage and Vacancy Survey of Medical Laboratories. *Laboratory Medicine*. March, 1999; 30(3): 174 - 178.

The Ferris Career Planning and Placement Services provides a summary of placement and salaries gathered from graduates during the first five months after graduation. The tables below summarize the results of surveys collected following the 1990-1998 academic years for both the MT and MLT programs.

Medical Technology, BS	1990-1991	1991-1992	1992-1993	1993-1994	1995-1996
# of Degrees Granted	13	20	17	15	19
% Employed †	75*	100	94	93	100
Beginning Salary ‡	N/A**	24,702	27,407	28,502	N/A

* Three were not seeking employment

**Not available

† Number of graduates placed in jobs or further education on full-time basis

‡ Average annual beginning salary

Medical Technology BS	1996-1997	1997-1998
# of Degrees Granted	10	26
% Employed †	100*	81
Beginning Salary ‡	26,133	N/A

* Three were not seeking employment

**Not available

† Number of graduates placed in jobs or further education on full-time basis

‡ Average annual beginning salary

Medical Laboratory Technician, A.A.S.	1990-1991	1991-1992	1992-1993	1993-1994	1995-1996
# of Degrees Granted	6	14	6	6	10
% Employed	100	91	66	83	100
Beginning Salary ‡	N/A*	N/A	N/A	N/A	16-19K

**Not available

† Number of graduates placed in jobs or further education on full-time basis

‡ Average annual beginning salary

Medical Laboratory Technician, A.A.S	1996-1997	1997-1998
# of Degrees Granted	12	17
% Employed	100	100
Beginning Salary ‡	12-27K	13-27K

**Not available

† Number of graduates placed in jobs or further education on full-time basis

‡ Average annual beginning salary

If you compare the salaries reported in the Laboratory Medicine survey with those of the most recent Ferris survey, it is clear that graduates from our MT program are paid above the regional average.

According to *Occupational Outlook Quarterly*, spring 1999, "Steady growth in health occupations, 1986-1996 and projected 1996-2006," examined trends in health careers over the past 10-years and predicts what will happen the next 10. From 1986-1996 almost one out of every nine jobs created was in health occupations. It is estimated that 18.6 million new jobs will be created from 1996-2006 and 2.1 million of those will be health related. More specifically, Health Technologists and Technicians (which includes Medical Technologists and Medical Laboratory Technicians) experienced a 44% growth in the past 10 years. What's more, they "expect growth more than twice as fast as averaged over the next 10 years."

SECTION EIGHT: PROGRAM FACILITIES AND EQUIPMENT

The CLS programs have historically had laboratory equipment that provides excellent learning experiences for our students. As the clinical laboratory has become more automated, the analyzers have become larger and more complex. In addition, automation has invaded such traditional "hands on" areas as clinical microbiology and the blood bank.

The equipment available on campus is listed at the end of this section. In addition, a refurbished Beckman CX-7 large chemistry analyzer is being installed as this report is being written. When installation is completed, faculty and students will be trained in its use. We hope to incorporate its operation into CLLS 456 this fall, and certainly into CLLS 215 and CLLS 256 in winter 00.

Instrumentation reaches us from several sources: donations from clinical affiliates, donations from other laboratories (usually at the suggestion of one or more FSU alumni), and vocational education funds provided for two year academic programs. We are grateful for this support. However, this disorganized process does not allow us to plan for orderly and systematic acquisition, and replacement of instruments and equipment, because we do not know when or if funds will be available.

The CLS faculty maintain an equipment "wish list", which is updated periodically. We are thus able to quickly respond when equipment is offered by donors or if voc-ed funds become available. Ideally, we would know each year that a certain number of dollars is available for equipment acquisition. However, manage to function in the existing environment.

An additional concern is the lack of maintenance funds for our analyzers. Most of them come to us fully depreciated, and maintenance plans available from the manufacturers would total more than our entire S+E budget. An equipment technician works mainly out of the VFS building, to provide prompt support for emergency situations, but he is unable to make major repairs. Most analyzers have an 800-type service support line which we use when needed. However, some of our instruments are old enough that they are no longer supported by the technical staff at the other end of the telephone connection. While an instrument may still provide a valuable educational experience for students, it's not of much use to us if it doesn't function and cannot be repaired.

Facilities for laboratory instruction are spread out through VFS 102, 103, and 104, with occasional classes scheduled in VFS 421 and 423. The faculty were hoping to be able to move to VFS 421 and 423, which would benefit the program in the following ways:

Seating capacity in those labs is larger, so we could teach fewer laboratory sections and be more productive. With fewer but larger laboratory sections, class scheduling would be greatly improved. Our current laboratories are often in use from 8:00 a.m. through 9:00 p.m., with resulting schedules that are hard on faculty and students, and especially on non-traditional students. VFS 423 could be set up as a core laboratory, combining the instrumentation of clinical chemistry, hematology, coagulation, and immunology. This would better reflect current laboratory practice, and allow us to better organize portable equipment, such as pipettes, racks, timers, and chemicals that require special storage. These items are shared between laboratories and sections. With the existing three room format, they never seem to be where they are needed.

We can manage with the existing laboratories, but educational experiences for our students would be greatly enhanced by moving to the fourth floor laboratories. With better scheduling, faculty could devote more time to recruiting and retention, university service, and other activities.

**MAJOR EQUIPMENT INVENTORY
CLINICAL LABORATORY SCIENCES**

Equipment Type	Brand	Model	Quantity
<i>Chemistry</i>			
Chemistry Analyzer	Abbott	Commander	2
Chemistry Analyzer	Abbott	Quikwash	2
Chemistry Analyzer	Abbott	TDX	2
Chemistry Analyzer	Abbott	IMX	1
Chemistry Analyzer	Abbott	Axsym	1
Spectrophotometer	Turner	350	1
Spectrophotometer	Turner	340	3
Osmometer	Advanced Instruments	3D2	2
Nephelometer	Kallestad	QM300	1
	<i>to dispose of below items??</i>		
Chemistry Analyzer	Abbott	ADX	1
Spectrophotometer	Gilford	III	2
Chemistry Analyzer	DuPont	ACA IV	1
Chemistry Analyzer	Beckman	Stratus II	1
Chemistry Analyzer	Beckman	Array Protein	1
Electrolyte Analyzer	Beckman	Lablyte 830	1
Electrolyte Analyzer	AVL	9180	1
Electrolyte Analyzer	AVL	983-S	1
Blood Gas Analyzer	IL	BGE 1400	1
Blood Gas Analyzer	Corning	Cooximeter 282	1
Hand Held Glucometers	Ames, Boehringer-Mannheim, Miles		12
<i>Electrophoresis</i>			
Densitometer	Beckman	Appraise	1
Power Supply	Beckman, Gelman, Redvotek, Turner		13
Theresting Chamber	Beckman, Helena, Corning		11
<i>Immunohematology & Serology</i>			
Immufuge	Dade		21
Cell Washer	Sorvall, IEC		5
Dry Bath Incubators	Marsters, Lab Line, Sybron, S/P		7
Agglutination Viewers	Clay Adams		17
Rotators	Clay Adams, Tektator		3
<i>Coagulation</i>			
Fibrinometer	BBL		12
Coagulation Analyzer	Ortho	Koagulab 16S	1
Coagulation Analyzer	Beckman Coulter	ACL 1000	1
Platelet Aggregometer	Chronolog Linear Instruments Corp.	702	1
Chart Recorder	Chronolog Linear Instruments Corp.	650	1
Clot Detector	MLA		1

<i>Hematology</i>			
Hematology Analyzer	Abbott	CellDyn 1600	1
Hematology Analyzer	Abbott	CellDyn 3000	1
Cell Counter	Coulter	ZM	1
Cell Counter	Coulter	ZF	1
Cell Computer (MCV)	Coulter	MHR	1
Differential Counter (manual)	Clay Adams		23
Differential Counter (electronic)	American Dade, TekPro	Tally III, Tektally 2	7
Hematocrit Reader	Damon/IEC	7950	3
Hematocrit Centrifuge	Damon/IEC	MB	2
Hematocrit Centrifuge	Separation Technology	Hematastat C-70	1
Dilutor	Dade	2D	2
Hemoglobinometer	Coulter	HGBR	2
Pipette Shaker	Clay Adams	Yankee	1
<i>Microbiology</i>			
Bacterial ID System	Biomerieux Vitek	JR	1
Bacterial ID System	Dade	Microscan TouchScan SR	1
Blood Culture System	Bactec	NR 730	1
Incinerators	Scientific Products	Bacticinerator	20
Disc Dispensers	Difco, BBL		15
Incubators	National Appliance Co., Labline, Napco		3
Bunsen Burners			2
Anaerobe Jars	BBL, Oxoid		17
Fyrite Gas Analyzer	Bacharach		1
Laminar Flow Hood	Contamination Control Inc.		1
Autoclave	Ongard Sterilization Technologies	HiVac	1
Ultraviolet Lamps	Ultraviolet Products		5
<i>Urinalysis</i>			
Urine Chemistry Analyzer	Ames	Clinitek 100	1
Urine Chemistry Analyzer	Ames	Clinitek 200	1
Refractometers	A/O, Atago, Reichert, National		4
Urinometers	Adams/Squibb		4
<i>Microscopes</i>			
Binocular Microscopes	A/O	150	16
	Reichert-Jung	150	5
	Olympus	CH2	5
	Olympus	CH30	5
	Nikon	Alphaphot 2	6
Darkfield Microscope	Olympus	BH	1
Dissecting Microscope	A/O		2
Phase Microscope	Olympus	BH2	1
Phase Microscope	A/O	(2 head)	1
Teaching Microscope	A/O	(4 head)	1
Fluorescent Microscope	A/O	2071	2

Computers & Instructional Aids

General Lab Computers	Dell	Optiplex G1	3
General Lab Computers	Gateway	2000	1
General Lab Computers	Gateway	4SX-25	1
Video Monitor	Sony Triniton (32")	KV.32510	1
Video Disc Player	Pioneer		2
Video Camera	Sony	DXC-107	1
VCR	JVC	HR-J410U	1
Computer Printers	Hewlett Packard	Desk Jet 500	2
	Hewlett Packard	LaserJet Series II	1
	Epson	FX-86E	1

General Lab Equipment

Centrifuges	Sorvall	GLC-2B	1
	Clay Adams	Dynac	1
	Clay Adams	Dynac II	1
Refrigerated Centrifuge	Beckman	TJ 6	1
Microcentrifuges	Abbott	TDX	2
Analytical Balances	Mettler	PN323	2
	Mettler (top loading)	H31AR	1
Ohm/Voltmeters	Simpson, Miconta		11
Slide Warmer	Labline		1
Glass Drying Oven	Labline		1
Plastics Drying Oven	Chicago Surgical		1
Refrigerators	Sears, Kelvinator, Gem		6
	General Electric, Hotpoint		
Water Baths	Labline, Precision Scientific		6
Deminerlizers	Barnstead Thermolyne		2
Pipette Washer	Heinicke	HN-1	1
Dishwasher	Labconco	Steam Scrubber	1
Hotplate w/ Stirrer	Corning, Tekstir		3
Stir Plate	Thermolyne	Nuova	1
Utility Carts			5
Automatic Dispenser	Oxford		2
Phlebotomy Practice Arms	Nasco		5
Phlebotomy Chairs			4
Phlebotomy Table			1

Safety Equipment

Chemical Fume Hood	Vectaire		1
Eye Wash Fountain			2
Eye Wash Station			1
Fire Blankets			3
Fire Extinguishers			4
Safety Showers			3
First Aid Kits			3

Clinical Lab Sciences Program

APRC 1999-2000

section 3 of 3

SECTION NINE: CURRICULUM

The program is in the process of proposing a major curriculum change. We anticipate completing the proposal by October 1, 1999. The changes were discussed briefly in Section One of this document.

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SECTION TEN: ENROLLMENT TRENDS, LAST FIVE YEARS

Enrollment in Clinical Laboratory Science programs has declined nationwide in recent years. The Clinical Laboratory Management Association is studying the number of job openings and the number of graduates entering the field. Preliminary data indicate that the strong economy has caused some graduates to take positions other than those available in the traditional hospital laboratory, where pay may be better, work hours are more attractive, and on-the-job stress is less.

CLS educators nationwide indicate that traditional female students have more opportunities than twenty years ago, and so are not choosing health professions for careers. In addition, national concern about curbing costs in health care may be discouraging students from preparing to enter these fields.

At the same time, the CLS programs at Ferris State University have implemented a Progression Review policy, whereby each student is required to meet earn a C or better grade in each CLS course, as well as in selected courses in Biology and Chemistry. So while our overall enrollment is down, our retention and success rates are up.

The table below illustrates our enrollment trends:

Academic Year	MT students, third year	MT students, fourth year	MT graduates	MLT students, second year	MLT graduates
1995-96	17 ¹	20	20	16	12 ⁵
1996-97	27 ²	12 ¹	12 ¹	18	17 ⁶
1997-98	20 ³	25 ²	25 ²	10	10 ⁷
1998-99	22 ⁴	19 ³	19 ³	10	11 ⁷
1999-00	14	20 ⁴	NA	7	NA

¹ Of the students who entered the third year of the MT program in Fall, 1995, two left for personal reasons, three left due to academic difficulties, and two elected to take three years to complete the final two years of the program. Two students were completing the career mobility program on a part time basis, adding to the graduation total.

² Of the 27 students who entered the third year of the program in Fall, 1996, three left for personal reasons, while one was dismissed due to academic difficulties. The two students who entered the program in 1995 added to the graduate total in 1998.

³ Of the 20 students who entered the third year of the program in Fall, 1997, one was persuaded to take three years to complete the program, due to academic difficulties. She is on course to graduate in May, 2000.

⁴ Of the 22 students who entered the third year of the program in Fall, 1998, two were dismissed for academic reasons. One works as an MLT, and the other has been re-admitted. He may graduate in 2001.

⁵ Of the 16 students who entered the second year of the MLT program in 1995, three were dismissed for academic reasons. A fourth has completed all graduation requirements except for English 250.

⁶ One of the 18 students admitted to the second year of the MLT program in 1996 was in a serious traffic accident during her internship. She was able to return later and complete graduation requirements in 1997.

⁷ One of the 10 students who entered the second year of the MLT program in 1997 completed English 250, her last graduation requirement, in Fall, 1998. She thus became a 1998 graduate.

Section Eleven: Program Productivity/Cost

There is no escaping the evidence that the CLS programs are expensive. The faculty have no information about how these costs are collected or assigned. CLLS 101 is taught once a year to any program student who needs to enroll in it. In CLLS 215, 224, 225, 230, and 235, second year MLT students and third year MT students are scheduled together. The same instructors work with both kinds of students, and indeed, are often unsure of which program any given student is enrolled in. Equipment and supplies are not ordered or provided separately for MLT or MT students in these courses. In other words, we have no information whatever on how the "MLT" costs for CLLS 230 are separated from the "MT costs" of CLLS 230.

CLLS 228 and 256 taught to MLT students only. CLLS 351, 355, 358, 430, 435, 456, 463, and 499 are taught to MT students only. BOTH "Career Mobility" and "2+2 Integrated" students are combined in all the courses except CLLS 456. Thus it may be possible to separate costs for these courses, although again, much of the supply and equipment costs are shared. Courses enumerated 27X are MLT internship courses, while CLLS 48X are MT internship courses, with relatively low costs to Ferris State University.

The table below indicates the costs per credit hour for the Clinical Laboratory Sciences programs, as provided by the Office of Institutional Studies:

CLS programs cost per credit hour, 1995-98

	1995-96	1996-97	1997-98
MLT (AAS)	\$133.42	\$110.19	\$204.70
MT (Career Mobility, years 3 and 4)	\$195.05	\$99.53	\$190.00
MT (BS)	\$117.01	\$124.72	\$199.09

Compare this to the number of students taking professional phase courses in each program for the same years:

Numbers of students in the second year of the MLT program, and 3rd and 4th years of the MT programs, 1995-98

	1995-96	1996-97	1997-98
MLT (AAS)	16	18	11
MT (Career Mobility, years 3 and 4)	2	6	7
MT (BS)	33	33	38

The MLT program seems to reflect costs you would expect: as enrollment went up, cost per credit hour went down, and as enrollment decreased, as between 1996-1997 and 1997-1998, costs went up.

However, for the career mobility program, as enrollment went from 2 to 6, costs fell in half, and when one more student arrived the following year, reported costs nearly doubled. While one could conclude that going from two students to 7 cut the cost in half, having only six students is twice as expensive as having seven.

For the 2+2 Integrated program, costs are even more confusing. There is little change for the two years when there were 33 students in the third and fourth years, but again, adding students causes costs PER CREDIT HOUR to increase. We have been operating on the assumption that we need to recruit more students, but these data seem to point in another direction.

The number of credit hours per full time equated faculty member also fluctuates, from year to year, although it has been trending upward for the past three years, while the university average has been going down:

Student Credit Hour/FTEF, 1993-4 through 1997-98

	Summer	Fall	Winter	F+W	University average
1993-94		47.50	101.52	141.17	485.40
1994-95	88.72	164.00	170.74	334.74	466.42
1995-96	138.75	143.07	135.01	277.85	464.12
1996-97	140.17	141.15	158.06	298.60	446.99
1997-98	167.22	154.74	151.25	305.94	442.10

The faculty are constantly exploring ways to become more productive, with emphasis on increasing program enrollment and retention.

Section 12: Conclusions

A. Centrality to FSU Mission

The Clinical Laboratory Sciences programs at Ferris State University serve well to enhance the mission of the university. The programs combine a strong emphasis on traditional sciences with liberal arts and technical education. The CLS programs emphasize orientation for professional careers. They are considered by the National Accrediting Agency for Clinical Laboratory Sciences to be a national leader in CLS education.

B. Uniqueness and Visibility

Ferris State University's Clinical Laboratory Science programs were among the first in the nation to convert from the traditional hospital-based format to an on-campus program that culminates with laboratory-based clinical experience. The on-campus simulated laboratory provides cost-effective preparation for clinical laboratory students. This unusual aspect of Ferris's program enables students to be prepared to graduate and practice their profession with a much-shortened internship experience. The students arrive ready to perform well at their assigned affiliate, having had considerable practice in routine and problem-solving laboratory situations on campus. This enables the clinical instructors to focus on orienting the student interns to the rapid pace and stressful conditions in today's clinical practice. The students at the affiliates are reviewing, rather than learning for the first time, the cognitive knowledge about clinical significance of laboratory results, correlation of results with patient diagnoses, reviewing results for accuracy and precision, and resolving problems as they occur. The students have also practiced professional behaviors on campus, including acceptable dress, adherence to safe practices, and communicating with other health care professionals.

The program is well-known nationally to Clinical Laboratory Science educators. The program is enrolling a growing number of students from other countries, sent by their governments to study and then to bring home knowledge and skills to their countries. Both the profession and Ferris's program must be made more visible to prospective students.

C. Service to the State and Nation

As discussed in the Overview of the Program, the CLS programs at Ferris State University prepare a large number of the annual CLS graduates in Michigan. Program graduates have been hired statewide, from Iron Mountain to Sault Ste. Marie, and from Alpena to Petoskey and from Monroe to St. Joseph. Other graduates have moved to nearly every state in the nation. Besides serving in traditional clinical laboratories, program graduates are employed in industry, laboratory management, research, and related fields.

D. Demand by Students

Ironically, as the number of job openings increase nationwide, enrollment in CLS programs has decreased. However, the CLS program at Ferris State University provides an alternative for students in pre-pharmacy, pre-optometry, and other competitive programs that have more applicants than places available. They are able to complete a health-related program and gain professional employment.

The CLS programs enrolls increasing numbers of nontraditional students, as well as students from traditionally under-represented groups.

E. Quality of Instruction

Surveys of students, adjunct clinical instructors, graduates, and employers of graduates all indicate that the content of the curriculum is appropriate for clinical laboratory practice. These groups also indicate that students and graduates are well-prepared to progress through the program and practice in the

profession. The faculty have included a variety of instructional methods, including computer instruction and group practice/problem based learning, to enhance student learning, whatever the individual student's preferred learning style.

The program faculty are supported in their efforts to attend and present at professional meetings. Support is also available for them to update their clinical skills on a rotating basis. Visiting clinical sites helps them to be aware of changes occurring in laboratory practice.

Students and graduates express satisfaction with the quality of instruction. Some students and graduates rate the CLS faculty more highly than faculty from other Ferris State University departments.

F. Demand for Graduates

As noted above, it seems that demand for graduates is increasing while enrollment has declined. Despite the nearly constant re-organization and re-engineering of clinical laboratories, graduates easily find entry-level employment in a variety of settings. The Career Planning and Placement Office at Ferris indicates annually that virtually all graduates find jobs in the field. Salaries are slowly increasing.

G. Placement Rate and Average Salary of Graduates

A problem of the system used by the Career Planning and Placement Office at Ferris State University is that they want graduates to report information on their jobs during the Winter Semester. Our four year graduates normally finish in May. Their clinical experience is often so intense that they have little or no time in the Winter Semester to search or interview for a job. Our two year graduates finish in August; asking them to report their job-search success in April, when they have an entire semester remaining, results in little or no employment data reported by them.

H. Service to non-majors

Students who are NOT majors do not usually enroll in CLS courses. This may be due to a lack of interest. More likely it is due to a lack of completion of pre-requisite courses. One graduate (1999) completed the entire last two years of the MT program while awaiting admission to the BSN program, and a second such student began the program in Fall 99. So we may be retaining students that would otherwise leave Ferris State University.

The faculty in CLS anticipate participating in future sections of CCLS 102 and 103, two of the three courses in the College of Allied Health Sciences core curriculum. We will be sharing our knowledge of chemical safety, blood-borne pathogens safety, and venipuncture with most CAHS students.

Several faculty have worked with students at the Math Science and Technology Center.

I. Facilities and Equipment

Ferris State University's Clinical Laboratory Sciences students are able to learn on-campus by practicing on a variety of instrumentation. Although the instruments tend to be one generation behind those in current practice, the operational principles are often the same. Program graduates and affiliated laboratories have been very generous with donations of both instruments and the supplies needed to run them. On-campus instruction has also included routine maintenance and minor troubleshooting procedures. The clinical instructors routinely express surprise that Ferris State University students are well aware of the instrumentation in common use in clinical laboratories, and are unafraid to jump in and begin using the equipment that they encounter in the "real world."

Through Perkins grants and other sources of funding, we have been able to obtain and maintain microscopes, computers, and other equipment that we need. Indeed, the equipment we have has filled space available!

The faculty have also received a Faculty Development grant to upgrade and redesign our home-made laboratory information system (computerized data base for laboratory test results). We hope to be able to interface several large analyzers directly to the computer system. If the LIS turns out as we hope, we plan to market the system to other CLS programs, for use in their on-campus instruction.

The laboratories are also well-equipped for any safety emergencies that may occur, with eye-wash stations, safety showers, fire blankets, fire extinguishers, first aid kits, and telephones.

At present, CLS courses are taught in two adjoining laboratories (with a prep room between, and a third laboratory around the corner, on the first floor of the VFS building. While this is ample space in terms of square feet for the numbers of students we have, the instrumentation makes it difficult to have more than 10-12 students per laboratory section. VFS 103-104 were designed 25 years ago to handle fifteen students per section, but today, many of those "seats" have large analyzers directly in front of them, which makes them unavailable for any other instruction. VFS 102 has 16 "seats," but the same problem. When we enroll 25 or more students in the professional phase of the programs, the laboratories are often in use from 8AM to 8PM and beyond.

The CLS faculty have proposed moving to two larger laboratories on the fourth floor, so that we could teach fewer laboratory sections, with larger enrollments per section. In addition, one of these laboratories could be set up as an automated core laboratory, which would mirror contemporary laboratory practice. Having larger and fewer sections should enable both the students and the faculty to have more realistic teaching and learning schedules.

J. Library Information Resources

Students and faculty have generally been able to access information that they need, either through the Timme Library, the Health Sciences Library, or the World Wide Web. Some of the faculty routinely donate professional journals to the Timme Library, so that they can be available for student use. CLS students who enroll in FSUS 100 during their first semester on campus are introduced by library faculty to the facilities and how to use them. Students report that this is helpful to them throughout their time at Ferris.

K. Cost

The most recent cost data demonstrate that the programs are expensive to run. However, considering the overall education needs for clinical laboratory professionals, a university based program is the most cost effective approach to use. Traditional hospital-based programs are closely nationwide, as health care providers are finding it too expensive to hire staff, dedicate space and instrumentation to the training of a few employees. A university based program can teach ten or twelve (or more!) students per lab section in a more cost-effective manner.

L. Faculty: Professional and Scholarly Activities

The faculty participate in local, statewide, national, and international continuing education activities. In addition to attending programs, all faculty have presented continuing education in a wide variety of formats. Some faculty have written chapters or sections of textbooks. We have also served as site surveyors for CLS programs undergoing re-accreditation. Mr. Landis has recently begun serving on the National Accrediting Agency for Clinical Laboratory Sciences Program Review Committee, which oversees the accreditation of hundreds of programs in the United States.

The faculty have also served the university on a variety of college and university-wide committees.

In addition, the CLS faculty are working on a professional development grant that will establish a simulated laboratory patient data base, where students can practice retrieving test orders, validating specimens, and entering and reviewing test results. If this project is successful, we hope to be able to market it to other university CLS programs.

Please refer to the individual Curricula Vitae for details of these activities.

M. Administration Effectiveness

We find it difficult to comment on administrative effectiveness at the moment, as we have only been assigned to our current department head since July 1, 1999. We look forward to working on, and completing a number of ongoing projects that hadn't been progressing very smoothly in past years. Among these are: completion of the Academic Program Review Process during this academic year, gaining national re-accreditation by February, 2001, completing our unit action plan on schedule, revising our curricula this year, establishing and meeting with a program advisory committee, recruiting additional students, and other projects.

The CLS faculty remain grateful for the excellent budgetary and administrative resources that have historically been provided to these programs. We intend to justify this support by gaining recognition as the premier CLS educational program in the nation.

Section Thirteen: Recommendations

A. Centrality to Ferris Mission

The existing CLS programs fit well with the university mission. The programs need to complete their curriculum revision, incorporate their laboratory information system, and continue other minor enhancements in order to continue to provide career-oriented, technological and professional education.

B. Uniqueness and visibility

The programs are well known nationwide among educators, and statewide among employers. The entire profession has traditionally been invisible to high school students and other prospective enrollees. The CLS programs at Ferris State University need to solicit the advice of the new advisory committee, graduates, and clinical affiliates about how to become more visible and attractive to prospective students.

C. Service to state and nation

As the number of program graduates increases, their distribution nationwide continues. Although employers nationwide praise the performance of our graduates, we don't seem to be producing graduates to meet the demand. It is encouraging to receive regular phone calls from laboratories statewide, soliciting applications from program graduates, specifically seeking Ferris State University because of the employers' knowledge of and experience with, other Ferris graduates. We can do more to increase the number of graduates, and we aim to justify this faith in the job we do.

D. Demand by students

Enrollment in Clinical Laboratory Sciences programs is decreasing nationwide, as well as in Michigan. There are no well-researched studies indicating why students are not attracted to the programs. The Ferris CLS recruitment efforts have been rather sporadic and haphazard. One of our goals for this academic year should be to organize ongoing efforts to increase both enrollment and retention of students.

E. Quality of instruction

The programs need to continue providing quality instruction in a variety of formats to qualified students. We are investigating, and gradually incorporating, a variety of possibilities, including web-based courses, group learning assignments, and non-traditional clinical experiences. This process should continue. The faculty are also pleased to see that the outline for our revised curriculum fits well with the proposed new essentials for accreditation. National experts are proposing that the traditional heavy background in natural sciences needs to be toned down, and replaced with additional education in communication, management, and computer skills. Our proposed curriculum should be approved and implemented as soon as possible.

F. Demand for graduates

Nationwide surveys indicate that the need for well-prepared graduates. We are providing these now, and need to continue to do so. If our enrollment can increase, our graduation numbers will also.

G. Placement rate and average salary of graduates

Nearly all our graduates gain employment in clinical laboratories, indicating that large changes are not needed in the CLS programs. Salaries are rising slightly nationwide; salaries are beyond the control of the CLS faculty, so no recommendation would be useful.

H. Service to non-majors

The CLS faculty should participate, as much as possible, in planning, evaluating, and teaching in the new core courses within the CAHS. This will increase our service to non-majors, as well as provide an avenue for us to be sure that the courses include what they are supposed to include.

I. Facilities and Equipment

The faculty would like to recommend some things that are beyond our direct control, such as that our graduates and clinical affiliates should continue their excellent support of our programs by donating equipment and supplies. In addition, we have been wishing for years that we had some REGULAR source of capital funding, so that we could plan for replacement of equipment in heavy use, such as microscopes, computers, and automated pipettes, as well as upgrading large analyzers and other equipment.

The faculty also recommends that the CAHS again visit the possibility of transferring the programs to two large laboratories on the fourth floor. This would greatly facilitate scheduling, even if larger sections would require two instructors. We could also establish a core automated laboratory by furnishing one of the labs with all of our large analyzers. This would enhance students' on-campus preparation for their clinical experiences.

J. Library Information Resources

We have no specific recommendations in this area, other than that the library staff continue to provide their dedicated service to students, despite their crowded and outmoded facilities. Like the rest of the campus, we look forward to the opening of FLITE.

K. Cost

The faculty and administrators of the program may need to investigate additional sources of funding for reagents, supplies, and equipment. Like programs in colleges such as Business and Technology, programs in Allied Health are blessed with dedicated support from prospective employers, from graduates, and from internship sites. However, health care facilities cannot be expected to provide direct financial support to Ferris's educational programs. Facilities that are operating at close to a financial loss themselves have little margin to provide support to health educational programs. However, we can continue to investigate support from vendors and other sources.

L. Faculty: Professional and scholarly activities

The faculty are able to maintain professional competence, thanks to ongoing support from the CAHS and the university. We recommend that this continue. We further recommend that other proposed changes, such as the revised curriculum and the move to fourth floor laboratories, take place. This should help prevent faculty burnout, and provide some time for increased service and scholarly activities.

M. Administrative effectiveness

We recommend that we reserve judgment on our new department head until we have more experience of working with him. We look forward to moving toward our goals, and meeting the criteria in our unit action plans.

Summary of Recommendations

The Clinical Laboratory Sciences programs faculty should:

- work to increase the visibility of the profession to prospective students
- develop an organized recruitment plan, and implement it to increase enrollment
- meet with our newly established advisory committee, seeking input about student recruitment, hiring trends, the need for clinical experience, and other matters of interest
- complete the curriculum revision process and implement the revised curriculum
- work toward moving into laboratory space more suited to current program needs
- complete the re-accreditation process in 2000-2001
- continue efforts to maintain professional competence

The College of Allied Health Sciences and the University should:

- establish an ongoing equipment budget, to allow for organized program planning
- facilitate program plans, such as the curriculum revision and the move to new facilities
- continue their budgetary and other support of the programs.



APPENDICES

- Appendix One: Curriculum Vita for Department Head**
- Appendix Two: Curricula Vitae for Faculty**
- Appendix Three: Administrative Program Review Report**

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SUMMARY:

Over 15 years of progressively responsible positions in health care. Enjoy patient care and didactic duties. Good combination of practical and theoretical experience.
Motivated. Hard working. Well organized.

EDUCATION:

Western Michigan University, Kalamazoo, Michigan
Doctoral Degree Program, Fall, 1999
Anticipated graduation, May, 2001
Education Administration and Supervision – Higher Education

Pittsburgh State University, Pittsburgh, Kansas
Master of Science Degree: 1986
Major: Community College Teaching

Biosystems Institute, Tempe, Arizona, 1980-1981
Graduate AMA accredited Respiratory Therapist Program

University of Notre Dame, Notre Dame, Indiana, 1970-1974
Bachelor of Arts Degree in Music Education

Lorain Catholic High School, Lorain, Ohio, 1966-1970
Graduate

**PROFESSIONAL
CERTIFICATION:**

Registered Respiratory Therapist (RRT) – June, 1983
Certified Respiratory Therapy Technician (CRTT) – June, 1982

**PROFESSIONAL
AFFILIATIONS:**

American Association for Respiratory Care
National Board for Respiratory Care
Michigan Society for Respiratory Care

**PROFESSIONAL
EXPERIENCE:**

Ferris State University, Big Rapids, Michigan
Department Head, Health Related Programs, May 1992 – Present

Responsible for the administrative management of the Respiratory Care, Radiography, Nuclear Medicine, Clinical Laboratory Sciences, and Opticianry programs.

Program Director, Respiratory Care, August, 1991 – Present

Responsible for the management of the Respiratory Care program. Duties include supervising of personnel and program/curriculum development.

Firelands College, Huron, Ohio
Director of Clinical Education, August, 1988 – July 1991
Responsible for supervising the clinical instruction of the Respiratory Care students. Assist in didactic/lab instruction. Assist the Program Director with program and curriculum development.

**PROFESSIONAL
EXPERIENCE: (cont)**

Labette County Medical Center, Parsons, Kansas

Director of Respiratory Care, July 1985 – August, 1988

Responsible for managing the Respiratory Care Department and formal training programs for students, nursing personnel, and medical staff.

Labette Community College, Parsons, Kansas

Didactic/Clinical Instructor, July 1983 – July 1985

Primary Instructor of the technician program. Assisted in teaching advanced respiratory therapy theory in the therapist program. Extensive involvement in program and curriculum development for the Joint Review Committee for Respiratory Therapy Education Accreditation.

Biosystems Institute, Tempe, Arizona

Didactic/Clinical Instructor, February 1981 – June 1983

Served as didactic instructor teaching the basic sciences, math, pharmacology, EKG, basic and advanced theory in the technician and therapist program.

Primary instructor of five month accelerated therapist program.

As a clinical instructor, worked with students supervising and instructing them on practical applications of RT techniques. Served as a clinical evaluator of students in the external technician and therapist programs. Assisted in program development.

St. Joseph Hospital of Phoenix Arizona

Staff technician (part-time) November 1980 – February 1981

Performed general and critical care duties.

Central Michigan Community Hospital, Mt. Pleasant, MI

Staff Technician, January 1978 – September 1980

Responsibilities in general and critical care. Performed basic pulmonary function testing, basic cardiography, and a full range of respiratory technician procedures.

**RELATED
PROFESSIONAL
EXPERIENCE:**

American Heart Association of Michigan, Mecosta County,
County Division

Board Member - 1992-1994

Michigan Society for Respiratory Care

Chairman - Awards and Scholarships Committee – 1995-1996

Sandusky/Medical College of Ohio Health Education

Committee Advisory Board Member – 1990-91

Easter Seal Society of Northwest Ohio Board of Trustees – 1989-91

American Lung Association of Ohio's South Shore Board of Trustees –
1990-91

**PROFESSIONAL
EXPERIENCE: (cont)**

Ohio Consortium for Blacks in Higher Education
State Treasurer – 1989-91

President, Kansas Respiratory Care Society (Section VIII) – 1986-1987

Chairman of Advisory Board for the Labette Community College
Respiratory Care Program – 1985-1988

National Board of Respiratory Care Entry Level and Advanced
Practitioner Examinations Item Writer – 1985-Present

Clinical Facilitator for "Freedom From Smoking" clinics sponsored by
the American Lung Association

PERSONAL:

Birthdate: November 28, 1952 - Lorain, Ohio
Health: Excellent
Marital Status: Married
Children: Four

REFERENCES:

Available on request.

Barry Berringer
Big Rapids, MI 49307
USA

EMPLOYMENT

- Ferris State University, Big Rapids, MI. Assistant Professor in Clinical Laboratory Sciences. August, 1999-present.
- Technical Specialist, Chemistry, Oregon Medical Laboratories, Eugene, OR. October, 1997-August, 1999. Responsible for Quality Control, Research and Development, continuing education within business, department and client services.
- State University of New York, Morrisville, NY. August-September 1997. Visiting Professor, Biology. Taught microbiology, Clinical Chemistry, hematology and was student advisor, and tutor.
- Program Coordinator, Medical Laboratory Sciences Program, Lakehead University, Thunder Bay, ON. 1992-1997. Responsibilities include directing program, lecturing, budget, advising and supervising students. Developed Distance Education program in Bio/Health Sciences.
- Quality Management Consultant, Sterling Consultants, Thunder Bay, ON. July 1996-August 1999. Specialist and consultant in implementation of ISO 9000 Quality Management Systems.
- Clinical Chemist, Thunder Bay Regional Hospital Thunder Bay, ON. 1993-1996. Department management, consulting with medical staff and technical staff development.
- Technical Director, Thunder Bay Institute of Medical Technology, Thunder Bay, ON. 1985-1993. Direction of entire program, recruitment and advising students, faculty appointments, budgets and administration.
- Charge Technologist, Clinical Chemistry, McKellar General Hospital, Thunder Bay, ON. 1972-1985. Senior and Junior Technologist. 1966-1972.

EDUCATION

- Master of Science in Clinical Chemistry. Columbia Pacific University, San Rafael CA. 1986.
- Honours Bachelor of Science. Lakehead University, Thunder Bay, ON. 1981
- Advanced Certification in Clinical Chemistry. Canadian Society of Laboratory Technologists. 1972.
- General Certificate in Medical Technology. Canadian Society of Laboratory Technologists. 1966.
- Educational Goal: to complete doctoral studies through a reputable university.
- Additional Skills: Computer word processing, spread sheets, date base, internet. Occupational Health and safety, WHMIS, quality management. Level II Swim/Natation Canada Official.

PROFESSIONAL ACTIVITIES

- Canadian Society of Laboratory Technologists. Member of Certification Board. 1989-1993. Member of the Special Committee for the New A. R. T. System and member of the Career Ladder Task Force.
- Canadian Society of Laboratory Technologists. Examiner for literature reviews and advanced certification in Clinical Chemistry.

PROFESSIONAL MEMBERSHIPS

- Canadian Society of Laboratory Technologists. Inactive member.
- American Association for Clinical Chemistry. Member

Phone: Home
Office 231 591 2324

Daniel P. de Regnier, MS, MT (ASCP)

18865 Winding Brook Pl.
Big Rapids, MI 49307

Home (231) 592 - 0358
Office (231) 591 - 2327

Daniel_P_deRegnier@ferris.edu

EDUCATION

UNIVERSITY OF MINNESOTA, Minneapolis, MN 55455. Master of Science, Clinical Laboratory Science. September, 1988 (GPA = 3.65, A=4.00)

UNIVERSITY OF NORTHERN IOWA, Cedar Falls, IA 50614. Bachelor of Arts Degree in General Science, with honors, September 1983. (GPA = 3.29, A=4.00)

ALLEN MEMORIAL HOSPITAL SCHOOL OF MEDICAL TECHNOLOGY, Waterloo, IA 50701. MT (ASCP); August, 1983

CERTIFICATION

American Society of Clinical Pathologists (ASCP) 1983; MT - 152652

EMPLOYMENT EXPERIENCE

Associate Professor, Clinical Laboratory Sciences
Clinical Laboratory Sciences
FERRIS STATE UNIVERSITY
Big Rapids, MI 49307
September 1992 - Present

Medical Technologist
IOWA LUTHERAN HOSPITAL
Des Moines, IA 50311
December 1991 - August 1992

Assistant Professor, Clinical Laboratory Sciences
Department of Medical and Research Technology
UNIVERSITY OF MARYLAND AT BALTIMORE
Baltimore, MD 21201
September 1988 - July 1991

Medical Technologist
ASSOCIATES IN PATHOLOGY, P.A.
Baltimore, MD 21201
January 1989 - July 1991

Medical Technologist
ALLEN MEMORIAL HOSPITAL
Waterloo, IA 50701
September 1983 - August 1985

PROFESSIONAL ORGANIZATIONS

1983 - present American Society for Clinical Laboratory Science
1987 - present American Society for Microbiology
1992 - present Michigan Society for Clinical Laboratory Science (MSCLS)
1992 - present Central Michigan Association for Medical Technology

ACADEMIC and PROFESSIONAL ACHIEVEMENTS

American Scientific Products Graduate Scholarship, 1987
Graduate School Academic Scholarship, University of Minnesota 1987-1988
Recipient of Timme Center Instructional Assistance Grant to obtain educational software, \$2,700
Michigan Society for Clinical Laboratory Science Key to the Future Award, 1994
Omicron Sigma member 1995, 1999
Internet Course Delivery Grant (with Mark Kellogg): \$25,000

Professional Development Grant: "An improved Laboratory Information System for the Clinical Laboratory Sciences Program; Investigator; \$9300.00

PRESENTATIONS

American Society for Microbiology, Annual meeting, Miami Beach, FL "*Giardia* Cysts in the Environment: Effect of Lake, River, and Tap Water." May, 1988

Metropolitan Hospital, Grand Rapids, MI "Clinical Parasitology Update." April, 1994

American Society for Microbiology, Annual Meeting, New Orleans, LA "The Simulated Laboratory: A Hands-on Strategy for Educating Clinical Laboratory Science Students." May, 1996

Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Kalamazoo, MI "Don't Drink the Water: A Review of Waterborne Pathogens." April, 1996

Michigan Society for Clinical Laboratory Sciences, Annual Meeting, E. Lansing, MI "Something Olde, Something Haute, Something Fuzzy, Something That's Not" April, 1998

Metropolitan Hospital, Grand Rapids, MI "Clinical Mycology Update." June, 1998

PUBLICATIONS

deRegnier, D.P, L. Cole, D.G. Schupp, and S.L. Erlandsen "Viability of *Giardia* Cysts Suspended in Lake, River, and Tap Water", Applied and Environmental Microbiology, May 1989, Vol. 55 NO. 5, pp. 1223-1229

deRegnier, Daniel P. *Case Study Number Four*, "Parasites in Human Immunodeficiency Virus," The Learning Laboratorian Series. 1994, Vol. 6 NO 3.

PROFESSIONAL ACTIVITIES

1992 - present	Faculty Advisor - Association of Clinical Laboratory Sciences, Student Organization, Ferris State University
1993 - present	Board of Directors, Michigan Society for Clinical Laboratory Science, webmaster and information services
1993 - 1995	Scientific Assembly Chair-Microbiology, Michigan Society for Clinical Laboratory Science
1993 - 1995	Program Committee, Michigan Society for Clinical Laboratory Science State
1993 - present	Legislative Steering Committee, Michigan Society for Clinical Laboratory Science
1993 - 1994	College of Allied Health Sciences 25 th Anniversary Committee Ferris State University
1993 - present	Mentor, Mecosta/Osceola Math/Science/Technology Center
1994 - present	Member, Library/Historical/Archival Committee, Ferris State University
1995 - 1997	Chair, Library/Historical/Archival Committee, Ferris State University
1995 - present	Safety Committee, College of Allied Health Sciences
1996 - 1997	Respiratory Care Program Review Committee
1997 - present	Instructional Performance Systems, Inc software reviewer
1997	Cumulative Performance Review Committee
1997 - present	Member, College of Allied Health Sciences Safety Committee
1998 - present	Michigan Society for Clinical Sciences District 8 Representative
1999 - 2000	Chair, Library/Historical/Archival Committee, Ferris State University

1998 - 1999	CCHS101 committee member
1999 - 2000	CCHS103 committee; ad hoc
1999 - 2000	WC3 Standards Committee, member

Continuing Education

Past workshops and scientific session are on file. Specific list available on request

Curriculum Vitae

John H. Landis

Address:	Telephone:	Date of Birth:	Place of Birth:
9267 Elmwood Ct Canadian Lakes , MI 49307	Home: (231) 972-3791 Work: (231) 591-2283	3/26/47	Flint, Michigan

Education:

Institution	Field of Study	Degree	Year
Michigan State University	Pathology - Clinical Laboratory Sciences	M.S.	1985
Wayne State University College of Education	Instructional Technology	25 Graduate Credits	1972-73
Pontiac General Hospital School of Medical Technology	Medical Technology	Certificate	1970
Albion College 1970	Biology/Med. Tech.	A.B.	

Experience:

Ferris State University, CLS Program Coordinator/Director, 1999 to present
Consultant for American Proficiency Institute, 1997 to present
Consultant for Abbott Laboratories, Hematology Division, 1994 to Present
Ferris State University, Professor, 1993 to Present
Ferris State University, Associate Professor, 1986-92
Ferris State University, Software Consultant, Dept. of Academic Computing, 1989-90
Ferris State College, MLT Program Coordinator and Assistant Professor, 1981-1986
Ferris State College, MLT Program Coordinator and Technical Instructor, 1973-1981
Oakland Community College, part-time Instructor, MLT Program, 1971-73 (20 hrs./week)
Pontiac General Hospital, Staff Medical Technologist, 1970-72 (Full-time)
Albion Community Hospital, Laboratory Technician, 1968-70 (Part-time - 10 hrs./week,
full-time - 6 months)
Hurley Hospital, Research Assistant, 1967
Albion College, Biology Laboratory Assistant, 1966 (part-time - 10 hrs./week)

Certification:

MT(ASCP) #072020 (1970)

Current Teaching Schedule:

CLLS 230 - Hematology 1 - Fall
CLLS 456 - MT Simulated Clinical Lab - Fall
CLLS 224 - Urinalysis and Coagulation - Winter
CLLS 430 - Hematology 2 - Winter/Summer
CLLS 256 - MLT Simulated Clinical Lab
Assigned Clinical Experience Courses - Winter/Summer

Past Teaching Schedule:

MDT 101 - Orientation to Medical Technology Program, 1973-95
MLT 101 - Orientation to Medical Laboratory Technician Program, 1973-95
MDT 334 & MLT 202 Clinical Chemistry and Instrumentation, 1973-85
MLT 105 & MDT 305 Basic Clinical Lab Techniques, 1980-85
MDT 454 - Clinical Chemistry and Instrumentation 2, 1978-85
MLT 205-211 - Clinical Experience Coordinator, 1973-88
MA 229 - Laboratory Techniques for Medical Assistants, 1975-85

Administrative Duties:

Order and maintain supplies and equipment for assigned courses
Assist in grant development
Assist in curriculum and course evaluation and development for MLT and MT Programs
Coordinate the writing of the MLT/MT self studies for accreditation
Coordinate Recruiting of CLS students
Coordinate curriculum revision
Serve as chair of the CLS program faculty meetings
Coordinate the activities of the CLS Advisory and Adjunct Faculty Committees

Professional Activities and Awards:

Michigan Society for Clinical Laboratory Sciences:

Membership Chairman - 1975
Elected Secretary - 1976;
Education Committee - 1976-78
District 8 Representative 1985-86
Appointed Education Scientific Assembly Chair 1989-90
Appointed Hematology Scientific Assembly Chair - 1986-87, 1995-96 and 1999-2000
Elected Nominations Committee 1988-89, 1989-90
Elected Nominations Committee Chair - 1998-99 and 1999-2000

Professional Activities and Awards: (cont'd)

American Society for Clinical Laboratory Science - Member 1973 to present
American Society of Clinical Pathologists - Associate Member - 1975 to present
Central Michigan Association of Medical Technologists - President Elect - 1982-83;
President - 1983-84; Past President - 1984-85; Member 1975 to present
Site Survey Team Member for NAACLS Accreditation of MLT programs - 1982, 1984, 1989, 1990,
1991, 1993,
Site Survey Team Captain for NAACLS Accreditation of MT and MLT programs - 1985, 1995 (2),
1996 (2), 1997 (2), 1998 (3), 1999 (1)
Clinical Chemistry Judge - Annual Michigan Medical Technology Student Bowl - 1982 and 1986
Granted Sabbatical leave to update clinical skills - March-May 1985
William Beaumont Hospital - Royal Oak, Michigan; Thomas Dutcher, MD
Central Michigan Community Hospital Mt. Pleasant, Michigan; Ronald Moss, M.D., Ph.D.
Hematology/Coagulation Judge - Annual Michigan Medical Technology Student Bowl - 1987, 1988,
1989, 1990
Awarded FSU Faculty development grant to establish a local area network/laboratory information
system for CLS programs - Spring, 1988
Awarded FSU Timme Foundation Advanced Instructional Technology Grant (5500.00), 1989
Awarded FSU Timme Foundation Instructional Assistance Grant (\$1500.00), 1990-91
Awarded FSU Timme Foundation Instructional Assistance Grant (\$2100.00), 1991-92
Appointed Adjunct Assistant Professor, University of North Dakota School of Medicine,
1991 to Present
Awarded Distinguished Teacher of the Year, Ferris State University, 1991-92.
Appointed as a consultant and faculty member in College of Medicine, King Abdulaziz University,
Jeddah, Saudi Arabia. Program sponsored by the University of Alabama at Birmingham and
the US-Saudi Joint Economic Corporation, Spring 1992, Winter 1993.
Awarded FSU Timme Foundation Instructional Assistance Grant (\$3000.00), 1994-95
Elected to the Clinical laboratory Sciences Program Review Committee of the National Accrediting
Agency for Clinical Laboratory Sciences (NAACLS)

Ferris State University Committee Assignments:

College and Departmental

Allied Health Sabbatical Leave Committee - 1978-79
Hospital Related Programs Clinical Adjunct Faculty Committee - 1978-79
Allied Health Dean's Search Committee - 1983-84
Allied Health Centennial Committee - 1982-84
Allied Health Parent's Day Committee - 1984
Allied Health Computer Planning Committee - 1982 to Present, Chair, 1987-1994
Allied Health Recruitment/Retention Committee, 1990-91
Academic Program Review Panel - Respiratory Therapy Program, Chair 1989-90
Academic Program Program Review Panel - Computer Information Systems, 1990-91
Academic Program Review Panel - Recreation Leadership and Management, 1992-93
Tenure Committees for Dan deRegnier and Mark Kellogg, 1995 to Present
Promotions Committee, 1995-96
Academic Program Review - CLS programs, 1999
CAHS Instructional Resources Committee - 1998-2001

All University Committees

Katke Golf Course Advisory Committee - 1975-77
Athletic Advisory Committee - 1979-83
Elected Allied Health Representative to Representative Faculty
Advisory Council - 1982-84
Student Activities Budget Advisory Committee - 1985-1987
College Professional Orientation Committee - 1986-1992
Computer Steering Committee - 1989, 1990, 1991, 1998
TIMME Center for Teaching Excellence Committee, Member, 1990-92; Chair, 1992-96
FSU MAGB Teacher Selection Committee, 1994, 1995
FSU Distinguished Teacher Selection Committee, 1994-98
Search Committee for Director of Center for Teaching, Learning and Faculty Development,
1996
Faculty Summer Institute Advisory Committee, 1996-97 and 1997-98
Advisory Committee for the Center for Teaching, Learning and Faculty Development,
1996-1998
Professional Development Committee, Chair, 1998-99

Workshops Coordinated:

"UFO's The Greatest Challenge Since Copernicus" - GECCLGAP program - 1975
"Evaluation of Clinical Performance" - FSC - 1976
CMAMT Seminar Series (7) - CMAMT - 1983-4

Seminars Presented:

"Clinical Enzymology" - West Michigan - American Chemical Society - 1976
"Instructional Objectives in Clinical Chemistry" - FSC MT Educators Meeting - 1978
"The Role of the MLT in the Clinical Laboratory" - FSC MLT Coordinators Meeting - 1979
"Hormones of the Adrenal Cortex" - Michigan State University (MSU) - 1980
"Biochemical Pathology of the Thyroid" - MSU - 1980
"Clinical Laboratory Evaluation of the Thyroid" - Central Michigan Association of Medical
Technologists (CMAMT) - 1981
"Coagulation - Review and Update" - CMAMT and MSU - 1982
"Applications of Chemistry in the Clinical Laboratory" - FSC - Super Saturday - (7th and 8th
graders) 1982
"Coagulation Review" - Michigan Association of AMT State Meeting - 1982
"Computer Assisted Instruction in Clinical Laboratory Sciences" - MSU - 1985
"Computer Assisted Instruction in Clinical Laboratory Sciences" - Mercy College of Detroit -
1986
"Hemostasis and Thrombosis Review" - Michigan Society for Medical Technology Annual
Meeting - 1987
"Diagnostic Laboratory Tests" - Michigan Optometric Association Annual Meeting - 1987
"Diagnostic Laboratory Tests" - Ferris State University College of Optometry Senior Seminar
1987 to Present

Seminars Presented: (cont'd)

- "Use of Interactive Videodiscs in Hematology Instruction", 6th Annual Clinical Laboratory Computer Symposium, University of Michigan Medical School, 1988
- "Optometric Management of Diabetes Mellitus Patients," North Central States Optometric Conference, 1989
- "Diagnostic Laboratory Tests" - FSU College of Optometry Post Graduate Course, OPT 767, 1989, 1990
- "Using Guide for CAI in Hematology Instruction," FSU - Faculty Orientation, 1990, 1991
- "Using CAI in Radiography Education", Michigan Society of Radiologic Technologists, Spring 1990
- "Using Guide for CAI in Hematology Instruction," Michigan State University - CLS Faculty, Fall 1991
- "Using Guide and Iconauthor as authoring tools for CAI," FSU, Fall 90, 91 for EDU 489, Special Topics in Education.
- Pathology 511, "Leukocytes in Health and Disease", Graduate Course, University of North Dakota School of Medicine, 1991
- "Videodisc Technology at FSU", Applied Technology Center, Grand Rapids Community College/FSU, 1992
- "Hematology and Clinical Chemistry," MOISD Monday Night Technology, 1992-1997
- "Teaching Practices - Classroom and Clinical," New Faculty Orientation Program, Fall 1992
- "Clinical Laboratory Assays Explained," Northwest Michigan Health Information Management Association, Fall meeting, November 1992
- "Urinalysis and Body Fluids Update," Michigan Society of Medical Technology, April, 1993
- "Morphologic Hematology", Abbott Laboratories, Hematology Product Specialists and Regional Managers, 40 Hour Seminar, 1994 to Present (once per year)
- "Computers in CLS Education", MSCLS annual meeting, 1996
- "Computers in CLS Education", Michigan Association of Laboratory Science Educators, 1997
- "Unusual Case Studies in Urinalysis", Michigan State University and Region 6 MSCLS annual meeting, 1997
- "Hematology Review", MSCLS annual meeting, 1998
- "Unusual Case Studies in Urinalysis", Central Michigan Association of Medical Technology, 1998

Publications:

Electronic Transparencies for the Teacher's Edition of Introduction to Computers and Information systems, Symanski, Symanski, Morris and Pulschen, 2nd Edition, MacMillan, 1991. 255 graphic images produced using Storyboard (IBM).

Continuing Education Granting CEUs:

- American Society for Medical Technology (ASMT) National Meetings - 1974-1977, 1987, 1998
- Michigan Society for Medical Technology (MSMT) State Meetings - 1973 to Present
- "Blood Smear Observations" - ASMT Workshop - 1974
- "Problem Solving in the Blood Bank" - ASMT Workshop - 1975

Continuing Education Granting CEUs: (cont'd)

- "ABO and Rh Grouping Problems" - ASMT Workshop - 1975
- "Acid-Base, Fluid and Electrolytes" - ASMT Workshop - 1975
- "RBC Enzymes - Lab Investigation" - ASMT Workshop - 1976
- "Isoenzyme Electrophoresis" - ASMT Workshop - 1976
- "Electronics & Instrumentation" - ASMT Workshop - 1977
- "Thyrodynamics" - ASMT Workshop - 1977
- "Techniques of Instrument Maintenance in Clinical Chemistry Lab" - ASMT Workshop - 1977
- "Quality Control in Chemistry" - ASMT Workshop - 1977
- "Chromatograph: Theory and Applications in the Clinical Laboratory" - ASCP Workshop - 1977
- "Coagulation Workshop" - MSMT, 1977
- "Electrophoresis Workshop" - Helena Lab, Inc., 1978
- "CPK Isoenzymes" MSMT Workshop - 1979
- "Recognition and Management of Problems in Pretransfusion Testing" - MDPH Workshop - 1979
- "Controversy in Clinical Chemistry" - Seminar - Mayo Clinic - 1979
- "Clinical Chemistry Seminar" - University of Michigan, Towsley Center - 1979
- American Society of Clinical Pathologists (ASCP) National Meeting - 1980
- "Electrolyte Balance and Osmolality" - ASCP - 1980
- "Modern Concepts in Hemostasis and Thrombosis" - ASCP - 1980
- "Solution of Endocrinologic Problems" - ASCP - 1980
- "Clinical Chemistry Symposium" - ASCP - 1980
- American Association of Clinical Chemistry (AACC) National Meetings - 1981
- "Decision Making Using Clinical Chemistry Results" - AACC - 1981
- "Ion-Selective Electrodes in Clinical Chemistry" - AACC - 1981
- "Personal Computers in the Clinical Lab" - AACC - 1981
- "Diagnosis of Myocardial Infarction" - AACC - 1981
- "ToxiLab System Users Workshop" - Analytical Systems, Inc. - 1981
- "Parasitology/Mycology Review" - CMAMT and MSU - 1982
- "Blood Coagulation - Clinical and Laboratory Aspects" - MSU - 1982
- "Evaluation and Implementation of Clinical Chemistry Methods" - CMAMT and MSU - 1983
- "Microcomputer Operation and Application in the Laboratory" - CMAMT Workshop - 1983
- Scientific Sessions - Copper Harbor Hematology Conference (CHHC) - 1984
- "Introduction to Flow Cytometry" - CHHC - 1984
- "Current Studies in Hemoglobinopathies and Thalassemic Syndromes" - CHHC - 1984
- "Correlation of Cytomorphology of Abnormal RBC, WBC and Platelets with Population Histograms"
- CHHC - 1984
- "Hemoglobin Electrophoresis Wet Workshop" - CHHC - 1984
- "Morphology for Students and Teachers" - Beaumont Hospital Seminar - 1984
- "Hematology Case Studies" - MSMT - 1984
- Ninth Symposium on Computer Applications in Medical Care SCAMC - 1985
- "Evaluation of Computer Assisted Instruction Software" - SCAMC - 1985
- "Microcomputer Seminar Series" - Office of Academic Computing FSC - 1985 to Present
- "Understanding Your Communication Profile" - ASCP - 1987
- "Automation and Quality Control in Hematology" - ASCP - 1987
- "White Blood Cell Morphology" - ASCP - 1987
- "Red Blood Cell Poikilocytes as Diagnostic Clues" - ASCP - 1987
- "A Hematological Potpourri of a Large Lab" - ASCP - 1987
- "R:Base 5000 Workshop" - GILL/FSU - 1987
- "R:Base - Application Development," Microrim, May 1989

Continuing Education Granting CEUs: (cont'd)

"Microcomputers in Clinical Laboratories: Administrative and Technical Applications" –
University of Michigan Medical School, 1988
"Higher Taxonomy Levels in CLS Education," MSMT, 1989
"Pedagogy in Computer Assisted Learning," SALT, 1990
"Microscopic Urinalysis," MSMT, 1990
"Learning to Remember Why Students Forget," MSMT, 1991
"Bone Marrow Morphology," ASCP, 1991
"Hypermedia 1991 - Scientific Sessions," Ball State University, 1991
"Clinical Laboratory Educators Scientific Sessions," CLEC, 1992
"Critical Thinking Workshop," FSU, 1992
"The New Morphology in Hematology," MSMT, 1992
"Teaching Thinking and Decision Making," FSU, 1992
"Institute for Academic Technology" workshops, 1992, 1993
"Microscopy of CSF and Body Fluids," ASCP, 1993
"Automated Hematology Update," ASCP, 1993
"Problem Cases in Pediatric hematology," ASCP, 1993
MSCLS Annual Meetings, 1993 to Present
Clinical Laboratory Educators Conference (ASCLS), 1994, 1995, 1996, 1998
FSU Summer Institute, "WebCT Training", 1998
American Society of Hematology National Conferences, 1998
Quality Control in the Clinical Laboratory, ASCLS Web Course, 1999

Community Involvement:

United Way Solicitor - 1984, 1987, 1988, 1989, 1990
Big Rapids Little League - Head Coach - 1982-85
Meceola Golf and Country Club - Elected Board of Governors - 1983-85 and 1986-88,
Elected President of the Board 1985, 1986, 1987 and 1988
Ferris State University Hockey Alumni Golf Tournament - Co-Chair - 1988, 1989
Big Rapids Area Junior Hockey Association - Board Member - 1985-86 Season,
Elected President - 1989-90 Season
Big Rapids High School Hockey Boosters - Board Member - 1990 - 1994
Big Rapids High School Sports Boosters - Board Member - 1992-96
Big Rapids Band Boosters - President, 1994-95 and 1995-96
Solid Ice Community Fund - Board Member - 1995 to Present
Canadian Lakes Property Owners Corporation, Lakes Committee member 1999 to present

**CURRICULUM VITAE
BARBARA A. ROSS**

Address:	Home: 16809 125 th Avenue Rodney, MI 49342	Business: Ferris State University 200 Ferris Drive Big Rapids, MI 49307-2740
Telephone:	231-867-3631	231-591-2317
Fax:		231-591-3788
e-mail:	<u>ROSSSB@TUCKER-USA.COM</u>	<u>BARBARA_A_ROSS@FERRIS.EDU</u>

Education:			
Institution	Field of Study	Degree	Year
Albion College Albion, MI	Biology, English	A.B. (honors)	1970
Kent State University Kent, OH	Chemistry	—	1970
Akron City Hospital Akron, OH	Medical Technology	MT(ASCP)	1971
Central Michigan University Mt. Pleasant, MI	Biology/Biochemistry	30 credits	1977-80
	Health Services Admin.	30 credits	1985-90
University of California, Los Angeles	Online Technology	4 credits	1998

Professional Certification: MT #079289 American Society of Clinical Pathologists

Experience:

Ferris State University: Big Rapids, MI	Education Coordinator and Assistant Professor Education Coordinator and Instructor Acting Program Director Teaching Assistant	1981-present 1978-81 1979 1976-78
Robinson Memorial Hospital Ravenna, OH	Staff Technologist	1975-6
St. Vincent's Medical Center Jacksonville, FL	Section Supervisor, Special Chemistry Staff Technologist	1974-5 1973-4
South County Hospital Wakefield, RI	Section Supervisor, Hematology Staff Technologist	1972-3
Robinson Memorial Hospital Ravenna, OH	Staff Technologist	1971-2

Current Teaching Schedule:

CLLS 228: Immunology and Immunoematology
CLLS 256: Simulated Clinical Laboratory
CLLS 358: Immunoematology
CLLS 456: Clinical Laboratory Practicum
CLLS 459: Advanced Problem Solving in Immunoematology
CLLS 463: Clinical Laboratory Management, Supervision, and Education
CLLS 499: Clinical Laboratory Sciences Seminar
FSUS 100: Ferris State University Freshman Seminar 1

Courses Taught Previously:

MLT 101: Orientation to Medical Laboratory Technician Program
MLT 105: Introduction to Clinical Laboratory Techniques
MLT 202: Clinical Chemistry and Instrumentation
MLT 228: Immunology and Immunoematology
MDT 101: Orientation to Medical Technology
MDT 334: Clinical Chemistry and Instrumentation 1
MDT 338: Immunoematology 1
MDT 454: Clinical Chemistry and Instrumentation 2
MDT 458: Immunoematology 2
MDT 460: Procedural Evaluation
MDT 461: Clinical Laboratory Education
MA 229: Laboratory Techniques for Medical Assistants
FSUS 101: Ferris State University Freshman Seminar 2

Administrative Duties:

- Coordinate clinical experience for clinical laboratory science students, including placement at clinical sites, coordination of evaluation, on-site supervision, e-mail and telephone communication with clinical faculty and students, problem solving.
- Provide applications and instruction for national certification examinations and state licensure, when applicable
- Coordinate development, administration, evaluation, and updating of "mock" certification examinations
- Advise and counsel students
- Order and maintain supplies and equipment for courses taught
- Assist in development and updating of on-campus and clinical course objectives
- Assist program director in locating and establishing clinical sites, preparation of self study documents, evaluation of applicants for admission to programs, planning and conducting adjunct clinical instructor meetings, maintaining quality of CLS programs.
- Monitor graduate placement and follow-up; survey graduates and employers
- Assist in curriculum and course development
- Assist in grant development
- Chair committees for Academic Program Review

College and University Committees:

- Ferris State College Educational Planning Committee, 1980-84
- Ferris State College Ophthalmic Dispensing Program Review Committee, 1983
- Ferris State College Health Services Management Program Review Committee, 1984
- School of Allied Health Dean's Search Committee, 1985-86
- College of Allied Health Sciences Curriculum Committee, 1987-90, 1992-95, chair, 1994-5
- College of Allied Health Sciences Task Force on Clerical Staff Reorganization, 1991

College and University Committees, continued:

- College of Allied Health Sciences Task Force on Administrative Restructuring, 1992
- College of Allied Health Sciences Tenure Committee, 1990-93, Chair, 1992-3
- College of Allied Health Sciences Faculty Development Committee, 1992-5
- Ferris State University Sabbatical Leave Committee, 1994
- Ferris State University Student Health Advisory Committee, 1990-93
- College of Allied Health Sciences Recruitment-Retention Committee, 1992-95
- Ferris State University Human Subjects Review Committee, 1992-95
- Candidate's Tenure Committee, Mrs. Lori Seiler, 1993-96 (Chair)
- Candidate's Tenure committee, Dr. Mark Kellogg, 1993-97 (Chair)
- Candidate's Tenure Committee, Mr. Daniel deRegnier, 1995-present
- College of Allied Health Sciences Task Force on Committee Structure (Chair), 1996
- Clinical Laboratory Sciences Program Academic Program Review Committees, 1996 and 1999 (chair both times)
- College of Allied Health Sciences Planning Committee, 1993-6
- Ferris State University Planning Committee for Health Professions Futures Conference, 1996-7
- College Of Allied Health Sciences Committee for Core Curriculum Planning, 1997-1999
- Ferris State University Web Instruction Committee, 1998-present

Professional Society Memberships:

American Society for Medical Technology, 1979-1985
American Society for Clinical Laboratory Science, 1994-present
American Association of Blood Banks, 1979-present
Ferris Professional Women, 1981-present; Treasurer, 1985-6
Clinical Laboratory Management Association, 1985-present
American Society of Clinical Pathologists, Associate Member, 1994-present
Michigan Association of Blood Banks, 1979-present
CLMA, Michigan Chapter, 1988-present
Central Michigan Association of Medical Technologists, 1978-9; 1993-present
Ferris State University Discussion Group: Faith in the Academy, 1995-1998

Professional Society Committees:

CLMA Education Committee, 1985-88

Other Professional Activities:

Evaluation of NCAMLPT MLT Examination Questions, 1979
Michigan Joint Council for Continuing Education for Medical Laboratory Personnel, 1979-81
NAACLS site surveyor: Southwest General Hospital School of Medical Technology, 1988
State University of New York at Alfred, 1997 (captain)
Trocaire College, 1997
NAACLS paper reviewer: Cincinnati State Technical and Community College, 1998
Consultant in Blood Banking, Reed City Hospital, Reed City, MI, 1993-4
Ferris State University Faculty Mentor for three faculty
Volunteer Assistant for MSMT Student Bowl and Student Competitions, 1981, 1983-5, 1994-present
People to People Citizen Ambassador Program Delegate to Russia, Poland, and Hungary, 1994
Ferris State University Faculty Summer Institute delegate, 1997

Continuing Education Programs Attended:

Hyland Coagulation Workshop, 1973
Behring Diagnostics Immunology Workshop, 1977
Helena Electrophoresis Workshop, 1978
Michigan Association of Blood Banks Spring Workshops, 1978, 1979, 1994, 1995
Michigan Association of Blood Banks Annual Meetings, 1978-82, 1985
AABB Workshop: Competency Evaluation of Blood Bank Personnel, 1980
AABB Workshop: Pretransfusion Testing for the '80s, 1980
AABB Workshop: Therapeutic Hemapheresis, 1981
AABB Workshop: Women in Management, 1981
MSMT Workshop: Cost Analysis in Clinical Education, 1983
AACC Annual Meeting, 1983
AACC Workshop: Case Studies in Clinical Chemistry, 1983
AACC Workshop: Procedural Evaluation, 1983
Ferris State College: Computers in Education, 1984
Clinical Laboratory Management Association Regional Meetings, 1985, 1992
ASCP Workshop: Using Statistics in the Clinical Laboratory, 1985
ASCP workshop: Common and Uncommon Problems in Hematology, 1985
Clinical Laboratory Management Association Annual Meetings, 1985, 1988
CLMA workshop: Laboratory Management in Transition, 1985
CLMA Seminar: Growth, Quality, Communication in Today's Laboratory, 1990
Ann Arbor Seminars: Current Topics in Blood Banking, 1979, 1984, 1986, 1988-90, 1992-3, 1995-8
Michigan Society for Medical Technology/Clinical Laboratory Science Annual Meetings, 1980-1, 1983-5, 1993-4, 1996-9
Central Michigan Association of Medical Technologists Meetings, 1993-present
ASCP Workshop: Statistics, Quality Control, and CLIA 88, 1994
ASCP Workshop: Competency Testing, 1994
ASCP Workshop: Total Quality Management for the Laboratory, 1994
NAACLS Site Visitor Training Workshop, 1994
AACC Symposium: Laboratory 2000, 1995
International Multiskilling Conference, Indianapolis, 1997
AABB Teleconferences: Changes in the Standards, 16th edition, 1995
Changes in Standards, 17th edition, 1996
Technical Manual Update, 1996
Peripheral Blood Progenitor Cell Transplantation, 1997
The FDA Inspection: Prayer and Preparation, 1998
Benchmarking your Laboratory, 1998
Customer Surveys: A Valuable Tool for Quality Improvement, 1998
Changes in the Standards (17th edition), 1999
Transfusion Reactions: Results of the BaCon Study, 1999
ASCP Teleconferences: Prions: From Protein to Pathogen, 1998
Chronically Transfused Patients: Impact on the Blood Bank, 1999
Ferris State University: Office of Affirmative Action Harassment/Sensitivity Training, 1998
Ferris State University Center for Teaching, Learning and Faculty Development: Evaluating your Teaching, 1998
Georgetown University Teleconference: Setting Up and Optimizing HLA Typing by SSP, 1999
Clinical Laboratory Management Association Annual Meeting, 1999
Ferris State University: Programmatic Marketing, 1999

Continuing Education Presentations:

Michigan Association of Blood Banks Workshop: Recognition and Management of Problems Associated with Pre Transfusion Testing,

- Ferris State College, 1979
- Muskegon Community College, 1980
- Michigan Department of Public Health, 1981

Applications of Chemistry in the Clinical Laboratory, Super Saturday for Eighth Graders, 1982

Rotary Club of Big Rapids: Current Developments in the Clinical Laboratory, 1988

Michigan Association of Blood Banks Workshop: Transfusion Reactions, FSU, 1989

Poster Session: "The Key to Student Retention: Early Intervention," Association of Schools of Allied Health Professions, 1993

Case Study: "Just Another Night in the Blood Bank," FSU/Michigan State University Distance Learning Program, 1994

Central Michigan Association of Medical Technologists: Blood Banking in Eastern Europe, 1996

College of Allied Health Sciences Workshop: Team Building Skills (facilitator): 1995

College of Allied Health Sciences Workshop: Core Curriculum in Allied Health: 1996

College of Allied Health Sciences Workshop: Problem Based Learning: 1997 (planning)

FSU Honors Program Students: Blood Banking in Eastern Europe, 1998

Michigan Society for Clinical Laboratory Science Annual Meeting: Antibody Identification (moderator), 1998

Michigan Society for Clinical Laboratory Science Annual Meeting: Stem Cell Transplantation Program (moderator), 1999

Clinical Laboratory Management Association Annual Meeting: Creating the Value-Added Services Wanted by Managed Care Plans (moderator), 1999

ADMINISTRATIVE PROGRAM REVIEW

MT

Program/Department: Medical Technology/Environmental & Clinical Sciences

Date Submitted: January 15, 1999 Dean: Isabel J. Barnes

Please provide the following information:

Enrollment/Personnel

	Fall 1994	Fall 1995	Fall 1996	Fall 1997	Fall 1998
Tenure Track FTE (a)	3	3	4	4	4
Overload/Supplemental FTEF (a)	0.90	0.37	0.33	0.05	
Adjunct/Clinical FTEF (unpaid) (a)	100	100	100	100	100
Enrollment on-campus*	73	70	63	60	50
Freshman	22	13	7	5	3
Sophomore	5	14	10	7	8
Junior	13	7	16	9	8
Senior	33	36	25	35	31
Pre-MT	9	10	5	2	4
TBD			5	4	
Enrollment off-campus*	0	0	0	0	0

*Use official count (7-day count for semesters, 5-day count for quarters).

(a) Same personnel teach in Medical Laboratory Technology program. No separate faculty for MT.

Financial

Expenditures* (b)	FY94	FY95	FY96	FY97	FY98
Supply & Expense	\$42,303	\$40,405	\$50,104	\$47,751	\$52,031
Equipment**					
Gifts & Grants	54,291	146,408	864	460	1,258

*Use end of fiscal year expenditures.

**Does not include Voc-Ed and General fund dollars.

(b) Budget shared with Medical Laboratory Technology. No separate budget for MT.

Other

	AY 93-94	AY 94-95	AY 95-96	AY 96-97	AY 97-98
Number of Graduates * - Total	15	20	19	11	23
- On campus	15	20	19	11	23
- Off campus	0	0	0	0	0
Placement of Graduates	93%	100%	100%	100%	N/A
Average Salary	\$28,502	\$26,313	\$27,500	\$29,000	N/A
Productivity-Academic Year Average (c)	290	334	277	298	305
- Summer (c)	0	88	138	140	167
Summer Enrollment	N/A	N/A	31	33	31

*Use total for academic year (F,W, S)

(c) With semester format, productivity is combined for MT and MLT.

ADMINISTRATIVE PROGRAM REVIEW

MLT

Program/Department: Medical Laboratory Technology/Environmental & Clinical Sciences

Submitted: January 15, 1999 Dean: Isabel J. Barnes

Please provide the following information:

Enrollment/Personnel

	Fall 1994	Fall 1995	Fall 1996	Fall 1997	Fall 1998
Track FTE (a)	3	4	4	4	4
Lead/Supplemental FTEF (a)	0.90	0.37	0.33	0.05	
Part-time/Clinical FTEF (unpaid) (a)	100	100	100	100	100
Enrollment on-campus total*	25	28	31	24	19
Freshman	6	7	4	5	3
Sophomore	7	9	15	10	5
Junior	7	7	6	5	5
Senior	5	5	5	2	6
Pre-MLT	12	9	6	4	3
TBD			1	2	
Enrollment off-campus*	0	0	0	0	0

* Official count (7-day count for semesters, 5-day count for quarters).

Enrollment personnel teach in Medical Technology Program. No separate faculty for MLT.

Financial

	FY94	FY95	FY96	FY97	FY98
Expenditures* (b)					
Supply & Expense	\$42,303	\$40,405	\$50,104	\$47,751	\$52,031
Equipment**			\$ 7,416		
Grants	54,291	146,408	864	460	1,258

* End of fiscal year expenditures.

** Expenditures do not include Voc-Ed and General Fund dollars.

*** Budget shared with Medical Technology. No separate budget for MLT.

Productivity

	AY93-94	AY 94-95	AY 95-96	AY 96-97	AY 97-98
Number of Graduates * - Total	5	7	8	12	10
- On campus	5	7	8	12	10
- Off campus	0	0	0	0	
Percentage of Graduates	83%	100%	100%	100%	N/A
Average Salary	\$22,500	\$24,000	\$25,500	\$27,000	N/A
Productivity-Academic Year Average (c)	290	334	277	298	305
- Summer (c)	0	88	138	140	167
Enrollment	N/A	N/A	14	23	16

* Base total for academic year (F, W, S)

** With semester format, productivity is combined for MT and MLT.

Administrative Program Review – 1998
Medical Lab Technology/Medical Technology

- I. Strengths**
- A. Faculty – Faculty is well prepared and is actively incorporating instructional technology into their courses.
 - B. Students – Active student organization.
 - C. Curriculum – Sim lab is a good experience for both MT and MLT students. Good articulation between MLT and MT programs.
 - D. Facilities – Not applicable
 - E. Budget – S&E funds are adequate to support instructional activities.
- II. Concerns**
- A. Faculty – Not applicable.
 - B. Students – Changing conditions in hospitals are beginning to limit availability of internship sites. Decrease in student numbers. Resources for recruiting.
 - C. Curriculum – Not applicable
 - D. Facilities – Lab design is inadequate for current usage.
 - F. Budget – Equipment replacement is still a problem although the MLT program received vocational education funding this year.
- III. Future Goals (including time frame)**
- A. Faculty – Complete PRP report by Fall 1999. Self-study to be done in preparation for accreditation visit in 2001.
 - B. Students – Outcomes assessment is on-going. Data should be utilized in curriculum revision currently in progress. Using 1995 as the base year, increase the ethnic diversity of students by 15% by the year 2000.
 - C. Curriculum – Revised curriculum containing core to be submitted by May 1999 for implementation in Fall 2000.
 - D. Facilities – Continue to work with CAHS to implement plan for re-allocation of space.
 - E. Budget – Develop a five-year plan for equipment upgrades and share with the dean by May 1999 so external sources of funding can be sought.
- III. Recommendations**
- A. Faculty – Faculty should develop and implement an effective recruiting plan.
 - B. Students – Not applicable.
 - C. Curriculum - Not applicable.
 - D. Facilities – Not applicable.
 - E. Budget – Not applicable.
 - F. Other – Explore use of FSU-GR/GRCC for weekend laboratory courses in MLT.
- IV. Progress toward 1997-98 Goals**
- Development of Internet-based courses completed.