Section 1: Overview

A. Program Goals

1. The goals of the CLS programs Medical Technology (MT), Medical Laboratory Technology (MLT).

a. To prepare graduates for employment in a variety of settings at career entry level.
b. To define clearly what is expected of students at all levels of the program, to make these expectations clear to all students, and to help students fulfill those expectations.
c. To incorporate appropriate liberal arts, science, and Allied Health core courses into the curriculum and to educate professionals who are aware of the needs and values of a changing world.
d. To provide evaluation mechanisms which recognize individual competencies and allow for advanced placement where appropriate.
e. To provide the opportunity for worthwhile clinical experiences for all qualified students.
f. To offer appropriate continuing education opportunities to medical laboratory professionals.

2. These goals were developed by the faculty of the CLS program and approved by the CLS advisory committee about 15 years ago. They have been reviewed during subsequent advisory committee meetings and have been allowed to stand as written.

3. The goals reflect program graduate needs for technical, professional and general education. Graduates function in a wide variety of employment settings.

4. The goals have not changed since the last APR. We feel they still accurately reflect our programs. The CLS Advisory Committee reviews the program goals on a regular basis and has not recommended changes.

5. 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 prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-oriented, broad-based education, Ferris serves our rapidly changing global economy and society.

Mission of CAHS: The College of Allied Health Sciences prepares students for successful careers in the programs contained therein, to foster responsible citizenship and to promote lifelong learning. The college will partner with healthcare providers and facilities to prepare students for rapidly changing careers.

The vision of the CAHS: The College's vision is to be a recognized leader in the provision of career-oriented programming in the allied health and nursing fields. It will become the preferred choice for students who pursue a career in one of the disciplines offered by the college through its alignment of programs with the evolving needs of the agencies which it serves.

Mission of the CLS programs: The mission of the Clinical Laboratory Science programs at Ferris State University is to prepare graduates with the knowledge, skills, and professional behaviors needed to function effectively in a wide range

of 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
- Work as a member of the health care team
- Identify opportunities for professional advancement
- Maintain technical competence under the normally stressful conditions of the clinical laboratory
- Integrate theory and practice effectively
- Generate data to be used in patient care, evaluate the validity of data, and to assure reliability before reporting test results
- Recognize the importance of quality control and quality assurance programs
- Collect and process samples of blood and other body fluids, and evaluate the suitability of these samples for analysis
- Perform routine tests and appropriate additional follow-up tests where needed
- Maintain instrumentation and identify and correct malfunctioning systems
- Communicate effectively with coworkers, patients, their families, and others
- 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 requirement.
- Correlate results for all areas of the laboratory and relate these results to the clinical condition of the patient.

B. Program Visibility and Distinctiveness

1. The CLS programs at Ferris State University are unique in a variety of ways:
   a. On – Campus simulated laboratory where students "practice" working in a lab for before their internship.

   b. Well-equipped labs. Students are able to learn to operate a variety of equipment that is very similar to that found in the clinical setting, including a Laboratory Information System. This provides them with the opportunity to gain proficiency on-campus prior to their assignment to the clinical setting.

   c. Internship. Unlike some other programs in the state, we make sure the eligible student has a site for internship. Students do not have the responsibility of locating their own internship sites.

d. Experienced faculty. The faculty members have more than 30 years of experience teaching CLS students. The adjunct faculty also has many years of current laboratory experience.

e. Functioning Laboratory Information System (LIS). An LIS is a large, secure database to manage patient test orders, specimens, and laboratory results. All clinical laboratories use these systems and Ferris is one of the few university-based programs where students can practice using an LIS before their clinical experience.

2. We attract quality students by:
- Recruiting heavily in high schools and in career technical schools.
- We also attract several Ferris pre-pharmacy and pre-optometry students who are not accepted into their respective programs.
- Participating in the CAHS Open Lab program. High school students from area Vocational-Education programs tour our labs and have the opportunity to ask questions about what Ferris has to offer them.
- Creating a career ladder (MLT to MT) that meets the needs of a diverse population of students.

3. The institutions that offer the main competition to our MT Program:
   a. Grand Valley State University (GVSU)
   b. Michigan State University (MSU)
   c. Andrews University
   d. Northern Michigan University (NMU)
   e. Eastern Michigan University (EMU)
   f. Wayne State University
   g. Saginaw Valley State University

The institutions that offer the main competition to our MLT program:
   a. Kellogg Community College
   b. Northern Michigan University
   c. Baker College of Owosso and Port Huron
   d. Macomb County Community College

a. Other than MSU and GVSU, these are small programs that enroll a limited number of students per year. We have combined our MT and MLT students in the 100 and 200 level courses with a CLLS prefix. This increases our efficiency. All programs in the state have had to deal with fluctuations in enrollment and have had to increase their recruiting efforts. Along with Ferris the other programs in the state are enrolling record numbers of students. On one hand, this is good for the profession and the future of laboratory professionals in the state; on the other hand, placing the students for clinical experience is more competitive than ever. .

b. There are many similarities among the competing programs in the state due in part to accreditation requirements, but there are some things that the CLS programs at Ferris could learn from other programs. For example, the requirement of a higher GPA for admission to the professional phase of the program. We currently require students to have a 2.50 for admission. Raising the GPA may increase the overall quality of student and reduce the attrition rate by keeping weaker students from beginning the program. Many of the students who are (academically) dismissed from the program have a GPA between 2.50 and 3.00. As an example, GVSU requires a minimum GPA of 2.8 for entry into the professional phase. In addition to a higher GPA, GVSU, SVSU and MSU require students to pass an introductory genetics course. The profession of laboratory is relying

increasingly on testing at the genetic level, so it only makes sense that we incorporate more genetics into our curriculum. The final item that our CLS program could do that other programs find beneficial is to require applicants to the program to go through and interview process and submit a writing sample. These would be additional items we could use to select the strongest candidates for the program.

C. Program Relevance

1. Labor Market Analysis

The American Society for Clinical Pathology (ASCP) conducted surveys of laboratory personnel wage and vacancy rates and reported the results in the March 2010 and April 2011 issues Lab Medicine, respectively. The results are summarized below.

Key Findings – Vacancy

Small hospitals (<100 beds) reported higher vacancy rates compared to larger facilities, while lowest vacancy rates were found at hospitals with 300-499 beds. By region, the Far West reported higher vacancy rates than other regions while the South Central Atlantic had the lowest rate. Michigan is in the Central Northeast Region, but unfortunately no data was included for our region. (Garcia et al LabMedicine, 42, 199-206).

Nationally, the majority of labs filled most staff positions within 6 months of posting an opening. Certain supervisory positions took more than a year to fill. (Garcia et al LabMedicine, 42, 199-206).

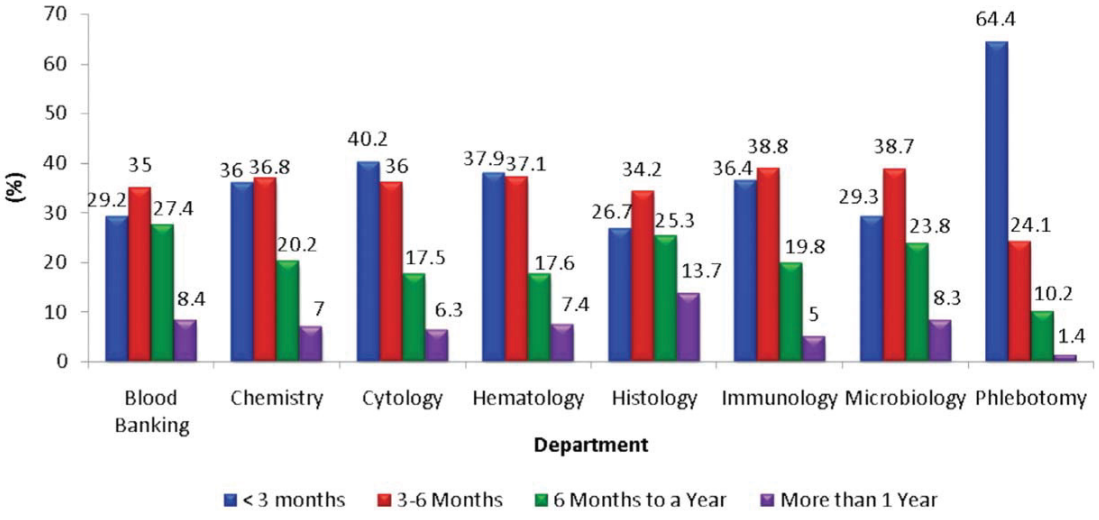

Figure 8 Time to fill empty staff positions. *LabMed April 2011 vol. 42 no. 4 199-20*

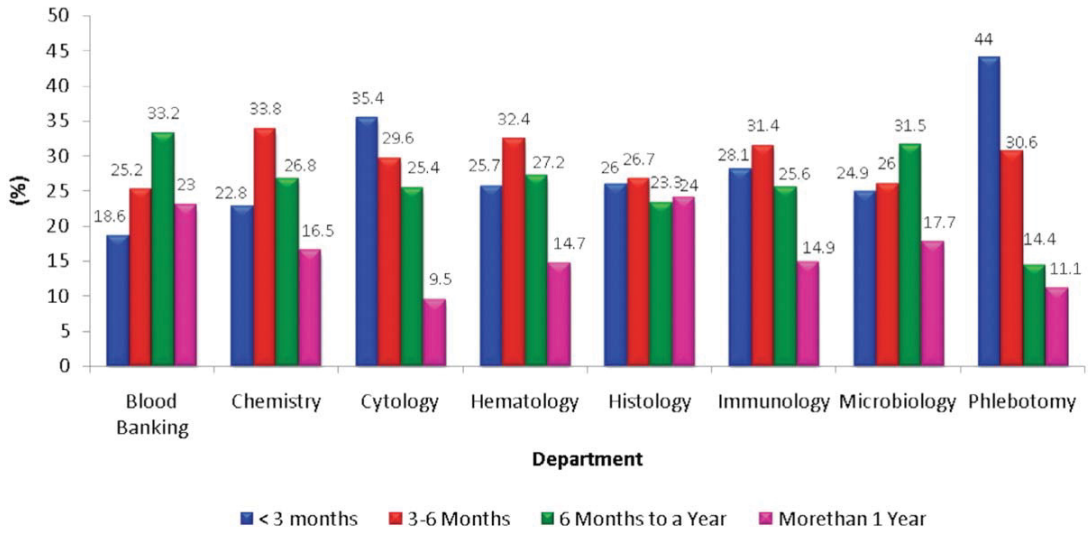

Figure 9 Time to fill empty supervisory positions.. *LabMed April 2011 vol. 42 no. 4 199-20*

The night shift was the most difficult time slot to fill. According to the survey, the majority of laboratories across the nation state "better pay and/or benefits at other area hospital" and "lack of necessary education and skills to perform the work" as primary reasons for hiring and recruiting difficulties. Most labs in the survey reported that their departments do not use any recruitment or retention initiatives to attract employees. ((Garcia et al LabMedicine, 42, 199-206).

Retiring baby boomers from all departments will be another challenge for Clinical Laboratories. The figure below shows the percentage of employees anticipating retirement in the next 5 years.

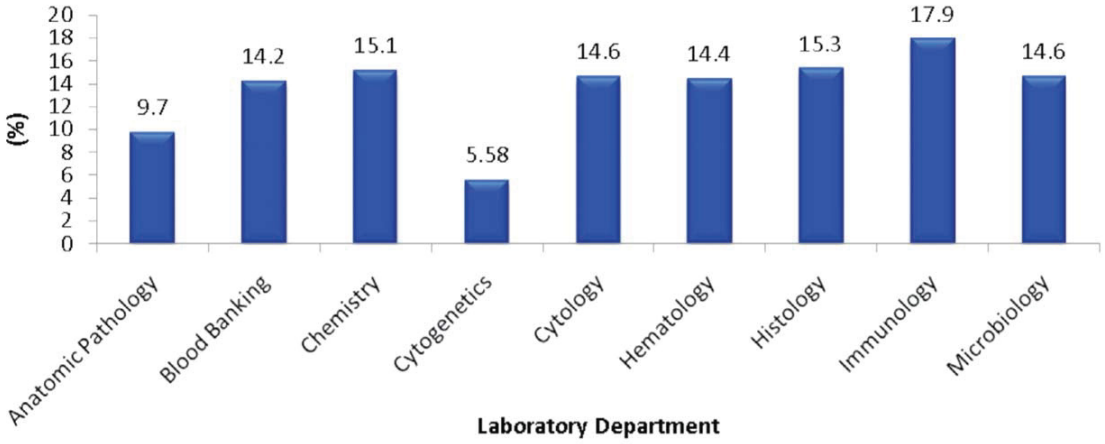

Figure 10 Percentage of employees by department anticipated to retire in the next 5 years *LabMed April 2011 vol. 42 no. 4 199-206*

There will continue to be difficulty finding qualified laboratory personnel. The reasons for this are many:

- Technology is redefining the workforce skills
- Lack of recruiting –and retention – incentives
- Stress of the occupations
- Work schedule
- Budget
- Commuting
- Limited advancement opportunities
- Lack of a "public face" on the profession

These factors are compounded by closure of Clinical Laboratory Science programs around the country.

Recent professional meetings and publications indicate that new test methods and systems, such as automated molecular diagnostics analyzers, will increase the number of tests and greatly increase the test volumes of clinical laboratories. These new developments, as well as tests developed as a result of the Human Genome Project, will increase the demand for trained laboratory personnel. ASCP has stated that it is anticipated that there will be about 9000 laboratory jobs per year for the rest of this decade, with about 4000 graduates per year. An MSU study focusing on MI only indicates that there will be approximately the same need in Michigan: there will be about 2 jobs per year available for each MI graduate (K. Doig, personal communication).

B. Key Findings - Salary

The national average hourly wage for staff level (BS degree) MT employees is $26.16 (SD=$5.49). (See figure 4). Reference labs and hospitals with 300-499 beds pay the highest hourly wage, $27.08. Non-pathologist physician office labs pay the lowest, $20.32/hour. Certified MT's earn 10% more than those that are not certified. The average year of experience of the respondents is 16.53 years. Supervisors earn an hourly wage of $31.48 (SD=$5.80). Certified supervisors earn more per hour than noncertified.

MT/MLS/CLS	Average Wage	Average Experience
Staff Level	$26.16/hr ($54,412/yr)	16.53 years
Supervisory Level	$31.68/hr ($65,478/yr)	17.36 years

Staff level (AAS) MLT employees are paid an average rate of $19.78/hour (SD=$4.96). Pay rates among facilities are comparable, except for non-pathologist physician offices where the hourly rate is $18.26/hour. Certified MLT's make 10% more than noncertified. The average years of experience of the respondents is 14.43 years. MLT supervisors earn an average hourly wage of $23.72 (SD=$6.06). The highest pay for MLT supervisors in hospitals with 100-299 beds and reference labs. Certified supervisors earn more per hour than noncertified

MLT/CLT	Average Wage	Average Experience
Staff Level	$19.78/hr ($40,768/yr)	14.43 years
Supervisory Level	$23.72/hr ($49,338/yr)	15.68 years

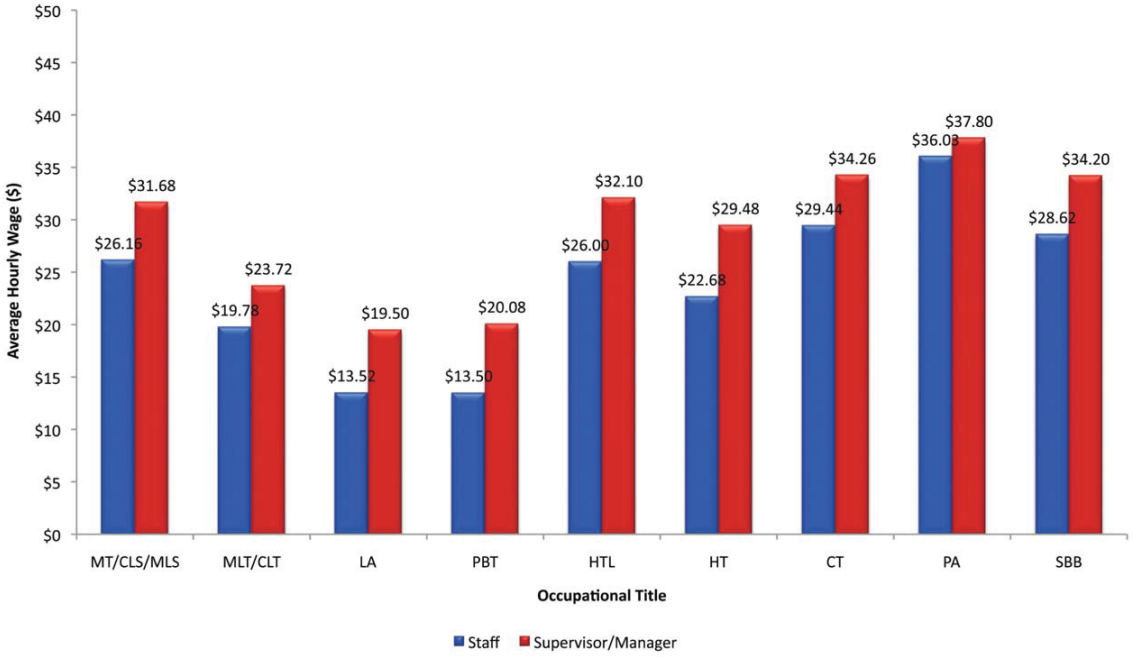

Figure 4 Average hourly wage for laboratory staff and supervisor. *LabMed March 2011 vol. 42 no. 3 141-146*

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 2005-2009 academic years for both the MT and MLT programs.

Medical Technology, BS

Year	# of Grads	% Response	# of Responses	% Placement Rate	# of Job/#CE	Average Salary
05-06	9	33	3	100	3	38,964
06-07	16	68	6	100	6	38,933
07-08	22	23	5	80	4	37,988
08-09	19	26	5	100	5	39,000

Medical Laboratory Technician, AAS

Year	# of Grads	% Response	# of Responses	% Placement Rate	# of Job/#CE	Average Salary
05-06	4	50	2	100	2	N/AV
06-07	6	67	4	100	4	41,753
07-08	1	0	0	0	0	N/AV
08-09	1	0	0	0	0	N/AV

This data indicate that Ferris MT and MLT students are in high demand. In addition, it shows that our graduates have a commitment to continuing their education. I think the data also show that we, as a program and University, need a better system for graduate follow-up surveys.

According to *Occupational Outlook Handbook 2010-2011*, Bureau of Labor and Statistics:

Job Outlook for Clinical Laboratory Technologists (MT) and Clinical Laboratory Technicians (MLT)

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2010-11 Edition, Clinical Laboratory Technologists and Technicians, on the Internet at http://www.bls.gov/oco/ocos096.htm (visited May 11, 2011).

Rapid job growth and excellent job opportunities are expected. Most jobs will continue to be in hospitals, but employment will grow rapidly in other settings, as well.

Employment change. Employment of clinical laboratory workers is expected to grow by 14 percent between 2008 and 2018, faster than the average for all occupations. The volume of laboratory tests continues to increase with both population growth and the development of new types of tests. Technological advances will continue to have opposing effects on employment. On the one hand, new, increasingly powerful diagnostic tests and advances in genomics—the study of the genetic information of a cell or organism—will encourage additional testing and spur employment. On the other hand, research and development efforts targeted at simplifying and automating routine testing procedures may enhance the ability of non-laboratory personnel—physicians and patients in particular—to perform tests now conducted in laboratories.

Although hospitals are expected to continue to be the major employer of clinical laboratory workers, employment is expected also to grow rapidly in medical and diagnostic laboratories, offices of physicians, and all other ambulatory health care services.

Job prospects. Job opportunities are expected to be excellent because the number of job openings is expected to continue to exceed the number of jobseekers. Although significant, job growth will not be the only source of opportunities. As in most occupations, many additional openings will result from the need to replace workers who transfer to other occupations, retire, or stop working for some other reason. Willingness to relocate will further enhance one's job prospects.

Conclusions

According to recent surveys, there are jobs available. Certain regions of the United States, and particular departments, have more vacancies than others. Results from the FSU Planning and Placement Services show high placement rates for our graduates. The adjunct advisory committee and health occupation specialists predict more jobs due to the "graying of the workforce."

Anecdotally, the faculty receives several phone calls and emails each month from hospitals and other labs with job openings and inquires about recent graduates.

2. The program responds to emerging issues in the discipline, changes in the labor force, changes in employer and student needs by continually upgrading equipment, revising the curriculum every 5 years or so. During curriculum revision we use advisory committee input and communication with lab instructors to change course content to reflect current practice. Faculty are active in professional organizations, for example American Society for Microbiology (ASM), and the American Society for Clinical Laboratory Sciences (ASCLS). By attending their meetings, the faculty is able to stay abreast of changes in the discipline.

Laboratory managers continue to cite FSU's program as best preparation for those interested in lab medicine careers. They routinely direct potential students to our program. Students continue to succeed during internship and are hired by our clinical affiliates.

3. According to an informal survey conducted in CLLS101 Orientation to Clinical Laboratory Sciences, the students listed the following as reasons for enrolling in our CLS program:

- Small class size
- Reputation of the program and faculty
- On-Campus simulated lab
- Hands on experience
- Help with finding internship sites for eligible students
- Lab managers encourage prospective CLS student to attend program because of our excellent reputation

a. We believe that we exceed the expectation of the students. We are continually updating our instrumentation, revising curriculum to reflect the changing technologies, and participating in continuing education opportunities. For more information, refer to the graduate survey results.

b. Every student meets with a faculty advisory at least once per semester, each faculty is evaluated twice per semester by students in the program using the Student Assessment of Instruction (SAI) or IDEA and occasional in-class surveys.

D. Program Value

1. The clinical laboratory sciences programs benefit the university by offering a program that is unique in Western and Northern Michigan. The Medical Technology program is the only program in the northern Lower Peninsula and provides an opportunity for students in the northern part of the Lower Peninsula to enroll in a program near their home. A state-of-the art laboratory and experienced faculty enhance the reputation of the program and serve as an incentive for students to enroll.

2. The students learn in state-of-the-art equipped labs that are not available to students in similar programs. Our on-campus simulated laboratory (for the MT and MLT program) provides cost-effective preparation for clinical laboratory students. The courses are taught by faculty and staff, who are dedicated to the profession of

laboratory medicine and Ferris. We also benefit the university by providing an alternative for students in pre-pharmacy, pre-optometry and other competitive programs that have more applicants than places available. The final semester on campus includes simulated laboratory, the unique aspect of Ferris's program, which enables students to be prepared to practice their profession with a much-shortened internship experience and then graduate. The students arrive ready to perform well at their assigned affiliates, having had considerable practice in routine and problem-solving laboratory situations on campus. Additionally, we have cooperated with the Nursing program to involve their students with our simulated laboratory. It allowed those students to have some experience dealing with "employees" of a laboratory. We found it beneficial to both groups of students.

3. Our program prepares a large number of the annual CLS graduates in Michigan. Program graduates have been hired statewide, from the U.P., and from Alpena to Petoskey and from Monroe to St. Joseph. Other graduates have moved to nearly every state in the nation. Besides serving traditional clinical laboratories, program graduates are employed in industry, laboratory management, research and related fields. It seems that demand for graduates is increasing while enrollment in many programs across the country is just now leveling off and even increasing. The employers who hire our graduates are very pleased with the level of their entry-level skills and their attitude toward the profession. All of the employers would hire a Ferris graduate again. These opinions are expressed on surveys and directly to faculty during visits to the lab and discussion at professional meetings.

4. The faculty participates in local, statewide, and national, continuing education activities. In addition to attending programs, all have presented continuing education (CE) in a wide variety of formats. This benefits all current laboratory professionals by allowing them to take advantage of educational professionals delivering their CE. In addition, the current CLS students who attend the meetings witness the faculty leading by example. We strongly encourage our students to join professional organizations, attend continuing education conferences, and be involved in the profession. Some of the faculty has reviewed chapters or sections of textbooks. We have also served as site surveyors for CLS programs undergoing re-accreditation. Four past faculty members have served as president of the Michigan Society of Clinical Laboratory Sciences and been selected as Michigan Clinical Scientists of the Year.

5. The faculty and students have, when at one time or another, provided services to groups outside the university. Several current and former students have been involved with the Hometown Recruiting Program and American Red Cross blood collection drives. Graduates of the program have represented Ferris and CLS at recruiting fairs. The registered student organization, Association of Clinical Laboratory Science (ACLS) performs several service projects each semester, such as Relay for Life, Project Poncho, and The Big Event.

SECTION 2: Survey of Program Graduates

A. Graduate Follow-up Survey

Consolidation of Survey Results: A total of 81 surveys were sent out, electronically, to the graduates of the 2008-2010 graduating Medical Technologists and Medical Laboratory Technology by Institutional Testing and Research.

A total of 6 surveys were returned for a response rate of 7%. The MT and MLT responses are combined due to the low number of responses.

Discussion: Our experience over many years has taught us that a 50% survey response is about the best we can expect, so it the return rate of this round of surveys was totally unexpected.. Many graduates remain in touch with program faculty. Some disappear. The Alumni Office is helpful with supplying addresses of program graduates; unfortunately, these addresses are often not valid. Our graduates are mostly female, which adds the additional complication that they marry and change their name. Having e-mail addresses seems to help with remaining in contact with our graduates. Perhaps the use of social media, e.g. Facebook, will be a solution. We currently have a Facebook group for CLS graduates and may need to rely on that for the future surveys.

A summary of their responses is listed below:

1. Where are you currently working?

Of the 6 graduates who responded, all reported working in clinical laboratories in Michigan.

- Borgess Medical Center 2
- Bronson Methodist Hospital 1
- Chelsea Community Hospital 1
- Mercy Health Partners 1
- Spectrum Health United Hospital 1

Discussion: I think this says that our graduates have a strong sense of commitment to the state. Anecdotally, we are seeing a few more students leaving the state for employment. The reason is almost always that they are following a significant other. We have no data on this, however.

2. How long have you been employed here?

- less than one year: 3
- one to three years: 3

3. What is your present position?

- 2 responded: Medical Technologist, 3rd Shift
- 3 responded: Medical Technologist/
- 1 responded: Lab Tech III

4. What was your starting salary?

- 4 indicated a Range: 17.60-21.60
- 1 responded: 30,000/year
- 1 responded: about 32,000/year

Discussion: these numbers are lower than what was reported in section 1 nationally. I think the explanation for this may be that our numbers are based on new, entry level technologists. In addition, these numbers reflect a mix of responses from MT and MLT graduates. MLTs (AAS degree) typically earn less than an MT (BS degree) graduate.

5. What hours do you currently work?

- "40": 1
- 2nd/3rd split shift: 1
- third shift: 3
- Flex: 1

6. Do you work weekends?

7. How frequently?

- All 6 responded Yes. The frequency varies, but most (4) work "every other" or 2 out of 5.

8. Do you take Call?

9. How frequently?

- 2 responded Yes: "a few times a month" or "whenever I sign up"
- 4 responded No

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

- Blood Bank: 6
- Chemistry: 6
- Coagulation: 6
- Hematology: 6
- Urinalysis/Body Fluids: 6
- Serology/Immunology: 5
- Microbiology: 1
- Molecular: 1

11. Where else have you worked as a MT?

- Nowhere else, this is their only place of employment: 6

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

- Hired after my internship: 4
- Told of the position by another Ferris Grad 1
- Yes (was an MLT in a lab that prefers MTs) 1

Discussion: The graduates of our program who want a position, usually have no problems finding one. We believe this trend will continue as the average age of current clinical lab scientist continues to increase. This year, as in past years, many (if not most) of the students remain at the hospital where they completed their clinical experience.

13. Comments on CLS courses

- I enjoyed my professors and the classes. We learned a lot of stuff that was on the certification exam but I never use while working which seems silly but makes sense.
- My course in blood bank, the teacher was very proud to teach it and enjoyed teaching us students. My hematology, microbiology, clinical chemistry, again, because of the teachers, they made a huge impact on the way I learned.
- Prepared me the most.
- Sim Lab, All "lab" based courses
- The labs for those classes were the best help. I do use lab math on occasion for things like dilutions. It was good that exams I took had case studies so we can correlate lab results with disease states.
- These courses prepared me very well for my job. I would say that the Simulated Laboratory course helped prepare me the most for working in my position.

14. Comments on science/math courses

- A lot as a background for understanding CLS courses.
- It helped to understand the science behind the tests I perform.
- My biochemistry class was a joke...
- The biology courses were very helpful, the advanced chemistry courses weren't very helpful. I don't feel Organic Chemistry or Biochemistry have been beneficial in my position. I don't think I have every used any of the course information while working in my current position

15. Comments on CAHS courses

- I don't remember much about these classes. The few I took didn't really apply. For instance, the intro to healthcare (I think) had us learn how to transport patients and take a pulse... I never do that at work.
- Intro to health care covered HIPPA well
- Somewhat with an overall view of healthcare
- Very good, especially Medical Terminology

16. Comments on other required courses

- I absolutely loved the History and Sociology courses I took. Dr. G. Thomas Behler is by far my favorite professor while taking courses at Ferris.
- None really. I really liked my stats professor but I don't remember what his name was.
- Not so much helpful in preparing for working in a lab but I felt I received a more rounded education by taking these courses.
- Statistics and the business English class were really useful.

Discussion: Based on the comments from sections 13-16 there is a strong indication that students are satisfied with their education at Ferris, especially the CLLS courses, and believe that they have the knowledge to succeed on the job. The one area we may need to focus on for improvement is the organic/biochemistry courses. The student experience (positive or negative) depends on the course instructor.

17. Which area(s) need(s) improvement

- Guided tours of working labs would be helpful so I didn't feel so lost the first day I walk in for internship. I had never even seen a unit of blood by the time I starting my internship

  Discussion: The CLLS101 instructor used to take a trip to the Mecosta County Medical Center lab for a tour. In recent years, the enrollment in CLLS101 has grown to 40 or more students and that makes that trip impossible to schedule. A "virtual" tour of a lab has been discussed.

- Offer courses more often. Don't limit courses to just one semester per year.

  Discussion: Our course are offered one time per year due to a variety of factors: faculty resources, supply costs, and physical space availability are just a few of them.

- The specimen collection class. There needed to be more of an emphasis of blood drawing. Techs have to draw more often then I think the teachers realize.

  Discussion: The faculty realize how much specimen collection takes place in lab. We are limited in our course because of: availability of volunteers, cost of each phlebotomy, and length of the course

- There were scheduling conflicts between classes I needed to start the CLS core classes and not being able to take all the classes I needed in one semester held me back from graduating on time.

  Discussion: While there are occasional conflicts and time overlaps between CLLS and Arts and Sciences classes, we work with the students to make sure they have the time necessary to finish the curriculum and graduate on time.

18. As a regular part of your assigned duties, which of the following do you perform? (1 responded that none of these duties applied to current job).

	Often	Sometimes	Never
Routine Phlebotomy	1	1	4
Specimen Processing	3	3	0
Using a laboratory information system	18	0	0
Instrument maintenance	5	1	0
Instrument calibration	5	1	0
Instrument troubleshooting	5	1	0
Problem solving (difficult antibody ID, unusual organisms, etc.)	3	3	0
Proficiency testing	4	2	0
Evaluation of instruments/procedures	2	10	4
Assay validation	2	0	4

Training employees	2	11	5
Teaching students	0	2	4
Supervising employees	0	4	2
Scheduling personnel	0	1	5
Ordering supplies/maintaining inventory	1	2	3
Drawing donors	1	0	5
Preparing blood components	2	2	2
Drawing arterial samples	0	0	6
Outreach (cholesterol screening programs etc.)	0	2	4
Point of care testing	1	0	5
Quality assurance teams/projects	1	1	4
Calibration of instruments	5	10	3
Competency assessment (having yours assessed)	4	2	0
Competency assessment (assessing others)	1	1	4
Consultation with physicians, nurses, etc.	3		3
Outcomes assessment	1	1	4
Design of critical paths/clinical paths	0	5	13

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

- Spectrum Health Gerber Memorial 1
- Bronson Methodist Hospital: 1
- Mercy General Health Partners (Muskegon) 1
- Spectrum Health United Health 1
- University of Michigan 1
- Munson Medical Center

20. Which areas of your clinical experience best prepared you for your current position? Explain.

- All of it did.
- All, because I now work in every department that I interned with.
- Each of the required labs helped my be prepared. We actually did things in lab that you actually do in the real world. I wish I could say that SIM lab helped me but I was unfortunately unable to take it.
- I was basically trained to work there during my internship. The only thing I wasn't fully trained for during internship was using the LIS.
- Mercy Health Partners although a great employer, it is not a great facility for students. I believe they only prepare students for employment at their facility, not for employment or experience elsewhere. It is great for students to get repetitive use of instrumentation and certain procedures, but if they have techs who can't explain why or how it works and enforce what the student has learned in school, I feel as if they are doing the student a disservice.
- Our internship experience was essentially the same as a new-hire would have. We just learned how to do the tests.

21. Should any part of the clinical experience be changed? Explain.

- Allow all students to take SIM lab, no matter how many students are enrolled. It was an important class that I should have been able to experience.
- Maybe class work at the site
- No, although it might be nice to have a few days to explore other areas of the hospital. Surgeries, procedures, etc
- Not that I can think of.

Discussion: Sections 20 and 21 indicate that the students are satisfied with the clinical experience they receive from our affiliated labs. From time to time there are personality conflicts between student and the clinical instructor that may alter the perception of the experience

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

- I grandfathered out of the venipuncture class. Thank God! I never have to draw blood and I never want to.
- I only had the one phlebotomy course before internship and graduation, however, my internship did not include a phlebotomy rotation and I do not draw patients in my current position.
- It was enough, but it was too long before I had to actually do it on internship. I haven't had to do any since.
- The amount that I received was not efficient enough. There should have been draws required in school, and more emphasis on how to handle a difficult draw (elderly, chemo patients, little kids, drug users, etc.) techs comes across these types of patients either in the ER, ICU, or outpatients.

- The only practice I received before clinical experience was my phlebotomy course. Skills could have been improved by drawing all of my internship, not just a couple weeks
- We had some required draws in the specimen collection class I took and that's all I did before internship.

Discussion: We continue to struggle with giving the students enough practice at collecting specimens while they are on campus. We are limited by reasons listed above. We will look for ways to improve their on-campus experience.

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

- Continuing Education only. No higher degrees.
- I have been able to obtain CEUs through webinars offered.
- I have done some continuing education for maintaining certification but I am planning on going back to school or taking specialist course.
- Yes, all online so far.
- yes, I almost have all my CE credits to have my certification renewed. I discovered the RENEW service from the ASCP is really handy and cost-efficient and have done all my credits through their program.
- Yes, I do continuing ed. for my ASCP certification, and I'm required to do continuing ed. through the hospitals I work at. I plan on continuing to do them to keep my skills sharp

Discussion: All graduates of Clinical Laboratory Sciences programs are encouraged to take (and pass!) the national certification exam. When a graduate passes, they are required to earn a minimum number of CE to maintain their certification. None of the graduates who responded to this survey have enrolled in a graduate program

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

- I think surveying graduates at least 3-4 years out of college would be helpful.
- Just that I wish I had actually seen the inside of a laboratory at least once before I started my internship.

B. Employer Follow-up Survey

Unfortunately, only 2 employers of our graduates returned surveys.

C. Graduating Student Exit Survey

We have not surveyed the graduates immediately when they complete the program. We do, however, survey them 9 months to 1 year from graduation. We do this so we can ask questions about how well they were prepared (at Ferris) to work in a laboratory.

D. Student Program Evaluations

STUDENT PERCEPTIONS OF OCCUPATIONAL EDUCATION PROGRAMS

This survey instrument is derived from the PROE survey and was administered during the end of Fall semester 2010.

INSTRUCTIONS: Rate each item using the following guide:

6 Don't Know
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%

** % = 3+4+5 / total number of surveys

A comment column has been provided if you wish to explain your rating	1	2	3	4	5	6
Please rate each item below: **Courses in your occupational program are**: **48/49 = 98%**						
• Available and conveniently located 1			2	12	34	1
• Based on realistic prerequisites **48/49 = 98%** 2		1	3	22	23	
-Add genetics - Pathophys was a waste for MT program						
• Available at moderate cost **43/49 = 88%** 3	2	3	23	13	7	1
- tuition, online fee						
Written objectives for courses in your occupational Program: **45/49 = 92%**						
• Are available to students. 4	1	1	3	5	37	2
• Describe what you will learn in the course 5 **47/49 = 96%**		1	2	11	34	1
- Some 200 level or 100 level						
• Are used by the instructor to keep you aware of your progress **45/49 = 92%** 6		1	5	15	25	3
- Courses are much heavier in work load that it should be						
Teaching methods, procedures and course content: **45/49 = 92%** • Meet your occupational needs, interests and objectives. 7		3	2	16	27	1
- won't know until job experience						
• Provide supervised practice for developing job skills **47/49 = 96%** 8			3	11	33	2
- Job skills to broad- what specific skills						
Related courses (such as English, Mathematics, Science) are: **42/49 = 86%**						
• Pertinent to occupational instruction 9	2	4	15	13	14	1
- Most of them - general ok background - org 212? how about decrease level of biochem 324 (to high of a level)						
• Current and meaningful to you **39/49 = 79%** 10		6	13	15	11	4
Work experience (or clinical experience) in your Occupational program is: **30/49 = 61%**						
• Readily available at convenient locations. 11	5	4	9	11	10	10

- Need more - More locations in southeast MI or out of state. Other schools seem to take them all							
• Readily available to both day & evening students 12 **25/49 = 51%**	1	6	7	8	10	17
• Coordinated with classroom instruction 13 **41/49 = 84%**			7	13	21	8
• Coordinated with employer supervision 14 **31/49 = 63%**		1	6	9	16	17
Career planning information: **45/49 = 92%** • Meets your needs and interests 15		2	7	15	23	2
- advisor change						
• Helps you plan your program **45/49 = 92%** 16	1	1	3	17	25	2
-advisor change						
• Helps you make career decisions and choices 17 **45/49 = 92%**		2	4	19	22	2
-advisor change						
Career planning information (Continued): **38/49 = 78%** • Helps you understand your rights and Responsibilities as an employee 18	1	2	4	16	18	8
• Helps you evaluate job opportunities in relation to salary, benefits and conditions of employment 19 **39/49 = 80%**		2	8	16	15	8
• Is provided by knowledgeable, interested staff 20 **42/49 = 86%**	1		5	16	21	6
• Explains nontraditional occupational Opportunities for both sexes 21 **33/49 = 67%**	1	3	11	8	14	12
Job success information on former students in your occupational program: 31/49 = 63% • Is provided to help you make career decisions 22	2	7	8	13	10	9
• Indicates how many job opportunities there are in your occupation **35/49 = 72%** 23	2	4	6	13	16	8
• Identifies where these job opportunities are located **35/40 = 72%** 24	3	3	10	14	11	8
• Tells about job advancement opportunities 25 **36/49 = 73%**	2	3	7	18	11	8
Placement services are available to: **22/49 = 45%** • Help you find employment opportunities 26	3	4	4	11	7	20
• Prepare you to apply for a job 27 **32/49 = 65%**	1	2	8	6	18	14
Occupational instructors: **47/49 = 96%** • Know the subject matter and occupational Requirements 28		1	3	11	33	1
• Are available to provide help when you need it 29 **48/49 = 98%**		1	4	16	28	
• Provide instruction so it is interesting and understandable **46/49 = 94%** 30	1	1	2	19	25	1
Instructional support services (such as tutoring, lab assistance) are: **37/49 = 76%** • Available to meet your needs and interests 31	1	4	7	11	19	7
• Provided by knowledgeable, interested staff 32 **35/49 = 71%**	1	2	5	9	21	11
Instructional lecture and laboratory facilities: 44/49 = 90% • Provide adequate lighting, ventilation, heating, and other utilities 33		4	2	17	25	1

- Need working equipment having automation is what sets FSU apart - Mold smell - Soap in lab - New equipment and label cabinets							
• Include enough work stations for the number of students enrolled **45/49 = 92%** 34		3	4	11	30	1
• Are safe, functional, and well maintained. 35 **45/49 = 92%**	1	2	3	10	32	1
- Need labeled cupboards - Soap in lab						
• Are available on an equal basis for all students 36 **49/49 = 100%**			5	14	30	
Instructional equipment is 32/49 = 65% • Current and representative of industry 37	6	11	7	17	8	
- Chemistry updates needed - All of our equipment it out of date - While our equipment is better than many lab programs it is far from up to date and much of it is non functional - new equipment is badly need						
• In sufficient quantity to avoid long delays in use 38 **33/49 = 67%**	5	10	9	15	9	1
- Specimens are based on donation						
• Safe and in good condition 39 **40/49 = 82%**	2	7	15	17	8	
- Somewhat in good condition. Many tests running on instruments are delayed by old instruments, old reagents, old controls, etc - Equipment is out of date - They are safe						
Instructional materials(e.g., textbooks, reference Books, supplies) are: **47/49 = 96%** • Available and conveniently located for use as needed 40	1		2	13	32	1
- Some are located in the lab						
• Current and meaningful to the subject 41 **46/49 = 94%**	1		4	14	28	2
• Not biased toward "traditional" sex roles 42 **42/49 = 86%**			2	13	27	7
• Available at reasonable cost 43 **36/49 = 73%**	3	9	10	18	8	1
- Books reasonable? - Most things here are too expensive. FSU budget as w whole needs to be reconstructed						

Discussion:

The results indicate that the students are satisfied with the courses in the CLS program. The majority feel the classes are conveniently located. Twenty-two percent feel the tuition rates are too high, which we can do nothing about.

Almost all students feel that the course objectives are good to excellent and describe what they will learn. This has always been a strong point for our program. We also see a majority of students feel the teaching methods used are strong to nearly ideal. This indicates that students are comfortable with lecture and lab format of the CLS programs.

We see that only around three-quarters of the current students find the related courses (English, Math, Biology, and Chemistry) are pertinent, current and related to their profession. No specific reasons were given for their dissatisfaction.

Many students indicated that they do not know how to rate the clinical experience in the CLS programs. This makes sense since the vast majority of the students who took this survey have not been on internship yet. This may also explain some of the low ratings in regards to career planning. We try to keep the students informed of all the career opportunities available. Many jobs are posted on the FerrisConnect discussions boards and the Michigan Society for Clinical Laboratory Sciences also maintains a job posting area.

It appears one of the areas we could improve is to inform them of job success of former students. This may be difficult since we may not know where graduates are currently employed. We do indicate to them that the new graduates seem to be finding jobs without much difficulty. We refer student to placement service when necessary, but most of the time the faculty are aware of jobs before the placement office does and we can post them to the FerrisConnect discussion board or to the bulletin board outside our laboratories.

For the most part the students are satisfied with support services available to them. About three-quarters indicated they did not know what was available. We continually stress the availability of the services, but find it frustrating that some still don't know what is available. The University is better at getting the word out via MyFSU. Also, the faculty maintain regular office hours for those students who wish get some additional support.

The majority of the students are happy with the instructional facilities available to them. The students sense the faculty's frustration with lack of professional maintenance of the instrumentation and indicated that with comments. They are grateful that we are doing are best, but don't understand the reluctance of the university to support the program with maintenance agreements.

E. Faculty Perceptions

Survey

The survey form for determining faculty perceptions was provided by the APRC. The three current faculty members of the CLS programs completed the survey. The results have been compiled on a representative survey form (attached) and are summarized below.

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 4. Competency based Performance Objectives**. This has score has improved with the use of TracDat
> **Item 5. Use of Competency based Performance Objectives.** We have seen this score increase, as well.
> **Item 28. Qualifications of Instructional Staff**

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

> **Item 27. Instructional Staffing**. More than 1 faculty is on overload. One of the faculty was hired to teach for CLS programs, but is now (also) developing courses for the new Molecular Diagnostics degree. This increase the load on the other two faculty
> **Item 29. Professional Development Opportunities.** The low score in this item may be due to the fact that the administration in the CAHS is not providing any funding for travel to professional meetings. While the CAHS may "encourage" professional development, it does not financially "support" the professional development.
> **Item 33. Maintenance and safety of instructional equipment**. The "below expectations" rating for this item is probably because that many of our instruments do not have maintenance agreements and may be discarded if they are too expensive to repair.

Averages by Category

Goals and Objectives (Q1-9)	4.5
Processes (Q10-24)	4.3
Resources (Q25-40)	4.1

Comments from Faculty

Question	Comments
1.	Much improved since we have a permanent department head
2.	May need some revision in light of information regarding available clinical sites
3.	Objectives present, need to organize with exams to match (they are probably more on organization piece)
4.	CLS has done a great job at this
6.	Shortage nationwide (maybe use the updated equipment to improve our lab/teaching also)
8.	Need more information, especially with new Board of Registry
9.	Need time to do surveys and better student contact info.
10.	We could improve this a bit; some "hands-on" may not be available due to cost
11.	Not always offered at times that fit our schedule and we have to adjust ours to meet theirs.
13.	The number of internship sites is decreasing as other programs take "our" labs; some "hands-on" cannot be done on campus due to cost
14.	We work hard at recruitment. Our professional courses are only on BR campus
15.	Good support on campus for the few disable students we've had; while services are available, often student don't take advantage of the suggested offerings

16.	We can support students with most disabilities
18.	Faculty advisors do a great job at this along with our pre-program advisor
20.	Nice website and offerings available. Students took advantage of services and were reasonably pleased.
22.	We help as much as we can and when asked
23.	We only send surveys and don't have a great response rate.
24.	We try as much as we can, but have limited schedules. A dedicated CAHS recruiter (again) would help.
26.	Our department head had no real higher education background, but he's learning!
27.	Three faculty with overload each semester – now being asked to develop new BS. Help will be needed; Need more time for instructors to prep for class, especially new instructors and teaching
29.	Funding cuts have severely restricted financial support for travel to professional meetings; faculty need to find own funding
30.	Difficult to recruit qualified adjuncts on what Ferris pays
31.	Great secretarial support
32.	Well-equipped labs but no service contracts make it hard to maintain what we have; older equipment being used for labs (below expectations), for instructions in lab (excellent); overall lots of good equipment but we have issues with costs of regular maintenance and service visits – only used when broken vs. scheduled periodic maintenance visits
34.	Beautiful labs and lecture rooms; our new labs and smart classrooms are terrific
40.	We seem to get funding for new/used equipment, but not to maintain it. This varies – it can be either excellent or insufficient.

1. What are the chief occupational education strengths of your program?

- Dedicated, well-qualified faculty; well-equipped labs and newly renovated lab space; great support from our graduates and affiliated labs; increased enrollment in BS and AAS programs; addition of new BS program; our simulated lab; professional laboratory information system (LIS); support staff, e.g. our "lab manager"

- Great experiences for students on campus: shorter internship time, sites are happy that students are 'ready'; good relationship with alumni so they give back by donating goods for the lab.

- Faculty are committed to student instruction; great facilities – our labs were renovated into beautiful teaching spaces; great student base – they enjoy being involved; many supportive clinical internship sites

2. What are the major needs for improvements in your program and what action is required to achieve these improvements?

The number of internships is decreasing due to competition with other programs. At the same time, our enrollment has seen an increase. We need to see administration get involved and "fight" for Ferris at sites. Other university programs seem to be advocating for their programs.

An additional faculty member; currently we have two tenure track and a three-year temporary. With the addition of the new BS, one faculty has been developing the new courses, pulling her away from other duties in CLS.

Our program is one of the best equipped in the state. The drawback to a well-equipped teaching lab is maintenance of the instruments. Service agreements are a necessity as the technology/sophistication has improved.

Laboratory equipment: newer equipment need so students don't spend more time troubleshooting/stop instruction due to instrument malfunction;

Instructor: new program being developed, need more faculty for instructions;

Set up "faculty development" fund

Additional clinical sites to cover increasing student population; difficulties in covering all courses without adjunct help due to faculty retirement in summer 2010.

Discussion: Overall, the perceptions of the faculty and staff are favorable. Comments under "strengths of the program" pertain to well equipped laboratories (including our LIS), simulated laboratory, dedicated, knowledgeable faculty, support from alumni, and support of clinical affiliates.

Concerns that were noted in the comments section under "major needs for improvement" pertain to staffing as the program expands and hiring adjuncts in specialty areas, recruitment of students, on-going maintenance of equipment, and maintaining quality programming with expansion. It should also be noted that the funding, by CAHS, for faculty development has been inadequate for the last few years. The reinstatement of support by the college is a priority item.

F. Advisory Committee Perceptions

We survey 6 members of our Advisory Committee and 3 were returned.

Discussion: Those members that responded to the survey are very happy with the CLS programs at Ferris. All rated the instructional program as excellent and praised our newly updated teaching labs. The main area for improvement include newer and better maintained instrumentation.

Section 3: Program Profile

A. Profile of Students

1 a-f) Student Demographic Profile: Medical Technology, BS, and (MT) Program

		2006	2007	2008	2009	2010
		MT	MT	MT	MT	MT
Sex	Male	19	20	13	13	13
	Female	44	43	34	35	35
Race	Black	3	5	4	3	2
	Hispanic	1	1	1	0	2
	Indian/Alaskan	1	0	0	0	0
	Asian/Pac Isl.	6	7	2	4	5
	White	50	50	40	41	38
	Foreign	0	0	0	0	0
	No Response	2	0	0	0	0
Age	Avg. Age	23	22	22	24	24
Residence	In-state	63	63	47	48	48
	Out-of-State*	0	0	0	0	0
Enrollment Status	Full-Time	58	54	33	36	41
	Part-Time	5	9	14	12	7
	Day	63	63	47	48	48
	Evening	0	0	0	0	0
	Weekends	0	0	0	0	0
	On-Campus	63	63	47	48	48
	Off-Campus	0	0	0	0	0
Course delivery method	100% on-line	0	0	0	0	0
	Mixed delivery*	10	16	22	20	21

*internship only

A. Profile of Students
1 a-f) Student Demographic Profile: Medical Laboratory Technology, (MLT) AAS, Program

		2006	2007	2008	2009	2010
		MLT	MLT	MLT	MLT	MLT
Sex	Male	1	1	1	0	3
	Female	7	12		6	4
Race	Black	1	3	3	1	0
	Hispanic	2	1	0	1	0
	Indian/Alaskan	0	0	0	0	0
	Asian/Pac Isl.	1	2	0	0	0
	White	4	7	8	4	7
	Foreign	0	0	0	0	0
	No Response	0	0	0	0	0
Age	Avg. Age	26	23	23	22	32
Residence	In-state	8	13	11	6	7
	Out-of-State*	0	0	0	0	0
Enrollment Status	Full-Time	7	9	7	6	5
	Part-Time	1	4	4	0	2
	Day	0	13	11	6	7
	Evening	0	0	0	0	0
	Weekends	0	0	0	0	0
	On-Campus	8	13	11	6	7
	Off-Campus	0	0	0	0	0
Course delivery method	100% on-line	0	0	0	0	0
	Mixed delivery*	4	6	2	1	3

*Internship only

Section 3: Program Profile

g) **Discussion:.** Nationwide, enrollments in CLS programs have been, anecdotally, on the increase of the past couple of years. This is reflected in our enrollment numbers, as well. 2011-2012 will be the second year in a row with more applicants than available places. The increase in our student numbers are due to the "residual effect" of the one-time CAHS recruiter along with recruiting efforts of the faculty. We have found that introducing the undergraduate students in the College of Arts and Sciences to our programs during their first year of chemistry has played a role in our increased numbers. We also see an increase in inquiries for the MT program by pre-pharmacy or pre-optometry students who were not selected for the next class.

The students in the MT and MLT program are full-time, day students and come from within Michigan. Consequently, all of our internships sites are in Michigan. This is a benefit to the state because the almost all the students remain in the state immediately after their internship is completed. This may change, however. We have had to investigate the possibility of sending students out of the state for their internship in 2012 and beyond. The competition for sites has become fierce and with increased numbers of students in other University-based programs, we will have to be creative in locating internship sites.

The workforce in the medical laboratory field has been traditionally made up of women. This is reflected in the demographics for our programs. The number of male students enrolled in CLS varies from year to year, so there really is no trend; however, we may enroll a higher percentage of males than many of the other CAHS programs. Whether the students are male or female has no impact on our curriculum.

In recent years, we have seen fewer students from outside of Michigan, and the U.S., enroll in the CLS programs. The reason for this may be lack of recruiting outside of Michigan, the students are finding programs closer to home or they don't know our programs exists once they get to Ferris. We have had students from other states in the past years, however.

2 a-b) Quality of Students - Medical Technology, BS, (MT) Program

		2006	2007	2008	2009	2010
		MT	MT	MT	MT	MT
GPA	Range	2.3-3.81	2.22-4.00	1.77-3.93	2.3-3.92	2.47-3.97
	Average	3.14	3.13	3.05	3.05	3.18
ACT	Range	13-34	13-34	14-34	14-34	14-30
	Average	22.21	21.49	22.02	21.53	23.12
GPA (Graduated)	Range	2.66-3.59	2.72-3.77	2.66-3.72	2.76-3.91	2.68-3.86
	Average	3.01	3.39	3.23	3.28	3.11
ACT (Graduated)	Range	19-29	18-32	15-29	14-29	14-34
	Average	23.33	25.18	20.90	22.75	21.84

2 a-b) Quality of Students - Medical Laboratory Technology, AAS, (MLT) Program

		2006	2007	2008	2009	2010
		MLT	MLT	MLT	MLT	MLT
GPA	Range	2.69-3.64	1.87-3.89	2.15-3.8	1.86-3.4	2.71-3.72
	Average	3.23	2.78	2.86	2.74	3.16
ACT	Range	14-24	16-25	16-27	16-30	19-21
	Average	20.33	20.44	19.8	20.60	20
GPA (Graduated)	Average	3.19-3.19	2.56-3.50	2.16-3.53	2.78-2.78	3.53-3.77
	Range	3.19	3.13	3.35	2.78	3.64
ACT (Graduated)	Average	14-14-	19-23	24-24	NA	25-27
	Range	14	21	24	NA	26

A. Profile of Students

2) Quality of students

a) Other than ACT and GPA we do not use any other methods to assess the quality of students entering the programs. We do however require students to earn a C or better in BIOL108/286, BIOL205 and CHEM214 to enter in the program. This is based on a study of indicators of student success in the CLS programs. In addition, we have learned that a student who earn less than a C in the courses with a CLLS prefix tend not to be as successful on internship as those who earn a grade of C or better. The less than average student typically requires more individualized help during the internship, which may not be available due to staffing reductions in some labs.

b**)** Academic awards earned by students in the CLS programs include the American Society for Clinical Laboratory Sciences (ASCLS) scholarship, Andrea Warfield Scholarship for non-traditional students, the Call scholarship for Allied Health students, Biomedical Exhibitors Association of Michigan (BEAM), and American Proficiency Institute (API). These awards bring regional and national attention to the high quality, dedicated and involved CLS students we attract to the program

c) Scholarly activities/creative activities in which the CLS students have participated:

- Michigan Society for Clinical Laboratory Science (MSCLS) meetings where they are able to participate, along with professionals in the field, in continuing education sessions
- Student representative at the ASCLS National Membership meeting.
- Poster presentations at MSCLS, including first, second and third prizes
- MSCLS student competition individual first place
- MSCLS student competition team first place
- Central Michigan Association of Medical Technologists meetings where they are able to participate in continuing education sessions
- Association of Clinical Laboratory Science students sponsors a speaker for the Central Michigan Association of Medical Technologist meeting. The meetings are held in Mt. Pleasant each month.

All of these activities are models for professional behavior. The degree is not the end of the education.

d) Other Significant Student Accomplishments

- Past president of Ferris Student Government
- Involved with Kappa Psi, including president of the FSU chapter and participation at the national level.
- Student tutors
- Student Ambassador
- Involved in CAHS Summer camps
- Summer internship at The Mayo Clinic, Rochester, MN

These activities put students in leadership positions.

3) Employability of Students (MT and MLT)

a) For the most recent graduating class for which we have data, 2010, 100% of graduates have become employed full-time in the field within one year of receiving their degree. This shows the demand for highly trained clinical laboratory scientists.
b) The average salary of graduates who become employed full-time in the field is $ 20.48/hr for MT. No MLT's returned the survey so we have no data for them. The salary is approximately the same as the last APR. I think this number is artificially low because of the small number of surveys returned.

c) Less than10% of graduates have become employed as part-time or temporary clinical laboratory scientists within one year of receiving their degree.
d) Many of our students commit to jobs before the end of their internships and do not require career assistance. If the student does require assistance it often begins with advising from a faculty member who may direct them to a potential employer. They also are encouraged to attend on-campus job fairs if their schedule permits, although many times they are off-campus. Refer to the results of the student perceptions survey.
e) 100% of the graduates who returned surveys continue to be employed in the field. This high percentage shows a dedication to the career.
f) 100% of MT graduates who returned surveys remain Michigan. We cannot comment on the MLT graduates. This high percentage shows the strong sense of loyalty to family and concern for quality health care in Michigan.
g) None of the students indicated that they were continuing their education. This low number may also indicate the student's dedication to the profession, and the career opportunities available to them with their bachelor's degree.
h) In the past, any of the graduates who continue their educational training enroll in universities in Michigan, including the MLT graduates who continue their education at Ferris. Students attend graduate programs the University of Michigan, Wayne State University, Central Michigan University and Western Michigan University.

B. Enrollment

1. Anticipated Fall enrollment, **as of May17, 2011**

PMT: 47
MT: 47
PMLT: 25
MLT: 1

2. Enrollment and SCH Trends

The numbers listed in the table below are from the FSU Fact book.

	Fall 2006		Fall 2007		Fall 2008		Fall 2009		Fall 2010	
	Enrollment	SCH	Enrollment	SCH	Enrollment	SCH	Enrollment	SCH	Enrollment	SCH
MLT	8	**	13	**	11	**	6	**	7	**
MT	63	**	63	**	47	**	48	**	48	**
Total	71	**	76	**	58	**	54	**	55	**

** I have NO idea where this number is.

According to the university data our enrollment has remained relatively stable since our last program review. The number of SCH is related to the number of students enrolled. The numbers reflect fall semester totals.

3. The CLS program has been using an application process for 2 years. The students complete the application and submit it in January for the class that begins in May. A total of thirty-two qualified students can be admitted, MT and MLT combined.

This year (2011), for example, we had 56 applicants, sixteen of which had met all the criteria for admission. The remaining 40 were completing one or more required course. Once the spring semester was over, the program coordinator looked at the applicants again to verify the minimum GPA and all required course had been met and admitted all the student who met the qualifications.

4. Those students who apply and meet admission criteria are admitted to the MT or MLT program. Those who do not meet admission criteria are placed into pre-MT or pre-MLT until they meet admission criteria.

5. Of those who are admitted, 100% enroll.

6. For years, the CLS enrollment goal was a 10% increase per year. However, the last two years we have been at (or very near) capacity. A revised goal may be to maintain our current numbers and ensure we have more applicants to the program than we have places. In that way, we can almost guarantee full sections of CLLS courses We use a variety of strategies to increase/maintain enrollment:

Strategy for Increasing Enrollment	Person(s) Responsible
Open Lab Days	CLS Faculty
Visits to CHEM121classroom	CLS Faculty
Career Fairs	FSU Admissions, CLS Alumni
High School Visits	FSU Admissions, CLS Alumni
Community College Visits	FSU Admissions, CLS Alumni
Dawg Days	FSU Admissions, CLS Faculty

Strategy for Increasing Retention	Person(s) Responsible
Advising	CLS Faculty
Hands-on laboratory courses	CLS Faculty
Variety of teaching methods	CLS Faculty
Active student organization	CLS students, Faculty advisor
Progression policy	CLS Faculty

We feel that the most successful strategy is the visits to the undergraduate chemistry courses. Each year we recruit several qualified students who are not accepted into pharmacy or optometry school and are searching for a program to which their credits will transfer.

C. Program Capacity

1. The appropriate program enrollment capacity for the CLS programs is 16 students per laboratory section and 32 per lecture section. Limitations to our enrollment capacity are:
    a. Available faculty
    b. Student safety concerns in the laboratory
    c. Available laboratory space
    d. Actual numbers of instruments for students to operate
    e. Limited number of affiliated hospital laboratory sites

    Note: with the introduction of the Molecular Diagnostic degree, those students will be required to enroll in some of our introductory lecture courses. They will not enroll in the concurrent lab section. Consequently, our enrollment may appear higher for some of our lecture sections.

D. Retention and Graduation

1. To examine the attrition rate we looked at our students who enrolled in CLLS101 and tallied the numbers of students who left the program. If we could, we identified the reason. Since our last APR, we have had approximately 164 (up from 100) students enroll in CLLS101. Fifty-seven (up from twenty-five) are no longer in a CLS program. The reasons are varied:

Reason	# of Students
Academic dismissal	14
Enrolled in Molecular Diagnostics	4
Switched to Health Care Systems/HIT	2
Switched to Nursing	3
Switched to Sonography	2
Switched to Nuclear Medicine	2
Switched to Radiography	2
Switched to College of Arts and Sciences	7
Switched to College of Business	4
Unknown reasons	17

2. Our current goals and strategies to retain students include:
    a. Intensive advising- students are required to meet with their advisor at least twice per academic year, students who are having difficulty are contacted by their advisor
    b. Progression review policy
        i. Grade of C or better in BIOL205
        ii. Grade of C or better in BIOL108 or 286
        iii. Grade of C or better in CHEM214
        iv. Grade of C or better in all CLLS courses

    We have analyzed grades in BIOL205 and CHEM214 and compared them to how well a student performs in the CLLS program. We concluded those students who did not receive a grade of C or better would not be successful in the program and internship.
3. The trend according to the FSU Fact Book is that our enrollment appears to be relatively stable. It may be worth noting that many MLT students change their curriculum into MT program. Consequently, they do not graduate from the MLT program.
4. The number of students who enroll in the program and graduate in the prescribed period of time is nearly 100%. Most who take more than the “allotted” time transfer in from other programs or colleges and are missing professional course prerequisites, so it takes them longer to finish. There are occasional students who must repeat a CLLS course. That will delay their graduation by one year.
5. On average, it takes an MT student 4-5 years to graduate from the program, while an MLT graduates in 2-3. Most who take more than the “allotted” time transfer in from other programs and are missing prerequisites, so it takes them longer to finish

E. Access

1. The CLS programs make ourselves accessible to students by:
    a. Offering multiple entry points (summer and fall)
    b. Separating lecture and lab courses to allow flexibility in scheduling and to facilitate transfer students
    c. Adapting FerrisConnect for our clinical internship and mixed delivery courses

2. The actions described in (1) above have had the following impact:
    a. Significantly increased the enrollment in the CLS programs, subsequently increasing the need for resources--supplies and costs and put added pressure on

the department to find instructors for the courses. This has had no impact on the load of the tenure faculty because we have been at maximum load for 2-3 years.

b. Summer and fall entry points allow a greater number of students the opportunity to enroll in the CLS programs, particularly students who are not accepted into the programs in pharmacy and optometry, but who have all of the necessary prerequisites for professional courses.
c. Separating lecture and lab courses allows flexibility in scheduling and eases the transfer of students into the program.
d. Using FerrisConnect for the clinical internship has reduced printing and postage costs, streamlined the paperwork, increases the speed at which students are graded, and facilitates communication between on-campus and off-campus faculty. However, the development was time consuming for a faculty already on overload. It also assumes the clinical affiliate will have a computer that will allow a student to use the internet. This has security implications for the laboratory, although all of our affiliates allow such access.

F. Curriculum

1. Refer to the table below for a list of program related course using The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). Refer to appendix C for a detailed description of the each CLLS course. Describe and assess the program-related courses required for graduation
    a. Refer to the table below for our directed electives. Note: we do not require students to enroll in specific Cultural Enrichment or Social Awareness electives. This allows the student to choose course in which they are most interested. list directed electives and directed General Education courses and provide rationale for these selections

Course	MLT Program	MT program	Rationale
MRIS102	X	X	Serves as foundation for medical terminology
CCHS101	X	X	CAHS core curriculum; information all consumers should know
CCHS102	X	x	CAHS core curriculum; information all health care workers should know; Contains content required by NAACLS
ENGL150	X	X	University requirement
ENGL250	X	X	University requirement
ENGL321		X	University requirement; important for those students continuing to a management position or graduate school; Contains content required by NAACLS
COMM221	X	X	University requirement; good foundation in working and communicating within workplace; Contains content required by NAACLS
MATH117	X	X	University requirement; meets our need for Contains content required by NAACLS

Course	MLT Program	MT program	Rationale
BIOL108/286	X	X	Meets general education; required for CLLS235; Contains content required by NAACLS
BIOL205		X	Meets general education, Prerequisite for many CLLS courses, Contains content required by NAACLS
BIOL300		X	Meets general education, Prerequisite for many CLLS courses, Contains content required by NAACLS
CHEM114	X	X	Meets general education, Prerequisite for many CLLS courses, Contains content required by NAACLS
CHEM214	X	X	Meets general education, Prerequisite for many CLLS courses, Contains content required by NAACLS
CHEM324		X	Contains content required by NAACLS
CCHS315		X	Contains content required by NAACLS

b. There are no hidden prerequisite courses.

2. Yes. Please refer to the attached curriculum check sheets?
3. We are in the process of implementing the most recent curriculum changes.
4. We examine our curriculum in depth every 3-5 years and compare it to the NAACLS essentials. In this way we ensure we are covering current and relevant material.

The following NAACLS check-sheet lists the FSU courses meeting the NAACLS Standard. Where appropriate, clarifying comments are included in bold italics. For reference, the FSU course catalog descriptions are included on the following pages (see Section 3.F.III.3). Appendix 6

Standard	**Medical Technology**	**Medical Laboratory Technician**
Standard 22B1		
Anatomy/physiology	***BIOL 205***	***BIOL 205***
Immunology	***CLLS 252/253***	***CLLS 252/253***
Genetics/molecular biology	***BIOL 103***	
Microbiology	***BIOL 108 or BIOL 286***	***BIOL 108***
Organic/biochemistry	***CHEM 214, CHEM 324,***	***CHEM 214***
Statistics	***MATH 117,CCHS 315***	***MATH 117***
Standard 22B2		
Pre-analytical, analytical and post-analytical components of laboratory science		
Hematology	***CLLS 231/232, CLLS 431/432, CLLS456***	***CLLS 231/232, CLLS256***
Hemostasis	***CLLS 219/220, CLLS456***	***CLLS 219/220, CLLS256***
Chemistry	***CLLS 216/217, CLLS 356/357, CLLS456***	***CLLS 216/217, CLLS256***
Microbiology	***BIOL 108 or BIOL 286, CLLS 236/237, CLLS 241/242, CLLS 436/437, CLLS456***	***BIOL 108, CLLS 236/237, CLLS256***
Urinalysis	***CLLS 218/220, CLLS456***	***CLLS 218/220, CLLS256***
Microscopy	***CLLS 220, CLLS 232, CLLS 237, CLLS 432, CLLS 437***	***CLLS 220, CLLS 232, CLLS 237 CLLS256***
Molecular diagnostics	***Introduced in CLLS 357, but needs enhancement; may be able to take some of the new DMOL courses***	
Immunology	***CLLS 252/253***	***CLLS 252/253, CLLS256***
Immunohematology	***CLLS 258/259, CLLS456, CLLS 458/459***	***CLLS 258/259, CLLS256***

Standard 22B3		
Principles and practices of quality assurance/quality improvement as applied to the pre-analytical components of laboratory services.	***Integral part of clinical laboratory sciences: CLLS 216/217, CLLS 241/242, CLLS 258/259, CLLS 231/232, CLLS 236/237, CLLS 241/242, CLLS 252/253,CLLS 356/357, CLLS 431/432, CLLS 436/437, CLLS 456, CLLS 458/459, CLLS 465***	***CLLS 216/217, CLLS 241/242, CLLS 258/259, CLLS 231/232, CLLS 236/237, CLLS 241/242, CLLS 252/253, CLLS256***
Principles and practices of quality assurance/quality improvement as applied to the analytical components of laboratory services.		
Principles and practices of quality assurance/quality improvement as applied to the post-analytical components of laboratory services.		
Standard 22B4		
Application of safety to laboratory practice.	***Introduction to topic in CCHS 102; safe handling of patient specimens and general safety in the clinical laboratory is described and practiced in all CLLS courses.***	***Introduction to topic in CCHS 102; safe handling of patient specimens and general safety in the clinical laboratory is described and practiced in all CLLS courses.***
Application of governmental regulations and standards as applied to laboratory practice.	***CCHS 102,CLLS 456, CLLS 465, CLLS 491***	***CCHS102, CLLS 256, CLLS 291***
Standard 22B5		
Principles of interpersonal and interdisciplinary communication and teambuilding skills.	***COMM 221, CLLS 465***	***COMM 221***
Standard 22B6		
Principles and applications of ethics.	***CLLS 101***	***CLLS 101***
Principles and application of professionalism to address ongoing professional career development.	***CLLS 101, CLLS 465, CLLS 499***	***CLLS 101, CLLS256***
Standard 22B7		
Education techniques and terminology sufficient to train/educate users and providers of laboratory services.	***CLLS 465***	

Standard 22B8		
Knowledge of research design/practice sufficient to evaluate published studies as an informed consumer.	***CLLS 499***	
Standard 22B9		
Critical pathways and clinical decision making.	***Algorithmic thinking/clinical problem solving is introduced/reinforced in every CLLS course, and culminates with special emphasis in CLLS 456; CLLS 491***	***Algorithmic thinking/clinical problem solving is introduced/reinforced in every CLLS course, and culminates with special emphasis in CLLS 256; CLLS 291***
Performance improvement.	***CLLS 465, CLLS 491***	***CLLS 265, CLLS 291***
Dynamics of healthcare delivery systems as they affect laboratory service.	***CLLS 465***	
Human resource management to include position description, performance evaluation, utilization of personnel, and analysis of workflow and staffing patterns.	***CLLS 465, HCSA 335***	
Financial management: profit and loss, cost/benefit, reimbursement requirements, materials/inventory management.	***CLLS 465***	

H. Quality of Instruction

1. Discussion of student and alumni perceptions: refer to section 2.

2. Discussion of advisory committee and employer perceptions: refer to section 2.

3. The CLS programs continue to improve the quality of our education by adding updated instrumentation. The major improvement is the addition of a laboratory information system (Harvest, Orchard Software Corporation 701 Congressional Boulevard Suite 360 Carmel, IN 46032). This allows the students to get experience in ordering tests, generate barcode labels, print work logs, and upload and download data through instrument interfaces. We have also added several new pieces of laboratory equipment since the last program review: BacT Alert 120, Coulter AcT Diff, electronic differential counts, and urine dipstick readers, among other things. We have successfully enhanced our lectures with FerrisConnect. For example, we use it as a mechanism to continue to have discussions outside of the classroom, delivery of review material, quizzing, and a secure grade book.

We have also improved the curriculum by creating a course in specimen collection. This has allowed us to remove that content from the existing courses leaving more room for more appropriate content.

3. Professional Development by the Faculty: The faculty have attended a variety of Faculty Center for Teaching and Learning (FCTL) courses, including FerrisConnect help courses and most recently “Adobe ConnectPro.”. For more detail see faculty CVs in the appendix
4. Efforts to increase interaction between students with faculty include a yearly trip to the MSCLS meeting and monthly trips to Mt. Pleasant to attend the Central Michigan Association of Medical Technology meeting. These are good opportunities for faculty and student to earn continuing education credit and to interact outside the classroom in a professional setting.
5. Current laboratory practice has always infused teaching and learning in the CLS courses and this has not changed. As instructional technology has improved faculty have quickly adapted to innovative teaching method. The CLLS courses incorporate a variety of reading, writing, research, and lab assignments to accommodate various learning styles.
6. Having been successful at CLS for the past 45 years, we will continue to adapt course content and deliver them as circumstances require. We interact with all of students for many hours per week. Consequently, we have a good idea of their learning styles and can identify those students who may require an extra effort on our part to help them succeed.

H. Composition and Quality of Faculty

1. Tenured and tenure-track Faculty
   a. Daniel P deRegnier, MS, MT(ASCP), Associate Professor, Clinical Coordinator. Refer to appendix for current CVs and summaries of professional activities.
   b. Sandra Cook, MS, MT(ASCP); Tenure-track. Refer to appendix for current CVs and summaries of professional activities
2. Workload
   a. The normal workload in the program is 18 contact hours/week, or an annualized workload of 36 contact hours. The faculty in the program accepts overload nearly every semester. This is in line with the college wide policy of workload.
   b. The program coordinator receives 25% release time for coordinator related duties.
3. Recruitment
   a. Faculty members are recruited using the procedure approved by the university. Once the approval to hire faculty has been obtained, a search committee will be formed. The committee will be chaired by a faculty member within the program and will have representation from the program faculty, faculty within the department and at least one member from outside the department. A national search will occur with advertising placed in a variety of professional publications and on-line resources. After review of applications, telephone interviews will be conducted and qualified applicants invited to campus for an interview. During the interview process, the applicants will meet with program faculty, administration and will be required to make a 30 minute long presentation**.**

   b. New faculty are required to possess at least a Master's Degree, preferably in Clinical Laboratory Sciences, be a certified Medical Technologist, and have teaching experience.
   c. The program has no set goals for hiring new faculty members of a particular race, gender or ethnicity other than to use University guidelines

4. Orientation of new faculty.
   a. We would expect a new faculty member to take advantage of the FCTL's New Faculty Transition Program. A current CLS faculty would be assigned to mentor the new faculty.
5. Reward Structure
   a. Up until a few years ago, in addition to salary, the faculty was rewarded with departmental and college funds to offset travel to professional meetings. There were no eligibility criteria, although the faculty were required to apply for funds through the CAHS Faculty Affairs Committee. The reward was limited to $500/faculty member per year. Faculty members were expected to apply for Timme funding, as well. Departmental incentive funds had also been available, on a limited basis, to offset the cost of travel for professional development. Due to the request for university-wide budget reductions in the past few years, within the College, any travel not related to direct student instruction has been curtailed, however, we are hoping it will be reinstated soon. The faculty are still encouraged to apply for Timme travel awards or secure outside funding.

      Money for software or reference materials is made available from incentive funds earned through off-campus teaching efforts or PDIs from FCTL.

   b. The current salary structure sometimes makes it difficult to attract faculty, especially adjunct faculty. The current pay scale for adjuncts was developed in 1994 so it is hard to recruit quality faculty to travel to Big Rapids.
   c. The reward structure to support faculty productivity in teaching is in place. Faculty who accept overloads are compensated according to the university standard. However, since faculty routinely accept overload each semester, research is

curtailed. Both faculty members in the program participate in several college and university committees. There is no program in place to reward faculty to actively participate in research and service. Additional faculty would address this issue. There is no reward structure in place for enhancing diversity and inclusion. These have not been an issue due to the inability to hire additional faculty.

6. Graduate instruction
   a. There are no graduate courses in the CLS programs.

7. Non-Tenure-Track and Adjunct Faculty
   a. Non-Tenure-track
      i. Mariane Setyabudi, MS, MT(ASCP). Refer to appendix for current CVs and summaries of professional activities

   Adjunct: CLS utilizes adjunct faculty to teach the specimen collection course and for supplemental coverage in our simulated laboratories.
   b. See (7a) above.
   c. An adjunct instructor in the CLS program should be a certified medical technologist (MT), preferably with a Masters degree.
   d. The problem with using only adjunct faculty, in our opinion is the lack of consistency and the difficulty finding qualified instructors who are willing to relocate, or at least travel, to Big Rapids. There is a limited pool of qualified candidates, so we are left with using adjuncts who may have limited knowledge of the topic and no teaching experience. This has the potential to affect the quality of the student's education.
8. Our accrediting agency, National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) has no opinion on the hiring of adjunct faculty other than "Faculty designated by the program must demonstrate adequate knowledge and proficiency in their content areas and demonstrate the ability to teach effectively at the appropriate level."

I. Assessment and Evaluation

At this time the TracDat material included is current as of Spring 2011. See the appendix 2. The TracDat material is a work in progress and we will be concentrating on refining our course outcomes and criteria for success. The first thing we will focus on is reducing the number of outcomes we are assessing for each course. We are trying to assess too many items. Once the numbers of outcomes are reduced to a more manageable level we can concentrate on keeping the information updated. There a many gaps in reporting. Finally, once the all the data is complete we can begin to use the information to improve the courses.

The data that does exist in TracDat is mix of outcomes that have been met and many that have not. We will examine each result and determine if the outcome needs to be changed. It may be more beneficial to have results from more than one year, however, before any major changes are made to the criteria for success.

J. Service to Non-Majors

a. There are no CLS courses that are designated as General Education service courses

b. Non-General Education service courses

Not applicable.

c. Not applicable

d. Discussions have been held with faculty in the Forensics tract of the Applied Biology program regarding forensic student enrollment in the clinical chemistry courses. .

K. Degree Cost and Productivity Data

Productivity Report Aggregated by Course Prefix (CLLS)

Year	Student Credit Hours (SCH)				Full-Time Equated Faculty (FTEF)				SCH/FTEF			
	Summer	Fall	Spring	F + Sp	Summer	Fall	Spring	Avg.F + Sp	Summer	Fall	Spring	F + Sp
2006-2007	0.00	637.00	690.00	1327.00	0.00	3.50	3.77	3.63		182.00	183.02	365.06
2007-2008	354.00	588.00	632.00	1220.00	1.58	3.09	3.33	3.21	223.77	190.6	189.85	380.42
2008-2009	351.00	604.00	611.00	1215.00	1.65	3.67	2.92	3.29	212.73	164.58	209.55	368.98
2009-2010	407.00	605.00	716.00	1321.00	2.39	3.58	3.29	3.43	170.29	169.04	217.59	384.60

When ranked by SCH/FTEF (aggregated by course prefix) we are 98th out of 164,(compared to 112th out of 140)
We can get to the median, but not much lower than that. Our current enrollment has increased but those numbers won't show up for a couple of years.

Degree Program Costing 2007-2008

	Avg. Instructor Cost/SCH	Avg. Dept Cost/SCH	Avg. Dean's Cost/SCH	Total Avg. Cost/SCH	Total Program Instructor Cost	Total Program Dept. Cost	Total Program Dean's Cost	Total Program Cost
FSU*								
CAHS*								
CRHA* Dept.								
MT	131.12	26.57	11.99	169.67	16,258.56	3,294.17	1486.49	21,039.22
MLT	197.25	25.89	12.22	235.36	16,766.65	2,200.36	1,038.41	20,005.42

* I don't know where to find the data for these categories.

A reason for the relatively high costs of the MT and MLT programs is related to our equipment intensive laboratories. We maintain one of the best-equipped labs of any MT/MLT program in the nation. Consequently, our students are very well prepared as they enter their clinical internship. Educating health professionals is expensive.

L. Administration Effectiveness

1. Adequacy of administrative and clerical support.

The MT and MLT programs to the Clinical Laboratory, Respiratory Care and Health Administration Department. Since that time, we have been extremely happy with the support we have received from our department head, Greg Zimmerman. We share a secretary with 4 other programs, but she is efficient enough to handle all our program needs. The secretarial support, including work-study students, in our Student Affairs office is adequate to meet the needs of the programs. The counselor and recruiter are very sensitive to our enrollment issues and work with us to increase our enrollment. Not sure the last two sentences belong in this part.

Because of limited faculty availability, students attend class until late afternoon or evening and have to return the next day at 8:00.

2. Efficiency of the program/department

The program coordinator, Daniel deRegnier, new to the position and is learning the job. He holds regular program meetings and has great communication with the other faculty member and the department head. Concerns are addressed in a timely manner. The current department head does an outstanding job the we feel like we finally have an advocate for the programs.

3. Class and teaching schedule preparation

Our department head prepares the class schedule with input from the faculty. This process works well for us.

4. Students ability to take courses in a timely manner

For the most part students are able to complete the MT program in 9 semesters (including one summer session) unless they choose to take longer. Students in the MLT program can finish the program in 5 semesters (including one summer session) unless they choose to take longer. The CLLS courses are offered in a preset scheduled so the students are assured that they will be able to graduate on time.

Section 4: Facilities and Equipment

A. Instructional Environment

1. Since the previous APR the CLS laboratories (VFS421 and 423) have been completely remodeled and upgraded. This has allowed us to bring more technology into the labs, including ceiling-mounted projection units with computer document camera and the ability to project images from our teaching microscope. Currently, the on-campus classrooms in VFS have all been updated. All classrooms are equipped with ceiling-mounted projection units and computers. These units make it much easier to deliver course material. There is one classroom with tables rather than desks, which are fine, except the tables are very narrow and unstable. One classroom, 326A, has occasional issues with excessive noise now that the former student computer lab is used as a instructional classroom.

2. Currently, all of the classrooms are in good condition and have no negative impact on teaching.

3. Because of our enrollment on-campus increase we will encounter serious limits on our laboratories. During fall semester our 2 labs are in use from 08:00 until 6 pm. In the spring, one is operated until 9 pm a couple of days per week.

B. Computer Access and Availability

1. There are 6 computers available for students in our labs. The main role of these computers is to provide access to our Laboratory Information System (LIS), although students are able to check email or access FerrisConnect. In order for the LIS to function in its full capacity it requires periodic upgrades and version changes. This is accomplished through an annual support agreement with the vendor. The CAHS does not have a student-computing lab at this time.

2. The main role of the computers in the CLS labs is to provide access to our LIS although students are able to check email, CLS educational tutorials or access other course materials. The CAHS does not have a student-computing lab at this time. This may be an inconvenience to some of our students, but because so many more students today carry their own computing device and have access to campus-wide Wi-Fi, the lack of a student computing lab in the building may not be an issue any longer.

3. The computer lab in VFS is no longer open for general student use, but it still serves a role in instruction. For example, it can be reserved for a classroom meeting to access a licensed software application or delivering on-line exams *en mass*. Care needs to be taken, however, to make sure the computers are scheduled for a regular update plan that includes hardware and software.

4. Currently there is no written plan to upgrade the computers in VFS421 and 423. We do however; get “hand-me-down” computers that are taken out of service due to an upgrade. If the old computer is newer than one of our lab computers, then we are upgraded. We anticipate including this in our strategic plan for next year and will earmark any future incentive funds for purchase of the computers. We were recently awarded a Ferris Foundation Grant to purchase 4 lap top computers to use exclusively with our LIS. The will allow more students to access the LIS and input patient results directly.

5. We use FerrisConnect for our internship courses. It is an efficient way to communicate, deliver documents, administer quizzes, and evaluate the student while they are off campus. Our clinical affiliates are very happy with the system. We also use FerrisConnect to enhance many of our courses. For example, we will post lecture notes,

host discussions or give review materials. Most students seem comfortable with using FerrisConnect and have come to rely on it for supplemental lecture materials.

6. We have been frustrated in the past with the level of computer support we have received. For a long time we had computer support in the VFS building. Now, there is no on-site staffing so if there are any computer issues we have to call computer support and a technician may be required to come across campus to address the problem or remain on the phone for support. This doesn't seem too efficient to us but we are still evaluating the process.

Support for FerrisConnect is spotty at best, but has improved. We appreciate that the FCTL has occasional training support sessions, but many courses that are offered are scheduled at times that are inconvenient because of the CLS faculty in-class teaching load.

C. Other Instructional Technology

1. Our LIS is used intensively in the instruction of the MT and MLT students. An LIS is an integral part of a real laboratory and we use ours to teach students to give them practical experience. We believe we are one of only a handful programs, nationwide, who have this resource.

   The clinical laboratory is a technology intensive area of health care. The entire program at Ferris involves instructing students in the use of technology that is found in the health care setting. Consequently, the analyzers that our students are trained on are also considered "instructional technology" along with the software that operates them.

2. See number 1

3. The LIS we use is more than adequate for what we do with it; however, we need to maintain support or it goes out of date quickly. The only way to do that is by purchasing an annual maintenance contract. It is currently in the budget, but we are unsure of how long it will remain there. Since the analyzers are such an integral part of the student's education and are considered instructional technology, it is important that they are also kept in good working order. This is best accomplished with annual maintenance agreements. Currently, we have maintenance contracts on only two of the analyzers. Increased funding to purchase contracts on the others would be ideal and be very beneficial to the students. Again, we could earmark any future incentive funds for maintenance agreements.

4. There is no written plan that includes purchasing the maintenance agreement for the any analyzers on an annual basis. In our opinion, there should be, but we understand there are issues with the overwhelming cost of maintenance agreements that tend to make this unrealistic.

5. Thanks to the generous donations from laboratories and alumni we have one of the best-equipped student labs in the country. They not only donate equipment, supplies and reagents, they also contribute their time and expertise. For example, honorary doctorate and alumnus of the year, Robyn Myers, (MT'83), who is works for Abbott Laboratories, continues to supply her expertise at no charge. Also, another graduate, Pam Rippee, employed in sales for Becton Dickenson, continually donates phlebotomy supplies to the program. This type of involvement by our graduates allows us to reduce our budget, gain up to date supplies and show the students other career paths with an MT or MLT degree. While these donations are greatly appreciated, they do not come to us on a regular basis, and therefore, cannot be relied on as a fixed source of supplies.

D. Library Resources

1. The print and electronic resources available through FLITE are adequate for our program.

2. The service and instruction that is provided by FLITE faculty and staff meet the needs of the program. The allied health liaison has provided excellent support for the program.

3. The budget allocation provided by FLITE to our program seems to be adequate. The liaison keeps in contact and informs us of any purchases that are pending. We are allowed to have input into some of the selections that are added to the collection.

Section 5 Conclusions

A. Relationship to FSU Mission

"Ferris State University prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-oriented, broad-based education, Ferris serves our rapidly changing global economy and society

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. We are considered by NAACLS to be a national leader in CLS education in large part due to our innovative simulated laboratory. We have designed the course to serve as a bridge from "student" to "technologist."

B. Program Visibility and Distinctiveness

Ferris State University's CLS 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. Grand Valley State University and Saginaw Valley University recently revamped their MT program and used our program as a model, including a simulated laboratory.
The on-campus simulated laboratory provides cost-effective preparation for CLS students. This unusual aspect of Ferris's program enables students to be prepared to graduate and practice their profession with a much shorter internship experience. The students arrive ready to perform well at their assigned affiliate, having had considerable practice in routine testing and problem-solving lab 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 modern clinical laboratory. The students at the affiliates are reviewing, rather than learning for the first time, the cognitive knowledge about the clinical significance of the laboratory results, correlation of results with patient diagnoses, and 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.

Our program was one of the first to incorporate a laboratory information system (LIS) into the on-campus courses. The use of our LIS decreases the learning curve that a student encounters while on internship. Our extensive use of instrumentation while the student is on campus is also unusual among other CLS programs. We also were early adopters of FerrisConnect (previously WebCT) for use while the students are on their clinical experience. This decreases costs to the University and administrative work by the education coordinator at the affiliated laboratory. This allows for closer communication ties with the students, which they appreciate.

We have also increased our visibility on campus by visiting chemistry classes to introduce the students to our programs and the profession of laboratory medicine. We are the only university program in the Lower Peninsula that has this distinction.

C. Program Value

The CLS programs at Ferris State University prepare a large number of the annual CLS graduates in Michigan. Additionally, we are the only program that offers CLS courses in proximity to the students in the northern Lower Peninsula. Program graduates have been hired statewide. Other graduates have moved to many states in the nation. Besides filling the ever-growing demand for professionals in the traditional clinical laboratories, program graduates are employed in industry, laboratory management, education, research, crime labs and many other related fields.

D. Enrollment

As reported earlier, the CLS programs have not been at capacity since the last APR. However, with the help of the former CAHS recruiter and extra diligence by the faculty and administration, our numbers have risen and appear to be staying there. The past two years have seen more qualified applicants to the program than there are available seats.

E. Characteristics, Quality and Employability of Students

Ironically, a large number of job openings still exist, but some programs around the country have reported decreased enrollment or have been threatened with closure. However, the CLS programs at Ferris provide 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 enroll increasing numbers of nontraditional students, as well as students from traditionally under-represented groups. This is especially true of the students entering the phlebotomy certificate. We not only see an increase in the numbers of all students, but the quality, as well.

Demand for graduates continues to be strong. Despite the nearly constant re-organization and re-engineering of clinical laboratories, graduates easily find entry-level employment in a variety of settings. One hundred percent of CLS graduates are employed after one year of graduation.

F. Quality of Curriculum and Instruction

Survey of students, adjunct clinical instructors, graduates and employers of graduates all indicate that the content of the curriculum is appropriate for clinical laboratory practice. We hope they will find our improved curriculum that much better. These groups also indicate that students and graduates are well prepared to progress through the program and practice in the profession. We have included a variety of instructional methods, including web-enhanced courses, problem based learning and critical thinking to enhance student learning.

However, for the past several years the faculty has not been supported, financially, in their efforts to attend and present at professional meetings. This remains true for financial support for us to update our clinical skills. This could potentially bring down the quality of instruction if the current policy is maintained.

G. Composition and Quality of Faculty

Since the last APR the CLS programs have lost one-quarter of the content expertise we feel are vital for the education of the highest quality laboratory professionals. At the same time, we have seen enrollment numbers that have remained stable and even now appear to have increase to a level never before seen for the CLS programs. In spite of teaching overloads, the faculty continue to participate in local, statewide, national, and international continuing education activities. In addition to attending programs the faculty have presented continuing education in a wide variety of formats and subjects. Some faculty have reviewed textbooks and are active in a variety of professional organizations.

The faculty has also served the University on a variety of College of Allied Health and the university-wide committees and task forces.

Students and graduates express satisfaction with the quality of the faculty and even rate the CLS faculty higher than faculty from other departments.

H. Academic Program Review Process

The CLS faculty appreciates the opportunity to participate in the Academic Program Review process. We understand the usefulness of the process and see its potential benefits. However, crafting a well-written detailed document is time consuming and puts a strain on small programs in which the faculty is already at load, and in some cases, teaching an overload.

In our opinion, we are a program worthy of enhancement. The rationale for our enhancement includes:

- The anticipated continued record numbers of applicants for our on-campus programs, MT and MLT.
- Development and expansion of off-campus programs, e.g. Molecular Diagnostics.
- Conversion of additional courses to a mix-delivery format.
- Continual maintenance and upgrade of existing laboratory instrumentation.

Clinical Laboratory Sciences (CLS)
Academic Program Review

Summary

The CLS program prepares respected, well-qualified graduates who are employed in a variety of laboratory settings in Michigan and nationwide. The job outlook for our graduates continues to be strong.

Areas of Strengths

Dedicated, experienced faculty

Even though we lost one-quarter of faculty due to retirement, the remaining faculty have covered the courses, with the help of multiple adjuncts.

High quality students

The use of a consistent application process and enforcement of the existing progression policy should increase the quality of the graduates of the CLS programs.

Nationally accredited program

The program continues to be accredited by the National Accrediting Agency for Clinical Laboratory Sciences. We are due for re-accreditation in 2012-2013.

Well-equipped student laboratories with a high degree of automation

The program continues to receive donated instrumentation and supplies from clinical affiliates. We also receive Perkins funds which allow us to purchase new or refurbished lab equipment. Experience using the equipment allows our students to be better prepared for their clinical experience, which gives our students an advantage in the job market.

Fully functional Laboratory Information System (LIS)

Our LIS makes us unique among other University-based CLS programs around the State of Michigan. Practicing on our LIS gives them experience that will transfer to their clinical experience and hopefully an advantage in the job market.

Unique Simulated Laboratory

We have been offering a Sim Lab for years and it has served as a model for other programs around the state of Michigan and nationally.

Strong relationship with our affiliates, alumni and other donors

Our program benefits from the generosity of our graduates and their employers. We are often the recipient of used equipment and expired reagents and supplies. Now, if we can only get them to complete our surveys!

Areas of Weakness: We understand that we have many limitations that may be keeping us from being an even stronger program.

Aging instrumentation and Instrumentation Costs (no contracts)

Our highly automated laboratories can be a double-edged sword. It is great for the students as long as the instruments are operational. It is costly to maintain the instruments without service contracts. We have had help from the College on an emergency basis. While this is appreciated, it is a temporary measure. We have had some “pro-bono” help from our graduates who have technical expertise operating the instrument but we cannot depend on their generosity. So, in the long run, maintaining the instrument by taking advantage of service agreements would be our preference. The only issue is that service contracts often run up to ¼ of our overall budget for each instrument.

Adjunct (qualified) availability

The three CLS faculty members accept overload assignments almost every semester. The department hires an adjunct to teach our specimen collection course and cover the simulated laboratory. Finding qualified adjuncts in this area is challenging to say the least. An additional faculty member would give us some stability and continuity in the curriculum.

Additionally, one full time 3 year temporary faculty was hired to teach in the CLS program, but she also has been serving as the program coordinator of the new Molecular Diagnostics degree AND designing the curriculum. We are in the process of hiring a faculty for that role, but until a hire is made, she will continue to do double-duty. It has been quite stressful for her.

Lack of clinical affiliates

The increased enrollment has been great for our program, but we are not the only program in the state to see increases. More students require more sites for the clinical experience and the competition between Ferris and the other Universities is fierce. We have lost several internship sites since GVSU changed their program. Now, with the program at SVSU requiring more sites, we seem to be on the losing end of this battle. Labs that historically took our students are being told by hospital administration to take students from other schools instead. We need our University to step up and help us fight for the internship sites we are losing. This year we are looking to other states, as far away as Iowa to send our students.

Attrition

Paradoxically, we have seen in increase in our attrition rate in the past few years. The explanation may be due to a couple reasons:

1) The enforcement of our existing progression policy and
2) the admission of some students who have struggled to meet the minimum requirements for entry into the program were finally admitted.

We don't plan on changing the progression policy at this time. We want to keep the admission standards at the current level, but will discuss the possibility of raising the minimum grade point required for admission. We hope that having a higher quality student to begin with will reduce the losses of students to academic difficulty we will lose fewer students to academic difficulty

Areas of Opportunity: Over the next several years we will look for opportunities to improve our programs

Instrumentation Service

In order to pay for the expensive maintenance of our instruments, we will look to outside funding or "sponsorship" of our labs.

Molecular Diagnostics BS degree

We will continue to market this unique BS degree as an alternate career path for students interested in laboratory science.

Molecular Diagnostics Certificate for currently certified MT's

This could be another opportunity for the CLS programs to increase our reputation as a leader in educating laboratory scientists around the state.

Increase Collaboration (across campus and within the college)

We have some limited success with inter-college collaboration. We will investigate the possibility of collaboration on larger scale in the future.

Non-credit Continuing Education

All newly certified laboratory professionals have to document a minimum number of continuing education (CE) credits. We believe, as educational professionals, we may be able to supply some of those credits by offering in-house CE for laboratorians.

Curriculum Revisions (Tweaks)

We are happy with the curriculum as it stands but can see a few places it would benefit from a minor adjustment.

Increase the number of affiliate sites

This will be a priority for us this year. It will be imperative to have enough places for all of our MT and MLT students to complete their clinical experience.

Increase GPA Requirement

We will look at this as way to reduce our attrition rate. Stronger students in the beginning may lead to stronger graduates.

Increase Faculty Number

Another faculty member is key in reducing the overloads the current faculty are experiencing. Plus, we are missing one-quarter of the content expertise. And, if we continue to have to share one of our faculty with Molecular Diagnostics, we will be down that much more.

CURRICULUM VITAE
Sandra A. Cook, M.S., MT(ASCP)
Clinical Laboratory Sciences Faculty
Ferris State University

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Big Rapids, MI 49307
(231) 591-2314
cooks@ferris.edu

Home Address
19145 Foxglove Circle
Big Rapids, MI 49307
(231) 796-8526
sandraacook@gmail.com

Education

2000 – 2002	Ferris State University Big Rapids, MI Master of Science, Career & Technical Education
1993 – 1994	Genesys Regional Medical Center School of Medical Technology Flint, MI Certificate of Completion/Registry Eligible
1989 – 1993	Aquinas College Grand Rapids, MI Bachelor of Science, Biology, Medical Technology

Professional Certification

1994	American Society for Clinical Pathology MT (ASCP) – Medical Technologist (MT 195377)

Employment Experience

2006 – present	Ferris State University Big Rapids, MI

Faculty, Clinical Laboratory Sciences

Courses Taught:

Introduction to Hematology
Introduction to Hematology Laboratory
Advanced Hematology
Advanced Hematology Laboratory
Urinalysis & Body Fluid Analysis
Hemostasis
Body Fluids & Hemostasis Laboratory
Introduction to Clinical Chemistry
Introduction to Clinical Chemistry LaboratoryAdvanced Clinical Chemistry Laboratory
Introduction to Specimen Collection
Specimen Collection Laboratory
MLT Simulated Laboratory
MT Simulated Laboratory
Phlebotomy Internship
Clinical Lab Science Theory for MLT
Clinical Experience for MLT
Clinical Lab Science Theory for MT
Clinical Experience for MT
Management Practice for MT
CLS Orientation
Management for the Clinical Laboratory
Orientation – Healthcare
Safety Issues – Healthcare
Medical Terminology
Introduction to Epidemiology

1997 – 2006 Ferris State University
Big Rapids, MI

Laboratory Coordinator, Clinical Laboratory Sciences
Job duties include maintaining student laboratories, preparing specimens, maintaining laboratory equipment, assisting faculty during labs, maintaining inventory/ordering of lab supplies, and supervision of student employees.

Adjunct Instructor, Clinical Laboratory Sciences
Courses Taught:

Summer 2006	Urinalysis & Body Fluid Analysis
Fall 2005	Simulated Laboratory
Summer 2005	Hemostasis & Body Fluid Analysis (co-taught)
Fall 2004	Introduction to Hematology
Summer 2004	Hemostasis & Body Fluid Analysis (co-taught)
Fall 2003	Introduction to Hematology
Fall 2002	Ferris State University Freshman Seminar
Summer 2002	Hemostasis & Body Fluid Analysis (co-taught)
Summer 2001	Clinical Chemistry I Laboratory

2005–present
University of Cincinnati
Cincinnati, OH

Distance Learning Facilitator, Clinical, Department of Analytical & Diagnostic Sciences
Duties include facilitating students in online Clinical Laboratory Sciences courses.

Courses Facilitated:
Clinical Hematology & Hemostasis
Human Genetics & Molecular DiagnosticTechniques
Clinical Parasitology
Clinical Mycology & Virology
Immunology
Laboratory Operations
Clinical Chemistry & Body Fluids
Clinical Immunohematology
Clinical Microbiology
Ecology & Environmental Toxicology
Statistics & Research in Clinical Laboratory Science
Humanities in Medicine

1994 – 1997 Sheridan Community Hospital
Sheridan, MI

Staff Technologist
Job duties included performing clinical testing in hematology, clinical chemistry, urinalysis, immunohematology, immunology, and microbiology.

1994 Genesys Regional Medical Center
Flint, MI

Microbiology Assistant
Job duties included setting up microbiological specimens for culture.

Professional Affiliations

1998 – present	American Society for Clinical Laboratory Science
1997 – present	Central Michigan Association of Medical Technologists; Secretary 2004-2011
1994 – present	American Society for Clinical Pathology

Continuing Education (CEU-Generating)

2010 Clinical Laboratory Educators' Conference (detail of PACE credits on file)
2009 Clinical Laboratory Educators' Conference (detail of PACE credits on file)
2008 Clinical Laboratory Educators' Conference (detail of PACE credits on file)

Michigan Society for Clinical Laboratory Scientists
Annual Meetings: 1994, 1998-1999, 2001-2011 (detail of PACE credits on file)
2005 - 2006 MSCLS Legislative Day at the Capitol
2005 MSCLS Seminar *Breast Cancer: Innovative Testing*

American Association of Blood Banks Teleconference
2006 – Legal Issues in Clinical Education

American Society of Clinical Pathologists Teleconferences
2001 – *Safety Issues in Phlebotomy*
1997 – *Evolving Role of Helicobacter pylori in Gastric Disease*
1995 – *Hemostasis & Malignancy*

SCACM Teleconference
1997 – *Pathogenic or Saprophytic Fungi: The New Emerging Pathogens*

CACMLE Self Study Courses
1995 -- Coagulation
1995 -- Anaerobic Bacteriology

Continuing Education Activities (Non-CEU-Generating)

1997 - present Central Michigan Association of Medical Technologists
Continuing Education Presentations (detail of topics on file)
2010 Ferris State University Faculty Center for Teaching and Learning: *Presentation Zen*
2010 Ferris State University Advising Workshop
2010 Ferris State University Faculty Center for Teaching and Learning: Facebook Pages
2010 Ferris State University Faculty Center for Teaching and Learning: SafeAssign
2009 Ferris State University Spring Learning Institute
2009 Ferris State University College of Allied Health Sciences Best Practices in Allied Health Education
2008 Book Discussion Group: *Helping Students Learn in a Learner-Centered Environment*
2008 Leveling the Playing Field: Teaching Students with Disabilities at Ferris State University
2008 Book Discussion Group: *A User's Guide to the Brain*
2008 ABET Webinar: *Defining Program Outcomes*
2007 Ferris State University Spring Learning Institute: *Creating the Learner-Centered University*
2006/2007 Ferris State University New Faculty Transition Program
2006 AABB Distance Learning Program *Legal Issues in Clinical Education*
2003 CDC Webcast *Smallpox and Vaccinia Laboratory Testing: A National Training Initiative*
2001 Lilly Conference on College & University Teaching – North
1995 Difficult Draws Workshop

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

7817 E. 5 Mile Rd. Home (231) 592 - 0358

White Cloud, MI 49349 Office (231) 591 - 2327

deregnid@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 and Program Coordinator, Clincal Laboratory Sciences — September 1992 - Present

Clinical Laboratory Sciences

FERRIS STATE UNIVERSITY

Big Rapids, MI 49307

Medical Technologist — December 1991 - August 1992

IOWA LUTHERAN HOSPITAL

Des Moines, IA 50311

Assistant Professor, Clinical Laboratory Sciences — September 1988 - July 1991

Department of Medical and Research Technology

UNIVERSITY OF MARYLAND AT BALTIMORE

Baltimore, MD 21201

Medical Technologist January 1989 - July 1991

ASSOCIATES IN PATHOLOGY, P.A.

Baltimore, MD 21201

Medical Technologist September 1983 - August 1985

ALLEN MEMORIAL HOSPITAL

Waterloo, IA 50701

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 ACHEIVEMENTS

- 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, 2005
- Internet Course Delivery Grant: $25,000
- Professional Development Grant: "An improved Laboratory Information System for the Clinical Laboratory Sciences Program; Investigator; $9300.00
- Awarded Tenure 2000
- Donna Duberg Mentorship Award; MSCLS
- Pam Agren Inspiration Award, MSCLS, 2010
- Ferris Foundation Exceptional Merit Grant, 5,200.00

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 Old, Something Haute, Something Fuzzy, Something That's Not*" April, 1998

- Metropolitan Hospital, Grand Rapids, MI "Clinical Mycology Update." June, 1998
- Michigan College of Optometry at Ferris State University, "*Laboratory Diagnosis of Ocular Infections*," 1998
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Romulus, MI "*Bringing Microbiology Education In-House*" April, 2000
- Lilly North Conference, September 22, 2001, Big Rapids, MI, "*The Campus Simulated Laboratory – A Transition from Student to Intern."*
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Kalamazoo, MI "*Travel Microbiology – Around the World in 80 Bugs*" April, 2002
- Big Rapids Charter School, "*What is Microbiology*?", 2002
- Clinical Laboratory Educators Conference, March 2003, New Orleans, LA, "*The Campus Simulated Laboratory – A Transition from Student to Intern."*
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Romulus, MI "*A Sporegasboard of Fungi*" April, 2003
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Lansing, MI "*Microbiology Review*" April, 2004
- Second Biennial Distance Education Conference "Best Practices in Distance Education for Health Professions", Sept 25th, 2004; "T*he Use of WebCT to Facilitate the Clinical Experience*"
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Kalamazoo, MI "The *Microbial Road Show*" April, 2005
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Lansing MI "*I'll Take Parasites for 500, Alex*", April 2007
- Michigan Society for Clinical Laboratory Sciences, Annual Meeting, Kalamazoo, MI. "*Microbiology Review*" April 2011

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

From	To	Activity
2010	Present	Program Coordinator
2007	2008	Conversion from WebCT CE to Vista Pilot Group
2007	2008	HCSA Academic Program Review Committee
2005	Present	Michigan Art Walk Selection Committee
2005	Present	CLS Academic Program Review Committee Chair
2005	Present	Sandra Cook tenure committee Chair
2005	Present	Core Curriculum Review committee, CAHS
2003	Present	Program Coordinator Workload Review Task Force

2003	Present	Arts and Lectures committee
2003	Present	Student Recruitment and Retention Committee, CAHS
2002	2003	Scientific Assembly Chair-Computer Information Systems, Michigan Society for Clinical Laboratory Science
2002	Present	Core Curriculum Review committee, CAHS
2001	2005	Instructional Resource Committee, College of Allied Health Sciences
2001	Present	Scientific Understanding Assessment Committee member, Ferris State University
2001	Present	Web Content Coordinator, College of Allied Health Sciences
2000	2002	MSCLS Nominations committee chair
1999	2000	Chair, Library/Historical/Archival Committee, Ferris State University
1999	2000	CCHS103 development committee; ad hoc
1999	2000	Dean of College of Allied Health Sciences search committee
1998	2000	District 8 Representative. Michigan Society for Clinical Sciences
1998	1999	CCHS101 development committee member
1997	1998	Instructional Performance Systems, Inc software reviewer
1997	1997	Cumulative Performance Review Committee
1996	1997	Respiratory Care Program Review Committee
1995	1997	Chair, Library/Historical/Archival Committee, Ferris State University
1995	2007	Safety Committee, College of Allied Health Sciences
1994	2003	Member, Library/Historical/Archival Committee, 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 Meeting
1993	1999	Legislative Steering Committee, Michigan Society for Clinical Laboratory Science
1993	1994	College of Allied Health Sciences 25th Anniversary Committee Ferris State University

1993	Present	Mentor, Mecosta/Osceola Math/Science/Technology Center
1993	1997	Monday Night Technology, Mecosta/Osceola Math/Science/Technology Center
1992	Present	Faculty Advisor - Association of Clinical Laboratory Sciences, Student Organization, Ferris State University

Teaching Responsibilities at Ferris State University

Course Number	Course Name
CLLS236/237	Diagnostic Microbiology/Lab
CLLS241/242	Medical Mycology, Virology, and Parasitology/Lab
CLLS252/253	Basic and Clinical Immunology/Lab
CLLS256	MLT Simulated Laboratory (team teach)
CLLS356/357	Advanced Clinical Chemistry – Molecular Diagnostics Lectures/Lab
CLLS436/437	Advanced Diagnostic Microbiology/Lab
CLLS456	MT Simulated Laboratory (team teach)
CLLS499	Clinical Laboratory Science Seminar

Non-teaching Responsibilities at Ferris State University
Academic advisor

Program Coordinator for MT/MLT programs

College of Allied Health and Clinical Laboratory Sciences Webmaster

CLS Laboratory Information Systems Resource Contact

Recruiting

Mariane Setyabudi, MS MLS (ASCP)^{CM}
E-mail: setyabm@ferris.edu, 200 Ferris Dr. VFS 311 Big Rapids, MI 49307
Phone: (231)591-3182

EDUCATION

M.S. in Clinical Laboratory Sciences, Michigan State University, December 2008.

Thesis:
Particle-based Flow Cytometric Assay to Detect Anti-Angiotensin II Receptor Type 1 and type 2 Antibodies in Renal Transplant Recipients.

B.S. in Clinical Laboratory Sciences, Michigan State University, May 2005.

CERTIFICATIONS

Medical Technology from American Society for Clinical Pathology (MLS ASCP^{CM})
Certification #: 218747 (Exp: 06/2013)

Post-baccalaureate certification in Molecular Laboratory Diagnostics
(Michigan State University, East Lansing, MI)

Post-baccalaureate certification in Immunodiagnostics and Clinical Flow Cytometry
(Michigan State University, East Lansing, MI)

EXPERIENCES

Laboratory Experiences

Abbott Laboratories (Diagnostic Division), North Chicago, IL (07/2004 – 07/2005)
Advanced Quality Technician
- Tested and processed complaint and stability data on LCx and AxSYM platforms supporting in-vitro diagnostic products
- Investigated non-conforming products using statistical analysis and a well-defined CAPA system supporting GMP compliance
- Processed returned materials from customers for complaint testing
- Supported the department in ensuring that all facilities were GMP compliance
- Decreased complaint processing cost by investigating options for materials purchasing

Sparrow Hospital, Lansing, MI (11/2003 – 05/2004)
Clinical Laboratory Scientist Intern
Performed clinical laboratory testing of biological specimens in the clinical laboratory under the supervision of a certified medical technologist

Entomology Department, Michigan State University, East Lansing, MI (05/2002-04/2004)
Laboratory Research Assistant
- Performed arthropod-borne virus surveillance (West Nile Virus, Eastern Equine Encephalitis, and St. Louis Encephalitis) using mosquito bodies and bird sera using ELISA, RNA extraction, gel electrophoresis and Reverse-Transcriptase PCR.
- Developed and maintained sample/result database
- Analyzed and solved technical problems to testing
- Coordinated and oversaw the work of three other lab assistants
- Generated weekly reports and summaries to public health officials in Michigan

Teaching Experiences

Ferris State University, Big Rapids, MI
Faculty
(May 2009 – Present)

Discipline	Course Code	Semester
Specimen Collection and Laboratory	CLLS 122, CLLS 123	Summer 2009, Fall 2009, Spring 2010
Clinical Chemistry and Laboratory	CLLS 216, CLLS 217 CLLS 356, CLLS 357	Fall 2009, Summer 2010, Spring 2010 (online), Fall 2010
Clinical Immunology and Laboratory	CLLS 252, CLLS 253	Summer 2009
Immunohematology and Laboratory	CLLS 258, CLLS 259 CLLS 458, CLLS 459	Fall 2010, Spring 2011
Simulated Laboratory for Medical Technology and Medical Laboratory Technician	CLLS 456, CLLS 256	Fall 2009, Fall 2010, Spring 2011
Medical Vocabulary	MRIS 102	Spring 2010
Epidemiology and Statistics	CCHS 315	Spring 2010 (online)

Michigan State University, East Lansing, MI
Instructor/Laboratory Coordinator/Teaching Assistant
(August 2005 – May 2009)

Discipline	Course Code	Semester
Clinical Laboratory Principles	BLD 213	Fall 2005, Summer 2006, Fall 2006, Summer 2007, Fall, 2007, Spring 2007, Summer 2007, Fall 2008
Clinical Immunology and Immuhematology	BLD 433	Spring 2006, Spring 2007, Spring 2008
Integrating Clinical Laboratory Science Discipline (writing course)	BLD 455W	Fall 2008
Immunodiagnostic Laboratory	BLD 852	Summer 2007, Summer 2008,

Other professional experiences

Michigan State University, East Lansing, MI

- Served as an academic advisor for incoming during Academic Orientation Program Assist in advising undergraduate students in the medical technology major *(Summer 2007, Summer 2008,Spring 2009)*
- Grandparents University Day *(Summer 2006, Summer 2007, Summer 2008)*.
  Organized and led educational laboratory activities for grandparents and grandchildren (ages 8-12) on “Medical Detective for a Day”.
- Girls in Math and Science Conference *(Spring 2008)*
  Organized and led educational laboratory activities for girls age 8-12 on “Medical Detective for a Day”

Other professional experiences, continued:

Ferris State University, Big Rapids, MI

- Responsible for development and summary of graduate/employer survey for assessment data (*Spring 2011)*
- Responsible for monitoring student performances and communication during clinical internship for medical laboratory technician major *(Spring 2010)*
- Molecular diagnostics program *(Summer 2010 – present)*
    - Serve as an academic advisor for incoming students who are interested in the program
    - Communicate with pre-professional advisors and other colleges for coordination in pre-requisites courses for the program
    - Assist in building partnerships with industry to develop a teaching laboratory and internship Responsible for curriculum update/revisions for the molecular diagnostics program
    - Responsible for recruitment and marketing for the program including website content, program fact sheet, and articulation agreement with community colleges
    - Responsible for initiating program accreditation with National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)

AFFILIATIONS

Member, American Society of Clinical Laboratory Sciences
Member, American Society for Clinical Pathology

CONTINUING EDUCATION ATTENDED

Association for Molecular Pathology Annual Meeting (2010)
National Accrediting Agency for Clinical Laboratory Sciences workshop (2010)
Michigan Society for Clinical Laboratory Sciences Annual Meeting (2006, 2007, 2008, 2009, 2010)
American Society for Clinical Laboratory Sciences Annual Meeting (2006, 2008, 2009, 2010)
American Society for Clinical Pathology Meeting (2005)

Sandy Cook

CV Pending

Mariane Setyabudi, MS MLS (ASCP)^{CM}
E-mail: setyabm@ferris.edu, 200 Ferris Dr. VFS 311 Big Rapids, MI 49307
Phone: (231)591-3182

EDUCATION

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EXPERIENCES

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Advanced Quality Technician

- Tested and processed complaint and stability data on LCx and AxSYM platforms supporting in-vitro diagnostic products
- Investigated non-conforming products using statistical analysis and a well-defined CAPA system supporting GMP compliance
- Processed returned materials from customers for complaint testing
- Supported the department in ensuring that all facilities were GMP compliance
- Decreased complaint processing cost by investigating options for materials purchasing

Sparrow Hospital, Lansing, MI (11/2003 – 05/2004)
Clinical Laboratory Scientist Intern

Performed clinical laboratory testing of biological specimens in the clinical laboratory under the supervision of a certified medical technologist

Entomology Department, Michigan State University, East Lansing, MI (05/2002-04/2004)
Laboratory Research Assistant

- Performed arthropod-borne virus surveillance (West Nile Virus, Eastern Equine Encephalitis, and St. Louis Encephalitis) using mosquito bodies and bird sera using ELISA, RNA extraction, gel electrophoresis and Reverse-Transcriptase PCR.
- Developed and maintained sample/result database
- Analyzed and solved technical problems to testing
- Coordinated and oversaw the work of three other lab assistants
- Generated weekly reports and summaries to public health officials in Michigan

Mariane Setyabudi, MS MLS (ASCP)^{CM}
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Phone: (231)591-3182

Teaching Experiences

Ferris State University, Big Rapids, MI
Faculty
(May 2009 – Present)

Discipline	Course Code	Semester
Specimen Collection and Laboratory	CLLS 122, CLLS 123	Summer 2009, Fall 2009, Spring 2010
Clinical Chemistry and Laboratory	CLLS 216, CLLS 217 CLLS 356, CLLS 357	Fall 2009, Summer 2010, Spring 2010 (online), Fall 2010
Clinical Immunology and Laboratory	CLLS 252, CLLS 253	Summer 2009
Immunohematology and Laboratory	CLLS 258, CLLS 259 CLLS 458, CLLS 459	Fall 2010, Spring 2011
Simulated Laboratory for Medical Technology and Medical Laboratory Technician	CLLS 456, CLLS 256	Fall 2009, Fall 2010, Spring 2011
Medical Vocabulary	MRIS 102	Spring 2010
Epidemiology and Statistics	CCHS 315	Spring 2010 (online)

Michigan State University, East Lansing, MI
Instructor/Laboratory Coordinator/Teaching Assistant
(August 2005 – May 2009)

Discipline	Course Code	Semester
Clinical Laboratory Principles	BLD 213	Fall 2005, Summer 2006, Fall 2006, Summer 2007, Fall, 2007, Spring 2007, Summer 2007, Fall 2008
Clinical Immunology and Immuhematology	BLD 433	Spring 2006, Spring 2007, Spring 2008
Integrating Clinical Laboratory Science Discipline (writing course)	BLD 455W	Fall 2008
Immunodiagnostic Laboratory	BLD 852	Summer 2007, Summer 2008,

Other professional experiences

Michigan State University, East Lansing, MI

- Served as an academic advisor for incoming during Academic Orientation Program Assist in advising undergraduate students in the medical technology major *(Summer 2007, Summer 2008,Spring 2009)*
- Grandparents University Day *(Summer 2006, Summer 2007, Summer 2008)*.
  Organized and led educational laboratory activities for grandparents and grandchildren (ages 8-12) on “Medical Detective for a Day”.
- Girls in Math and Science Conference *(Spring 2008)*
  Organized and led educational laboratory activities for girls age 8-12 on “Medical Detective for a Day”

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Phone: (231)591-3182

Other professional experiences, continued:

Ferris State University, Big Rapids, MI

- Responsible for development and summary of graduate/employer survey for assessment data (*Spring 2011)*
- Responsible for monitoring student performances and communication during clinical internship for medical laboratory technician major *(Spring 2010)*
- Molecular diagnostics program *(Summer 2010 – present)*
    - Serve as an academic advisor for incoming students who are interested in the program
    - Communicate with pre-professional advisors and other colleges for coordination in pre-requisites courses for the program
    - Assist in building partnerships with industry to develop a teaching laboratory and internship Responsible for curriculum update/revisions for the molecular diagnostics program
    - Responsible for recruitment and marketing for the program including website content, program fact sheet, and articulation agreement with community colleges
    - Responsible for initiating program accreditation with National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)

AFFILIATIONS

Member, American Society of Clinical Laboratory Sciences
Member, American Society for Clinical Pathology

CONTINUING EDUCATION ATTENDED

Association for Molecular Pathology Annual Meeting (2010)
National Accrediting Agency for Clinical Laboratory Sciences workshop (2010)
Michigan Society for Clinical Laboratory Sciences Annual Meeting (2006, 2007, 2008, 2009, 2010)
American Society for Clinical Laboratory Sciences Annual Meeting (2006, 2008, 2009, 2010)
American Society for Clinical Pathology Meeting (2005)

Program - Medical Laboratory Technology (A.A.S.) - Curriculum Map

Legend: (A) - Program Assessment, (I) - Introduced, (M) - Mastery, (R) - Reinforced

Outcomes	CCHS 101	CCHS 102	CLLS 101	CLLS 122	CLLS 123	CLLS 191	CLLS 216	CLLS 217	CLLS 218	CLLS 219	CLLS 220	CLLS 231	CLLS 232	CLLS 236	CLLS 237	CLLS 241	CLLS 242	CLLS 252	CLLS 253	CLLS 256	CLLS 258	CLLS 259	CLLS 281	CLLS 292	CLLS 293	MRIS 102
Graduates will communicate effectively to acquire/develop/convey ideas and info to diverse populations	I		I	I	I		R	R	R	R	R	R	R	R	R	R	R	R	R	M, R	R	R	R	M, R	M, R	
Graduates will utilize the knowledge/professional competencies to practice as entry-level MLT.	I	I	I	I	I																					
Graduates will apply previously learned knowledge to the solution of new problems			I	I	I		I	I	R	R	R	R	R	R	R	R	R	R	R	M, R	M, R	M, R	M, R	M, R	M, R	
Graduates will demonstrate professional and ethical behaviors	I	I	I	I	I		I	I	I	I	I	R	R	R	R	R	R	R	R	M, R	M, R	M, R	M, R	M, R	M, R	
The MLT Program will continue to meet the standards established by NAACLS																										

□□□nit Assessment Report - □our Column

□erris State □niversity

Program - Medical Laboratory Technology □A.A.S.□

M□ss□o□St□teme□t□ 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.

□□□so□□□o□□□Comm□ttee Meet□□s□ □nce per year

□e□t□□S□□□c□□em□c □o□□□m□Re□e□□ 2011-2012

□cc□e□t□t□o□□□o□□□ National Accrediting Agency for Clinical Laboratory Science □NAACLS□

□c□□em□c□e□□o□□□e□t □cc□e□t□t□o□Re□e□□ 2012-2013

Co□□e□e□ CA□S

Outcomes	Me□□s□o□□□ssessme□t□□□C□□te□□□□o□ Success□□□□s□s	Resu□ts	□ct□o□□□□o□□o□□□□
Program - Medical Laboratory Technology □AA.S.□ - Graduates will communicate effectively to acquire/develop/convey ideas and info to diverse populations - CA□S Theme□ Communication **Outcome□□□□es□** Learning **St□t□□□te□** 0□/0□/200□ **Outcome□St□tus□** Active	**□ssessme□t□Met□o□□** □mployer survey administered one year after students□graduation **□ssessme□t□Met□o□□C□te□o□□□** Survey - □mployer **C□te□o□□□o□Success□** □□□ of the employers will rate students as □ on items □ and 1□ on the employer survey	0□/1□/2010 - □mployer survey pending□□no employer surveys for MLT graduates returned. **C□□ss□□c□t□o□□** Inconclusive **□ct□o□□** 2 - Pending Action	0□/1□/2010 - □mployer survey has been distributed.
	□ssessme□t□Met□o□□ Preceptor evaluation of student at the conclusion of the internship e□perience **□ssessme□t□Met□o□□C□te□o□□□** Internship □valuation **C□te□o□□□o□Success□** □□□ of the clinical preceptors will rate students□ability to communicate in the professional setting as 3.□ or above	0□/1□/2010 - Criterion for success is currently being revised. MLTs currently on internship Spring and Summer 2011. Results will be compiled later. **C□□ss□□c□t□o□□** Inconclusive **□ct□o□□** 2 - Pending Action	0□/1□/2010 - Program faculty will meet September 2010 to discuss a new criterion for success. **□o□□o□□□□□** 0□/0□/2011 - MLTs currently on internship Spring and Summer 2011. Results will be compiled later. 0□/0□/2011 - MLTs currently on internship Spring and Summer 2011. Results will be compiled later.

Outcomes	Me□□s□o□□ssessme□t□□ C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
Program - Medical Laboratory Technology □AA.S.□ - Graduates will utilize the knowledge/professional competencies to practice as entry-level MLT. - CA□S Theme□ □nowledge and professional skills **Outcome□□□es□** Learning **St□t□□te□** 0□/0□/200□ **Outcome□St□tus□** Active	□ssessme□t□Met□o□□ □mployer survey administered one year following students□graduation □ssessme□t□Met□o□□C□te□o□□□ Survey - □mployer C□te□o□□o□Success□ □□□ of the employers will rate graduates □ on items 1, 2, □, on employer survey	0□/1□/2010 - Survey Results pending. No MLT graduate surveys returned. C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - □mployer survey has been distributed. □o□o□□□□ 0□/0□/2011 - No MLT graduate surveys returned
	□ssessme□t□Met□o□□ □aculty members□evaluation of student□s performance in Simulated Laboratory □ssessme□t□Met□o□□C□te□o□□□ Case Studies/Problem-based Assignments C□te□o□□o□Success□ □0□ of the students will be able to demonstrate their ability to perform assigned roles in the simulated laboratory	0□/1□/2010 - 100□ of the students were able to demonstrate their ability to perform assigned roles in the simulated laboratory C□ss□□c□t□o□□ Criterion Met □ct□o□□ 1 - No Action Required	
	□ssessme□t□Met□o□□ National Certification □□amination □ssessme□t□Met□o□□C□te□o□□□ Test - □□ternal - Post or Pre/Post C□te□o□□o□Success□ 100□ of the graduates will score at or above the national mean score on the national certifying e□amination	0□/1□/200□ - 2010□100□ of graduates passed and scored above the national mean. 200□□100□ of graduates passed and scored above the national mean. 200□□No first-time e□aminees□1 graduate retook the e□am and failed. 200□□□□□ passed on first attempt□both above national mean. C□ss□□c□t□o□□ Criterion Met □ct□o□□ 1 - No Action Required	
	□ssessme□t□Met□o□□ Preceptor evaluation at the conclusion of the practical e□perience □ssessme□t□Met□o□□C□te□o□□□ Internship □valuation C□te□o□□o□Success□ □□□ of the preceptors will rate students overall ability to perform required tests as a 3.□ or above on the clinical competency	0□/1□/2010 - Criterion for success in the process of being revised. Students currently on internship. Results will be compiled later. C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - Program faculty will meet September 2010 to discuss a new criterion for success. □o□o□□□□ 0□/0□/2011 - MLTs currently on internship Spring and Summer 2011. Results will be compiled

Outcomes	Me□□s□o□□ssessme□t□□C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
	check list		□o□o□ □□ □□ later.
Program - Medical Laboratory Technology □AA.S.□ - Graduates will apply previously learned knowledge to the solution of new problems - CA□S Theme□ Critical thinking and problem-solving **Outcome□□□es□** Learning **St□□t□□te□** 0□/0□/200□ **Outcome□St□tus□** Active	□ssessme□t□Met□o□□ □mployer survey distributed one year following students□graduation □ssessme□t□Met□o□□C□te□o□□□ Survey - □mployer **C□te□o□□□o□Success□** □□□ of the employers will rate graduates as □ on item □ of the employer survey	0□/1□/2010 - □mployer survey results are pending. No employer surveys returned for MLT graduates. **C□□ss□□c□t□o□□** Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - □mployer survey has been distributed
	□ssessme□t□Met□o□□ □aculty evaluation during Simulated Laboratory □ssessme□t□Met□o□□C□te□o□□□ Case Studies/Problem-based Assignments **C□te□o□□□o□Success□** □□□ of the students will receive a rating of 3.□ or above on their ability to solve problems posed during the simulated laboratory e□perience	0□/1□/2010 - Course was not offered Spring 2010. Results available Spring 2011 **C□□ss□□c□t□o□□** Inconclusive □ct□o□□ 2 - Pending Action	
Program - Medical Laboratory Technology □AA.S.□ - Graduates will demonstrate professional and ethical behaviors - CA□S Theme□ Professional and ethical behaviors **Outcome□□□es□** Learning **St□□t□□te□** 0□/0□/200□ **Outcome□St□tus□** Active	□ssessme□t□Met□o□□ □aculty evaluation of affective behaviors at the conclusion of the simulated laboratory e□perience □ssessme□t□Met□o□□C□te□o□□□ Case Studies/Problem-based Assignments **C□te□o□□□o□Success□** □□□ of the students will receive an overall rating on the student affective evaluation of 3.□ or above.	0□/1□/2010 - Course was not offered Spring 2010. Results available Spring 2011 **C□□ss□□c□t□o□□** Inconclusive □ct□o□□ 2 - Pending Action	0□/0□/2011 - □ ill compile results when internship is complete
	□ssessme□t□Met□o□□ Preceptor evaluation completed at the conclusion of the internship e□perience □ssessme□t□Met□o□□C□te□o□□□ Internship □valuation **C□te□o□□□o□Success□**	0□/1□/2010 - Criterion for success is in the process of being re-evaluated by program faculty. MLT are currently on internship. **C□□ss□□c□t□o□□** Inconclusive □ct□o□□	0□/1□/2010 - Program faculty will meet September 2010 to discuss a new criterion for success. □o□o□ □□ □□

Outcomes	Me□□s□o□□ssessme□t□□C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
	□□□ of the students will receive a rating of 3.□ or above on the affective domain evaluation portion of the internship evaluation	2 - Pending Action	□o□o□ □□ □□ 0□/0□/2011 - □ ill compile results when internship is complete
	□ssessme□t□Met□o□□ □mployer survey distributed one year following students□graduation □ssessme□t□Met□o□□C□te□o□□□ Survey - □mployer C□te□o□□□o□Success□ □□□ of the employers will rate graduates as □ on item 10 of the employer survey	0□/1□/2010 - □mployer survey results are pending. No employer surveys for MLT graduates were returned. C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - □mployer survey has been distributed. □o□o□ □□ □□ 0□/0□/2011 - No employer surveys returned for MLTS
Program - Medical Laboratory Technology □AA.S.□ - The MLT Program will continue to meet the standards established by NAACLS - CA□S Theme□ Specialized accreditation **Outcome□□□es□** □ther **St□□t□□ □te□** 0□/0□/200□ **Outcome□St□tus□** Active	□ssessme□t□Met□o□□ Review of university and program data □ssessme□t□Met□o□□C□te□o□□□ □ata Analysis C□te□o□□□o□Success□ □0□ of the Medical Laboratory Students who enter the professional phase of the program complete it successfully within two academic years	0□/1□/2010 - 100□ of MLT students who entered the professional phase in 200□ completed it successfully within 2 academic years C□ss□□c□t□o□□ Criterion Met □ct□o□□ 1 - No Action Required	
	□ssessme□t□Met□o□□ Annual reports from certifying agency □ssessme□t□Met□o□□C□te□o□□□ □ata Analysis C□te□o□□□o□Success□ Pass rates for □erris State □niversity graduates will meet or e□ceed national averages	0□/1□/2010 - 100□ of MLT graduates in 2010 e□ceeded the national average on the certifying e□am C□ss□□c□t□o□□ Criterion Met □ct□o□□ 1 - No Action Required	
	□ssessme□t□Met□o□□ Alumni survey distributed one year after students□graduation □ssessme□t□Met□o□□C□te□o□□□ Survey - Alumni □after one year□ C□te□o□□□o□Success□ □□□ of the graduates of the Medical Laboratory Technician program report they	0□/1□/2010 - Alumni survey results pending. C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - Alumni survey has been distributed. □o□o□ □□ □□ 0□/0□/2011 - No MLT graduate surveys returned

Outcomes	Me□□s□o□□ssessme□t□□C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
	are either employed as MLT□s or continuing their education within one year of graduation		
	□ssessme□t□Met□o□□ Graduate survey distributed on year after students□graduation □ssessme□t□Met□o□□C□te□o□□□ Survey - Alumni □after one year□ C□te□o□□□o□Success□ □0□ of graduates responding to the survey will indicat that they are prepared for professional practice	0□/1□/2010 - Graduate survey results are pending. C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - □mployer survey has been distributed. □o□o□□□□ 0□/0□/2011 - No employer surveys returned for MLTS
	□ssessme□t□Met□o□□ □mployer survey distributed one year after students□graduation □ssessme□t□Met□o□□C□te□o□□□ Survey - □mployer C□te□o□□□o□Success□ □0□ of the employers who respond to the survey will rate □erris State □niversity graduates of the Medical Laboratory Technology program as performing as well or better than graduates of other programs	0□/1□/2010 - □mployer survey results are pending. C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	

Assessment Impact by Course □b□ectives

□erris State □niversity

□ - CLLS Courses

□□□CLLS□Cou□ses

Cou□se□Outcome□□CLLS□101□□□C□□□c□□□L□□□Sc□e□ce□O□e□t□□□o□ess□o□□□□□□o□□e□□e□□Com□ete□c□1

□iscuss educational requirements for the various types of clinical laboratory professionals.

St□t□□te□ 12/10/200□
Outcome□St□tus□ Active

Me□□s□o□□□ssessme□t

□ssessme□t□Met□o□	C□□te□o□□□o□Success	□ssessme□t□Sc□e□u□e	□ct□□e
□□am 1 □1□ **□ssessme□t□Met□o□□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of the students will answer quiz correctly		□es

Resu□ts

Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - MT/MLT Requirements □□/□□ □ 100□ Pathologists 21/□1 - □1□ Phlebotomist 13/□1 □2□□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - More emphasis during lcture on additional lab professionals, not MT/MLT		2 - Pending Action

Cou□se□Outcome□□CLLS□101□□□C□□□c□□□L□□□Sc□e□ce□O□e□t□□□o□□em□so□□□□□

□sing current published literature, identify and discuss an issue of concern to clinical laboratory science

St□t□□te□ 12/10/200□
Outcome□St□tus□ Active

Me□□s□o□□□ssessme□t

□ssessme□t□Met□o□	C□□te□o□□□o□Success	□ssessme□t□Sc□e□u□e	□ct□□e
Literature Review of current articles in CLS **□ssessme□t□Met□o□□C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	□0□ of students will score greater than □0□		□es

Resu□ts

Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 3□/□1 □ □□□□ □□ non-submissions - □□/□□ □ □□□□ □ **C□□ss□□c□t□o□□** Criterion Not Met			1 - No Action Required

Cou□se□Outcome□□CLLS□101□□□C□□□c□□□L□□□Sc□e□ce□O□e□t□□□o□ess□o□□□□et□c□□□□e□□□□o□s

□emonstrate knowledge of professional behaviors resolution of ethical dilemmas in the work place

St□t□□te□ 12/10/200□
Outcome□St□tus□ Active

Me□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□te□o□ □o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□□am 2 - □12, 13 **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □0□		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □0/□1 □ □□□ □0/□1 □ □□□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 101 □□C□□□c□□L□□Sc□e□ce O□e□t□□□o□ess□o□□□□□□o□□e□□e□□ Com□ete□c□ 2

□escribe the various sections of the clinical laboratory, and identify the types of tests performed in each.

St□□t □□□te□ 02/02/2010
Outcome St□tus□ Active

Me□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□te□o□ □o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Simlab Paper **□ssessme□t Met□o□ C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	□0□ of students will score greater than □0□		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□ □□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 3□/□1 □ □□□ □□ non-submission - □3/□1 □ □□□ □ **C□□ss□□c□t□o□□** Criterion Not Met			1 - No Action Required

Cou□se Outcome □CLLS 101 □□C□□□c□□L□□Sc□e□ce O□e□t□□□o□ess□o□□□□□□□o□□e□□e□□ Com□ete□c□ 3

□istinguish between certification, accreditation and licensure, and the requirement for each.

St□□t □□□te□ 02/02/2010
Outcome St□tus□ Active

Me□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□te□o□ □o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□□am 2 - □3, □, □ **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □0□		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □3 □□/□1 □ □0□			1 - No Action

Results			
Result	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□ □ □□/□1 □ □0□			
□ □ □□/□1 □ □□□□ **C□□ss□□c□t□o□□** Criterion Met			

Cou□se□Outcome□□CLLS□122□□l□t□o□S□ec□me□□Co□ect□o□□□□o□ess□o□□□□□o□□e□□e□□□Com□ete□c□1

□emonstration knowledge of the factors affecting speciment collection, to include basic human anatomy, and the physiology of blood and body fluids.

St□t□□□te□ 12/10/200□
Outcome□St□tus□ Active

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□esignated questions for this topic **□ssessme□t□Met□o□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of scored e□am will show student earned □□□ or higher		□es

Results			
Result	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □0□ of students earned □□□ or higher **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □□.□□ of students earned □□□ or higher **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se□Outcome□□CLLS□122□□l□t□o□S□ec□me□□Co□ect□o□□□□o□□em□so□□□□

Recognize and propose solutions for problems that may occur during specimen collection

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□esignated questions for this topic **□ssessme□t□Met□o□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of scored e□am will show student earned □□□ or higher		□es

Results			
Result	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 03/1□/2011 - □inal e□am □3□ 100□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 122 □l□t□o S□ec□me□ Co□ect□o □□□o□ess□o □□□et □c□□e □□□o□s

□emonstrate knowledge of professional behaviors in the work place

St□t□ □te□ 12/11/200□
Outcome St□tus□ Active

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□ssessme□t Met□o□	**C□te□o □□o Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□esignated questions for this topic **□ssessme□t Met□o □C□te□o □□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of scored e□am will show student earned □□□ or higher		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 03/1□/2011 - □inal e□am □3□ - 100□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required
Test - Internally □eveloped - Pre/Post or Post - 03/1□/2011 - □inal e□am □1□ - □2□ **C□□ss□□c□t□o□□** Criterion Not Met			1 - No Action Required

Cou□se Outcome □CLLS 122 □l□t□o S□ec□me□ Co□ect□o □□□o□ess□o □□□□o□ □e□□e□□ Com□ete□c□2

□emonstrate understanding of the factors that may affect speciment collection, to include pre-analytical variable.

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Outcome St□tus□ Active

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□esignated questions for this topic **□ssessme□t Met□o □C□te□o □□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of scored e□am will show student earned □□□ or higher		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 03/1□/2011 - □inal e□am □3□ 100□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required
Test - Internally □eveloped - Pre/Post or Post - 03/1□/2011 - □inal e□am □onus A □□3 - □0□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 123 □S□ec□me□ Co□ect□o □L□□□□o□ess□o □□□□o□ □e□□e□□ Com□ete□c□1

□emonstrate safe practices while performing blood speciment collection, including correct use of equipment □evacuated tube systems, syringes, winged-infusion set□

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Outcome St□tus□ Active

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□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Real patient draw□ □evacuated tube systems, syringes and winged-infusion set will be utilized for this assessment□ **□ssessme□t Met□o□ C□te□o□□□** □bservations □e.g. Clinical or □ield□	100□ of scored real patient draw will show student earned □0□ or higher on this performance		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□bservations □e.g. Clinical or □ield□- 03/1□/2011 - 12/12 100□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 123□□ S□ec□me□ Co□ect□o□ L□□□□□o□ess□o□□□□t□c□□□e□□□□o□s

□emonstrate professional behaviors for dealing with patients and others

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Outcome St□tus□ Active

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Lab competency **□ssessme□t Met□o□ C□te□o□□□** □bservations □e.g. Clinical or □ield□	100□ of students will demonstrate professional behavior 100□ of the time		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□bservations □e.g. Clinical or □ield□- 03/1□/2011 - 12/12 □ 100□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 123□□ S□ec□me□ Co□ect□o□ L□□□□□o□ess□o□□□□o□ □e□□e□□ Com□ete□c□2

□emonstrate safe practices for special procedures such as throat swab collectons and urine speciment preparation.

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Outcome St□tus□ Active

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□lood culture □ throat swab competency. **□ssessme□t Met□o□ C□te□o□□□** □bservations □e.g. Clinical or □ield□	100□ of students will pass.		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□bservations □e.g. Clinical or □ield□- 0□/2□/2010 - 100□ of students passed **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Results			
Result	**Action**	**Follow-Up**	**Action**

Course Outcome - CLLS 123 - Specimen Collection □□□ Professional □□□□ Competency 3

Demonstration correct practices for collecting, processing and preparing speciment for transport or further testing, including use of personal protective equipment.

Start Date: 02/02/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Demonstrate current processes for labeling, processing □ Preparing specimens for transport. **Assessment Method Category:** Observations (e.g. Clinical or Field)	100% of students will pass		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Observations (e.g. Clinical or Field) - 0□/2□/2010 - 100% of students passed **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 191 - Clinical Experience - Phlebotomy □□□ Professional □□□□ Competency 1

Document at least 100 successful venipunctures on a variety of patients.

Start Date: 12/11/200□
Inactive Date: 0□/0□/2011

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Review of student phlebotomy logs **Assessment Method Category:** Written Product (essay, research paper, journal, newsletter, etc.)	□0% of students will document at least 100 successful venipunctures on a variety of patients.		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Written Product (essay, research paper, journal, newsletter, etc.) - 03/1□/2011 - 2/2 □ 100% **Classification:** Criterion Met			1 - No Action Required
Written Product (essay, research paper, journal, newsletter, etc.) - 02/0□/2011 - 100% of students met 100 successful venipuntures **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 191 - Clinical Experience - Phlebotomy □□□ Professional □□□□ Competency 2

Document at least 2□ successful capillary punctures on a variety of patients.

Start Date: 02/02/2010
Inactive Date: 0□/0□/2011

Resu□ts			
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□emonstrate computer skills related to speciment ordering, collection, labeling and processing.

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□emonstrates compliance with policies and procedures of the healthcare institution.

St□□t□□□te□ 12/11/200□
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Resu□ts			
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□emonstrate appropriate professional behaviors in the healthcare workplace.

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□ssessme□t Met□o□	C□te□o□ □o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
Performance evaluation by Clinical Supervisor **□ssessme□t Met□o□ C□te□o□□□** □□ernal review □e.g. employer or e□pert□	100□ of students will be reported as demonstrating appropriate professional behaviors in the healthcare workplace.		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
□□ernal review □e.g. employer or e□pert□- 02/0□/2011 - 100□ of students demonstrated appropriate professional behaviors in the healthcare workplace **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome□CLLS 191 □□C□□□□□□e□e□ce□□□e□otom□□□Commu□□c□t□o□

□emonstrate communication and caring skills with a variety of patients, other healthcare providers, and the public.

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Resu□ts			
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Cou se Outcome CLLS 216 C c C em st o ess o o e e Com ete c 1

escribe common methods of measurements used in clinical chemistry including spectrophotometry, electrochemistry, electrophoresis, and immunoassay.

St t te 12/11/200
Outcome St tus Active

Me s o ssessme t

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am **ssessme t Met o C te o** Test - Internally eveloped - Pre/Post or Post	0 of students will earn or higher		es
uestion 23-2 am 1 **ssessme t Met o C te o** Test - Internally eveloped - Pre/Post or Post	of the students will earn 100 on relevant test questions		es

Resu ts

Resu t	ct o	o o	ct o
Test - Internally eveloped - Pre/Post or Post - 0 /0 /2011 - 2 /31 of the students earned 100 **C ss c t o** Criterion Met			1 - No Action Required
Test - Internally eveloped - Pre/Post or Post - 0 /1 /2010 - of students earned or higher **C ss c t o** Criterion Not Met			2 - Pending Action

Cou se Outcome CLLS 216 C c C em st o ess o o e e Com ete c 2

iscuss measurement methods and the clinical significance for analytes such as proteins, carbohydrates, lipids, non-protein nitrogen compounds, electrolytes, enzymes, hormones, therapeutic drugs, and to ic substances.

St t te 02/02/2010
Outcome St tus Active

Me s o ssessme t

ssessme t Met o	C te o o Success	ssessme t Sc e u e	ct e
Analyte assignment **ssessme t Met o C te o** ritten Product essay, research paper, ournal, newsletter, etc.	of the students will earn or better on the analyte assignment		es

Resu ts

Resu t	ct o	o o	ct o
ritten Product essay, research paper, ournal, newsletter, etc. - 0 /0 /2011 - 2 /31 of the students earned or better **C ss c t o** Criterion Met			1 - No Action Required

Cou□se□Outcome□□CLLS□216□□C□□□c□□□C□em□st□□□□□□o□ess□o□□□□□□o□□e□□e□□□Com□ete□c□3

Perform calculations commonly used in clinical chemistry.

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□uestions 3□-□0 □□am □ **□ssessme□t□Met□o□□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of the students will earn □□□ or better on relevant test questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □2□ □1□/31□of the students earned □□□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Add laboratory math assignment		2 - Pending Action

Cou□se□Outcome□□CLLS□216□□C□□□c□□□C□em□st□□□□□□o□□em□so□□□□□

Apply principles of quality control and □ estgard rules to clinical chemistry procedures

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□uestions 2□-2□ □□am 3 **□ssessme□t□Met□o□□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of the students will earn □□□ or better on relevant test questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □1□ □13/31□of the students earned □□□ or better **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Add □C assignment		2 - Pending Action

Cou□se□Outcome□□CLLS□217□□C□□□c□□□C□em□st□□L□□□□□□o□ess□o□□□□□□o□□e□□e□□□Com□ete□c□1

□perate routine function checks and maintenance procedures on laboratory analyzers as assigned.

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Outcome□St□tus□ Active

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Maintenance log **□ssessme□t□Met□o□□C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	□0□ of the students will document instrument maintenance in the maintenance log		□es

Results			
Result	**Action**	**Notation**	**Action**
Written Product (essay, research paper, journal, newsletter, etc.) - 01/01/2011 - 100% of the student documented instrument maintenance **Classification** Criterion Met			1 - No Action Required

Course Outcome: CLLS 2170 Clinical Chemistry Laboratory Professional Competency 2

Perform measurement methods and correlate the clinical significance for analytes such as proteins, carbohydrates, lipids, non-protein nitrogen compounds, electrolytes, enzymes, hormones, therapeutic drugs, and toxic substances with patient's condition.

Start Date: 02/02/2009
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Laboratory report **Assessment Method Criteria** Written Product (essay, research paper, journal, newsletter, etc.)	100% of laboratory report will show students earned 80% or higher		Yes

Results			
Result	**Action**	**Notation**	**Action**
Written Product (essay, research paper, journal, newsletter, etc.) - 01/01/2011 - 100% of the student laboratory report average is 82% **Classification** Criterion Met			1 - No Action Required

Course Outcome: CLLS 2170 Clinical Chemistry Laboratory Professional Competency 3

Perform calculations commonly used in clinical chemistry.

Start Date: 02/02/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Assignment **Assessment Method Criteria** Case Studies/Problem-based Assignments	80% of students will earn 80% or higher		Yes
Laboratory math assignments **Assessment Method Criteria** Case Studies/Problem-based Assignments	80% of scored laboratory math assignments will show student earned 80% or higher		Yes

Results			
Result	**Action**	**Notation**	**Action**
Case Studies/Problem-based Assignments - 01/01/2011 - 100% of scored laboratory math assignment showed student average of 82% **Classification** Criterion Met			1 - No Action Required
Case Studies/Problem-based Assignments - 01/12/2010 - 100% of students earned 82% or			1 - No

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
higher **C□□ss□□c□t□o□□** Criterion Met			Required

Cou□se□Outcome□CLLS□217□□C□□□c□□C□em□st□□L□□□□□o□em□So□□□□

Apply principles of quality control and □ estgrd rules to clinical chemistry procedures

St□□t□□□te□ 12/11/200□
Outcome□St□tus□ Active

Me□□s□o□□□ssessme□t			
□ssessme□t□Met□o□	**C□te□o□□□o□Success**	**□ssessme□t□Sc□e□u□e**	**□ct□□e**
□uality Control log **□ssessme□t□Met□o□□C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	□0□ of the students will document quality control results in the quality control log		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the student documented quality control results and apply the westgard rules **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se□Outcome□CLLS□218□□□o□□□□u□□□□□□s□s□□□o□ess□o□□□□□□o□□e□□e□□□Com□ete□c□□1

□escribe the basic anatomy and function of the renal system.

St□□t□□□te□ 12/11/200□
Outcome□St□tus□ Active

Me□□s□o□□□ssessme□t			
□ssessme□t□Met□o□	**C□te□o□□□o□Success**	**□ssessme□t□Sc□e□u□e**	**□ct□□e**
□□am **□ssessme□t□Met□o□□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will earn □□□ or higher		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □3□ of students earned □□□ or higher **C□□ss□□c□t□o□□** Criterion Not Met	0□/2□/2010 - In class remediation		2 - Pending Action

Cou□se□Outcome□CLLS□218□□□o□□□□u□□□□□□s□s□□□o□ess□o□□□□□□o□□e□□e□□□Com□ete□c□□2

□escribe the physical, chemical, and microscopic components present in urine, in health and pathologic states.

St□□t□□□te□ 02/02/2010
Outcome□St□tus□ Active

Me□□s o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□□am □ssessme□t Met□o□ C□te□o□□□ Test - Internally □eveloped - Pre/Post or Post	□0□ of students will earn □□□ or higher		□es

Resu□ts			
Resu□t	□ct□o□	□o□□o□ □□□	□ct□o□
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □3□ of students earned □□□ or higher C□□ss□□c□t□o□□ Criterion Not Met	0□/2□/2010 - In class remediation		2 - Pending Action

Cou□se Outcome □CLLS 218□□□o□□□□u□□□ □□□s□s□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□3

□iscuss the different disorders, renal and metabolic, associated with the renal system.

St□□t□□ □te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□□o□ □□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 218□□□o□□□□u□□□ □□□s□s□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□4

□escribe the components of various body fluids encountered in the clinical laboratroy in health and pathologic states, including cerebrospinal fluid, serous fluids, synovial fluid, and semen.

St□□t□□ □te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
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Cou□se Outcome □CLLS 218□□□o□□□□u□□□ □□□s□s□□Commu□□c□t□o□

□iscuss proper collection, transport and processing of urine and body fluids.

St□□t□□ □te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□□o□ □□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 219□□Hemost□s□s□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□1

List the different components involved in hemostasis and fibrinolysis, including vascular components, platelets, clotting factors, and regularoy components.

St□□t□□ □te□ 12/11/200□
Outcome St□tus□ Active

Me□□s o□□ssessme□t			
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□□am □ssessme□t Met□o□ C□te□o□□□	□0□ of students will earn □□□ or higher		□es

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Test - Internally □eveloped - Pre/Post or Post			

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □□□ of students earned □□□ or higher **C□□ss□□c□t□o□□** Criterion Not Met	0□/2□/2010 - Increase emphasis on course materials in lecture		2 - Pending Action

Cou□se Outcome □□CLLS 219□□□ Hemost□s□s□□□ o□ess□ o□□□□□ □o□ □e□□e□□ Com□ete□c□ 2

□iagram the process of hemostasis from primary hemostasis to secondary hemostasis and fibrinolysis.

St□t□□□te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□**	**□ct□o□**
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□utline the structure and function of platelets.

St□t□□□te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome □□CLLS 219□□□ Hemost□s□s□□□ o□ess□ o□□□□□ □o□ □e□□e□□ Com□ete□c□ 4

List the different components involved in hemostasis and fibrinolysis and e□plain their roles.

St□t□□□te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□**	**□ct□o□**
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Cou□se Outcome □□CLLS 219□□□ Hemost□s□s□□□ o□ess□ o□□□□□ □o□ □e□□e□□ Com□ete□c□ 5

□escribe the use of different laboratory tests associated with monitoring the hemostatic system.

St□t□□□te□ 02/02/2010
Outcome St□tus□ Active

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□□am □ssessme□t Met□o□ C□te□o□□□ Test - Internally □eveloped - Pre/Post or Post	□0□ of students will earn □□□ or higher		□es

Resu□ts

Results			
Result	**Action**	**Notes**	**Action**
Test - Internally Developed - Pre/Post or Post - 0/2/2010 - 000 of students earned 000 or higher **Classification** Criterion Not Met	0/2/2010 - Increase emphasis on course materials in lecture		2 - Pending Action

Course Outcome: CLLS 219 Hemostasis Process Competency 6

Differentiate the disorders of the hemostatic system.

Start Date: 02/02/2010
Outcome Status: Active

Results			
Result	**Action**	**Notes**	**Action**
No Results Recorded			

Course Outcome: CLLS 219 Hemostasis Process Competency 7

Discuss the use of various anticoagulant drugs and their effect on patient laboratory results.

Start Date: 02/02/2010
Outcome Status: Active

Results			
Result	**Action**	**Notes**	**Action**
No Results Recorded			

Course Outcome: CLLS 220 Introduction to Urinalysis Hemostasis Lab Process Competency 1

Perform routine analyses on urine, including operating an automated urine dipstick reader, centrifuge, and microscope, and interpret the results.

Start Date: 12/11/200
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Perform routine UA interpret results **Assessment Method Category** Project/Model/Invention	0 of students will earn 0 or higher		Yes

Results			
Result	**Action**	**Notes**	**Action**
Project/Model/Invention - 0/2/2010 - 000 of students earned 0 or higher **Classification** Criterion Met			1 - No Action Required

Course Outcome: CLLS 220 Introduction to Urinalysis Hemostasis Lab Process Competency 2

Identify cellular components of urine.

Start Date: 02/02/2010
Outcome Status: Active

Results			

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 220 □□□o□□□u□ Hemost□s□s L□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 3

Perform manual cell counts using a hemocytometer and calculate results, including quantifying platelets and CS□ cell counts.

St□□t □□te□ 02/02/2010
Outcome St□tus□ Active

Me□□s □o□ □ssessme□t			
□ssessme□t Met□o□	C□te□o□ □o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
Perform hemocytometer counts and calculate results **□ssessme□t Met□o□ C□te□o□□□** Pro□ect/Model/Invention	□0□ of students will earn □0□ or higher		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
Pro□ect/Model/Invention - 0□/2□/2010 - □□□ of students earned □0□ or higher **C□□ss□□c□t□o□□** Criterion Not Met	0□/2□/2010 - Additional hemocytometer problems/tasks to be given in future courses		2 - Pending Action

Cou□se Outcome □CLLS 220 □□□o□□□u□ Hemost□s□s L□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 4

Perform a fibrinogen, APTT and PT using a fibrometer or toher mechanical method.

St□□t □□te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
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Cou□se Outcome □CLLS 220 □□□o□□□u□ Hemost□s□s L□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 5

□perate an automated hemostasis analyzer.

St□□t □□te□ 02/02/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
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Cou□se Outcome □CLLS 231 □ Hem□to□o□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 1

□utline the process of normal hematopoiesis and the components involved, to include intamedullary and e□tramedullary sites of cell production.

St□□t □□te□ 12/11/200□
Outcome St□tus□ Active

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□□am 1 □33 **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □□□		□es

Results			
Result	**Action**	**Notes**	**Action**
Test - Internally Developed - Pre/Post or Post - 0/0/2011 - 20/31 received full credit /31 received partial credit - 2 **Classification** Criterion Not Met	0/0/2011 - more emphasis on hematoporetic in lecture activities		2 - Pending Action

Course Outcome: CLLS 231 - Hematology Process Course Competency 2

Describe the normal functions of erythrocytes and leukocytes, including their metabolic processes.

Start Date: 02/02/2010
Outcome Status: Active

Measure Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Final Exam - 12, 13, 1, 2, **Assessment Method Criteria** Test - Internally Developed - Pre/Post or Post	0 of students will score greater than		Yes

Results			
Result	**Action**	**Notes**	**Action**
Test - Internally Developed - Pre/Post or Post - 0/0/2011 - 12 1/31 2 13 11/31 3 1 20/31 2 2/31 - 1/31 **Classification** Criterion Not Met	0/0/2011 - more emphasis and course exercises on basic cell metabolism/function		2 - Pending Action

Course Outcome: CLLS 231 - Hematology Process Course Competency 3

Describe the appearance of normal and abnormal red blood cells and white blood cells.

Start Date: 02/02/2010
Outcome Status: Active

Measure Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Final Exam - 30, **Assessment Method Criteria** Test - Internally Developed - Pre/Post or Post	0 of students will score greater than		Yes

Results			
Result	**Action**	**Notes**	**Action**
Test - Internally Developed - Pre/Post or Post - 0/0/2011 - 30 2/31 2/31 **Classification** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 231 □□Hem□to□o□□□□□o□ess□o□□□□□ □o□ e□□e□□ Com□ete□c□4

□ifferentiate the different erythrocyte disorders.

St□t□□ te□ 02/02/2010
Outcome St□tus□ Active

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□ssessme□t Met□o□	**C□te□□o□□ o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□inal □□am - □33, 3□ **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □□□		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □33 2□/31 □ □0.3□ □3□ 2□/31 □ □□□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 231 □□Hem□to□o□□□□□o□ess□o□□□□□ □o□ e□□e□□ Com□ete□c□5

□ifferentiate the hematologic neoplasms.

St□t□□ te□ 02/02/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	**C□te□□o□□ o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□inal □□am - □□□, □□ **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □□□		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □□□ 23/31 □ □□□ □□□ 2□/31 □ □□□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Additional emphasis and course e□ercises w/regard to hematoporetic neoplasms		2 - Pending Action

Cou□se Outcome □CLLS 232 □□Hem□to□o□□L□□□□□o□ess□o□□□□□ □o□ e□□e□□ Com□ete□c□1

□emonstrate proper use of a binocular microscope.

St□t□□ te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts			
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□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 232 □□Hem□to□o□□L□□□□□o□ess□o□□□□□ □o□ e□□e□□ Com□ete□c□2

Identify normal and abnormal blood cells.

St□t□□ te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
Cell I□ □uiz 3 □ssessme□t Met□o□ C□te□o□□□ Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □0□		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 232 □□Hem□to□o□□L□□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□3

Prepare and e□aine normal and abnormal blood smears, including the evaluation of cellular morphology and differential counts.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
Individual differential unknown slides □ssessme□t Met□o□ C□te□o□□□ □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	□0□ of students will score greater than □0□		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 2□/30 □ □0□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 232 □□Hem□to□o□□L□□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□4

Perform manual hematology procedures, including sedimentation rates, reticulocyte counts and sickle cell preparations.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
Individual competency assessment □ssessme□t Met□o□ C□te□o□□□ Test - Internally □eveloped - Pre/Post or Post	□0□ of students will score greater than □0□		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - 2□/30 □ □3□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Course Outcome: CLLS 232 Hematology Laboratory Process Competency 5

Manipulate instrumentation used in a hemotolgy lab.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 236 Clinical Microbiology Communication

Discuss treatment of infections caused by the medically significant bacteria.

Start Date: 12/11/2009
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 236 Clinical Microbiology Process Competency 1

List the most commonly medically important bacteria.

Start Date: 12/11/2009
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 236 Clinical Microbiology Process Competency 2

Describe the clinical significance of the medically important bacteria.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 236 Clinical Microbiology Process Competency 3

Outline the methods commonly used for identification of the medically important bacteria.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 236 Clinical Microbiology Process Competency 4

Describe the common methods of antimicrobial susceptibility testing.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**

□o Resu□ts □e□o□te□□

Cou□se Outcome□CLLS 237□□□ □□□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□ Com□ete□c□1

Select appropriate microbiological media.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 237□□□ □□□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□ Com□ete□c□2

□btain isolated colonies.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 237□□□ □□□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□ Com□ete□c□3

□se a binocular microscope.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 237□□□ □□□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□ Com□ete□c□4

Characterize bacterium using standard microbiologic stains.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 237□□□ □□□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□ Com□ete□c□5

Perform and interpret routine susceptibility testing.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 237□□□ □□□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□ Com□ete□c□6

Identify the clinically significant bacteria using manual, semi-automated, automated methods.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Results			
Result	Action	Follow-Up	Action Plan
No Results Reported			

Course Outcome: CLLS 237 □□□ □□□ost□c M□c□o L□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□7

Recover clinically significant bacteria from a variety of human specimens.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	Action	Follow-Up	Action Plan
No Results Reported			

Course Outcome: CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□Commu□c□t□o□

□iscuss the clinically significant protozoa, nematodes, cestodes, and digenea.

Start Date: 12/11/200□
Outcome Status: Active

Results			
Result	Action	Follow-Up	Action Plan
No Results Reported			

Course Outcome: CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□□□o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□1

Classify viruses based on nucleic acid content.

Start Date: 12/11/200□
Outcome Status: Active

Means of Assessment			
Assessment Method	Criterion for Success	Assessment Schedule	Active
Examination: Specified questions for each topic **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	□□□ of students will score □0□ or above on relevant examination questions		Yes

Results			
Result	Action	Follow-Up	Action Plan
Test - Internally Developed - Pre/Post or Post - 0□/1□/2010 - □□□ of students earned □0□ or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome: CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□□□o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□2

List a variety of medically important viruses and the diseases with which they are most associated.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	Criterion for Success	Assessment Schedule	Active
Examination **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	□□□ of students will earn □0□ or higher		Yes

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/1□/2010 - □□□ of students earned □0□ or higher **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□3

□utline the treatment of medically important viral infections.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□te□o□ □o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□□amination **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of students will earn □0□ or higher		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/1□/2010 - □□□ of students will earn □0□ or higher **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□4

□ifferentiate between fungi that are associated with cutaneous, subcutaneous, and systemic infections.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□5

□utline the treatment of medically important mycoses.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 241 □□□ □o□o□□M□co□o□□□□□□s□to□o□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□6

Recognize the life cycles of the clinically significant protozoa, nematodes, cestodes, and digenea.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported.			

Course Outcome - CLLS 241 [illegible] Competency 7

Outline the treatment of medically important parasites.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported.			

Course Outcome - CLLS 242 [illegible] Competency 1

Perform serologic tests used to diagnose viral infections.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Fungi identification assignment **Assessment Method Category:** Case Studies/Problem-based Assignments	[illegible] of students will earn a grade of [illegible]0[illegible] or better		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Case Studies/Problem-based Assignments - 0[illegible]/1[illegible]/2010 - [illegible] of students earned [illegible]0[illegible] or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 242 [illegible] Competency 2

Describe the macroscopic appearance of fungal colonies.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Laboratory Practical Exam **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	[illegible] of students will score [illegible]0[illegible] or above on relevant examination questions		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Test - Internally Developed - Pre/Post or Post - 0[illegible]/1[illegible]/2010 - [illegible]3[illegible] of students earned [illegible]0[illegible] or higher **Classification:** Criterion Not Met	0[illegible]/1[illegible]/2010 - Review Macroscopic morphology.		2 - Pending Action

Cou se Outcome CLLS 242 o o M co o s to o o ess o o e Com ete c 3

raw, label, and identify structural elements used for the identification of fungi.

St t te 02/03/2010
Outcome St tus Active

Me s o ssessme t			
ssessme t Met o	**C te o o Success**	**ssessme t Sc e u e**	**ct e**
Laboratory Practical am **ssessme t Met o C te o** Test - Internally eveloped - Pre/Post or Post	of students will score 0 or above on relevant e amination questions		es

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
Test - Internally eveloped - Pre/Post or Post - 0/1/2010 - 3 of students earned 0 or higher **C ss c t o** Criterion Not Met	0/1/2010 - ill review at ne t program faculty meeting.		2 - Pending Action

Cou se Outcome CLLS 242 o o M co o s to o o ess o o e Com ete c 4

Perform tests used to differentiate yeasts.

St t te 02/03/2010
Outcome St tus Active

Me s o ssessme t			
ssessme t Met o	**C te o o Success**	**ssessme t Sc e u e**	**ct e**
Laboratory Practical am **ssessme t Met o C te o** Test - Internally eveloped - Pre/Post or Post	of students will score 0 or above on relevant e amination questions		es

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
Test - Internally eveloped - Pre/Post or Post - 0/1/2010 - 3 of students earned 0 or higher **C ss c t o** Criterion Not Met	0/1/2010 - ill review at ne t program faculty meeting.		2 - Pending Action

Cou se Outcome CLLS 242 o o M co o s to o o ess o o e Com ete c 5

Perform common stains used for identification of the medically important fungi and parasites.

St t te 02/03/2010
Outcome St tus Active

Me s o ssessme t			
ssessme t Met o	**C te o o Success**	**ssessme t Sc e u e**	**ct e**
Laboratory Practical am **ssessme t Met o C te o** Test - Internally eveloped - Pre/Post or Post	of students will score 0 or above on relevant e amination questions		es

Resu ts

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/1□/2010 - □3□ of students earned □0□ or higher **C□□ss□□c□t□o□□** Criterion Not Met	0□/1□/2010 - Review procedure for common fungal stains		2 - Pending Action

Cou□se Outcome □CLLS 242 □□□ □o□o□□ M□co□o□□□□□□s to□o□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 6

Process human specimens for recovery of medically important fungi and parasites.

St□□t □□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□te□o□ □□o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Laboratory Practical □□am **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of students will score □0□ or above on relevant e□amination questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/1□/2010 - □□□ of students earned □0□ or higher **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 242 □□□ □o□o□□ M□co□o□□□□□□s to□o□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 7

□raw, label and identify medically important protozoa, nematodes, cestodes and dignea.

St□□t □□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□te□o□ □□o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Laboratory Practical □□am **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of students will score □0□ or above on relevant e□amination questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/1□/2010 - □□□ of students earned □0□ or higher **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 242 □□□ □o□o□□ M□co□o□□□□□□s to□o□□□□ □o□ess□o□□□□ □o□ □e□□e□□ Com□ete□c□ 8

□utline treatment of infections caused by medically important viruses, fungi and parasites.

St□□t □□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Laboratory Practical □□am □ssessme□t Met□o□ C□te□o□□□ Test - Internally □eveloped - Pre/Post or Post	□□□ of students will score □0□ or above on relevant e□amination questions		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 252 □□l□t□o C□□□c □□Immu□o□o□□□□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□ 1

□utline the development of the normal human immune system.

St□□t□□ □te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 252 □□l□t□o C□□□c □□Immu□o□o□□□□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□ 2

□efine terminology associated with immunology.

St□□t□□ □te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 252 □□l□t□o C□□□c □□Immu□o□o□□□□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□ 3

□utline the interactions between antigens and antibodies.

St□□t□□ □te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 252 □□l□t□o C□□□c □□Immu□o□o□□□□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□ 4

Compare an immunocompetent person with an immunocompromised one.

St□□t□□ □te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 252 □□l□t□o C□□□c □□Immu□o□o□□□□□□o□ess□o□□□□□□o□ □e□□e□□ Com□ete□c□ 5

□iscuss the immunologic basis of organ transplants and tumors.

St□□t□□ □te□ 02/03/2010
Outcome St□tus□ Active

Results			
Result	Action	Follow-Up	Action
No Results Reported			

Course Outcome - CLLS 253 - Clinical Immunology Lab - Professional Knowledge Competency 1

Select the appropraite immunoassay to aid in the diagnosis of a variety of medical conditions.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Results			
Result	Action	Follow-Up	Action
No Results Reported			

Course Outcome - CLLS 253 - Clinical Immunology Lab - Professional Knowledge Competency 2

Perform and interpret an example of the following immunoassays: serial dilution, agglutination, precipitation, florescent, electrophoresis, and enzyme immunosorbent assay.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	Action	Follow-Up	Action
No Results Reported			

Course Outcome - CLLS 256 - Simulated Laboratory for MLT - Professional Ethical Behaviors

Demonstrate professional behaviors in the laboratory by working with students, other faculty and guests to provide excellent laboratory service.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Daily check in LIS for work completed **Assessment Method Category:** Performance (e.g. Music, Theatre)	100% of the laboratory test assigned is completed		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Performance (e.g. Music, Theatre) - 0[illegible]/0[illegible]/2011 - 100% of the laboratory test assigned is completed **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 256 - Simulated Laboratory for MLT - Professional Knowledge Competency 1

Demonstrate acquired knowledge on bloodbank, body fluids, clinical chemistry, coagulation, hematology and microbiology.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
In class exam **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	100% of students will score [illegible]0% or above on exam		Yes

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	**C□te□o□□o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Comprehensive e□am **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the students will earn □0□ or better		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □□□ □□/□□of the student earned □0□ or better **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - □eedback to students on areas that need improvements based on section e□aminations		2 - Pending Action
Test - Internally □eveloped - Pre/Post or Post - 0□/1□/2010 - Course was not taught in Spring □10 due to low enrollment. **C□□ss□□c□t□o□□** Inconclusive			1 - No Action Required

Cou□se Outcome□ CLLS 256□□ S□mu□te□ L□□o□□to□□□o□ ML□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□ 2

□emonstrate knowledge by successfully completing section e□aminations.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□□ssessme□t			
□ssessme□t Met□o□	**C□te□o□□o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□□am **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the students will earn complete each section e□amination		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - 100□ of the student completed the section e□aminations **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome□ CLLS 256□□ S□mu□te□ L□□o□□to□□□o□ ML□□□□o□e□m□so□□□□

Perform and validate test results, including instrument function checks, review of quality control requirements and correct documentation.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□□ssessme□t			
□ssessme□t Met□o□	**C□te□o□□o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Student psychomotor performance evaluations **□ssessme□t Met□o□ C□te□o□□□** □bservations □e.g. Clinical or □ield□	100□ of students will score an average of □0□ or above on multiple psychomotor performance evaluations.		□es

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□ocument instrument maintenance and quality control results **□ssessme□t Met□o□ C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	100□ of the students will document instrument maintenance and quality control results		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - □□□□ □□/□□of the students documented appropriate maintenance and quality control results **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Provide orientation for simulated laboratory for students		2 - Pending Action

Cou□se Outcome□□CLLS 256□□□S□mu□□te□□L□□o□□to□□□□o□ML□□□□o□ess□o□□□□□□o□□e□□e□□□Com□ete□c□3

□se a laboratory information system to determine test orders, report results and pending tests.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□ocument all laboratory results using the laboratory information system **□ssessme□t Met□o□ C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	100□ of the students will document all laboratory results using the laboratory information system		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the students will document all laboratory results using the laboratory information system **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome□□CLLS 256□□□S□mu□□te□□L□□o□□to□□□□o□ML□□□Commu□□c□t□o□

Communicate with fellow students, faculty, and others to provide optimum laboratory service.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□□CLLS 258□□□Immu□o□em□to□o□□□□□o□ess□o□□□□□□o□□e□□e□□□Com□ete□c□1

Relate factors that influence antigen-antibody reactions to common transfusion service procedures.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o□Success	□ssessme□t Sc□e□u□e	□ct□□e
□□uestion 3□ □□am 1□ **□ssessme□t Met□o□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of the students will score 100□ on relevant test questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □2□ □1□/2□□of the student score 100□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Additional emphasis in lecture		2 - Pending Action

Cou□se Outcome □CLLS 258□□Immu□o□em□to□o□□□□□o□ess□o□□□□□o□ □e□□e□□□Com□ete□c□2

□escribe the role of blood group systems to transfusion practice.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o□Success	□ssessme□t Sc□e□u□e	□ct□□e
□□uestion 3□ □□am 1□ **□ssessme□t Met□o□C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□□□ of the students will score 100□ on relevant test questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □□□ □1□/2□□of the student score 100□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Additional emphasis in lecture		2 - Pending Action

Cou□se Outcome □CLLS 258□□Immu□o□em□to□o□□□□□o□ess□o□□□□□o□ □e□□e□□□Com□ete□c□3

□escribe common techniques performed in the transfusion service, including sources of error.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o□Success	□ssessme□t Sc□e□u□e	□ct□□e
□Case 3□ **□ssessme□t Met□o□C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	100□ of the student will score □□□ or better on case study		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the student score average of □□□			1 - No Action

Results			
Result	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
C□□ss□□c□t□o□□ Criterion Met			

Cou□se□Outcome□□CLLS□258□□Immu□o□em□to□o□□□□□o□ess□o□□□□□o□□e□□e□□□Com□ete□c□□4

□escribe causes, diagnosis, and treatment of transfusion reactions and hemolytic disease of the newborn.

St□□t□□□te□ 02/03/2010
Outcome□St□tus□ Active

Me□□s□o□□□ssessme□t			
□ssessme□t□Met□o□	**C□□te□o□□□o□Success**	**□ssessme□t□Sc□e□u□e**	**□ct□□e**
□Case □□ **□ssessme□t□Met□o□□C□te□o□□□**	100□ of the student will score □□□ or better on case study		□es
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□			

Results			
Result	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the student score average of □□□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se□Outcome□□CLLS□258□□Immu□o□em□to□o□□□□□o□ess□o□□□□□o□□e□□e□□□Com□ete□c□□5

Identify anticoagulants and preservatives used in blood collection, and describe the physiologic changes in a unit of stored blood.

St□□t□□□te□ 02/03/2010
Outcome□St□tus□ Active

Me□□s□o□□□ssessme□t			
□ssessme□t□Met□o□	**C□□te□o□□□o□Success**	**□ssessme□t□Sc□e□u□e**	**□ct□□e**
□Case 2□ **□ssessme□t□Met□o□□C□te□o□□□**	100□ of the student will score □□□ or better on case study		□es
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□			

Results			
Result	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the student score average of □0□ **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se□Outcome□□CLLS□258□□Immu□o□em□to□o□□□□□o□ess□o□□□□□o□□e□□e□□□Com□ete□c□□6

□escribe methods used to separate whole blood into components, and correlate component therapy with specific patient conditions.

St□□t□□□te□ 02/03/2010
Outcome□St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□lood component information sheet **□ssessme□t Met□o□ C□te□o□□□** □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	100□ of the students will complete a blood component information sheet		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the students complete the information sheet **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS□259□□Immu□o□em□to□o□□L□□□□□o□ess□o□□□□□o□□e□□e□□Com□ete□c□1

Perform basic techniques, such as separating serum and cells, making cell suspensions, and grading reactions.

St□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□Cell suspension and grading competencies□ **□ssessme□t Met□o□ C□te□o□□□** Performance □e.g. Music, Theatre□	100□ of the students will score □0□ or better on the competency check for relevant activities		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Performance □e.g. Music, Theatre□- 0□/0□/2011 - 100□ of the student average □0□ for the competencies **C□□ss□□c□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS□259□□Immu□o□em□to□o□□L□□□□□o□ess□o□□□□□o□□e□□e□□Com□ete□c□2

Type for A□□, Rh and other blood group antigens.

St□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Lab 2 **□ssessme□t Met□o□ C□te□o□□□** Performance □e.g. Music, Theatre□	100□ of the students will score □0□ or better on the laboratory e□ercise relevant to the activities		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Performance □e.g. Music, Theatre□- 0□/0□/2011 - 100□ of the student average □□□ for the competencies			1 - No Action

Results			
Result	**Action**	**Notation**	**Action**
Classification Criterion Met			

Course Outcome: CLLS 2591 Immunohematology Laboratory Process Competency 3

Perform direct and indirect antiglobulin tests.

Start Date: 02/03/2010
Outcome Status: Active

Measure Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Lab **Assessment Method Category** Performance (e.g. Music, Theatre)	100% of the students will score 80% or better on the laboratory exercise relevant to the activities		Yes

Results			
Result	**Action**	**Notation**	**Action**
Performance (e.g. Music, Theatre) - 01/01/2011 - 100% of the student average met for the competencies **Classification** Criterion Met			1 - No Action Required

Course Outcome: CLLS 2591 Immunohematology Laboratory Process Competency 4

Perform routine compatibility testing.

Start Date: 02/03/2010
Outcome Status: Active

Measure Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Lab **Assessment Method Category** Performance (e.g. Music, Theatre)	100% of the students will score 80% or better on the laboratory exercise relevant to the activities		Yes

Results			
Result	**Action**	**Notation**	**Action**
Performance (e.g. Music, Theatre) - 01/01/2011 - 100% of the student average met for the competencies **Classification** Criterion Met			1 - No Action Required

Course Outcome: CLLS 2591 Immunohematology Laboratory Process Competency 5

Identify antibodies in patient samples.

Start Date: 02/03/2010
Outcome Status: Active

Measure Assessment

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Lab □ □ssessme□t Met□o□ C□te□o□□□ Performance □e.g. Music, Theatre□	100□ of the students will score □0□ or better on the laboratory e□ercise relevant to the activities		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Performance □e.g. Music, Theatre□- 0□/0□/2011 - 100□ of the student average □□□ for the competencies C□□ss□□c□t□o□□ Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 259□□Immu□o□em□to□o□□L□□□□□o□em So□□□□□1

Perform compatibility testing in comple□situations, such as when patients have antibody or hisotry of antibody.

St□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Lab 10 □ssessme□t Met□o□ C□te□o□□□ Performance □e.g. Music, Theatre□	100□ of the students will score □0□ or better on the laboratory e□ercise relevant to the activities		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Performance □e.g. Music, Theatre□- 0□/0□/2011 - 100□ of the student average □0□ for the competencies C□□ss□□c□t□o□□ Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 259□□Immu□o□em□to□o□□L□□□□□o□em So□□□□□2

Investigate suspected transfusion reactions.

St□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Lab 11 □ssessme□t Met□o□ C□te□o□□□ Performance □e.g. Music, Theatre□	100□ of the students will score □0□ or better on the laboratory e□ercise relevant to the activities		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Performance □e.g. Music, Theatre□- 0□/0□/2011 - 100□ of the student average □2□ for the			1 - No

Results			
Result	**Action**	**Follow-Up**	**Action**
competencies **Class Action:** Criterion Met			Required

Cou□se Outcome □ CLLS 259 □ Immu□o□em□to□o□□L□□□□□o□em So□□□□3

Perform tests to predict, diagnose, and prevent hemolytic disease of the newborn.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Lab 12 **Assessment Method Category:** Performance (e.g. Music, Theatre)	100□ of the students will score □0□ or better on the laboratory e□ercise relevant to the activities		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Performance (e.g. Music, Theatre) - 0□/0□/2011 - 100□ of the student average □□□ for the competencies **Class Action:** Criterion Met			1 - No Action Required

Cou□se Outcome □ CLLS 281 □ C□□□c□□L□□Sc□□eo□□□o□ML□□□□o□ess□o□□□□□o□□e□□e□□Com□ete□c□1

Complete assigned review material in body fluid analysis, clinical chemistry, coagulation, hematology, immunology, Microbiology, and transfusion medicine.

Start Date: 12/11/200□
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Cou□se Outcome □ CLLS 281 □ C□□□c□□L□□Sc□□eo□□□o□ML□□□□o□ess□o□□□□□o□□e□□e□□Com□ete□c□2

Complete e□aminations in each of the areas listed above with a score of □0□ or better.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
□nline e□ams **Assessment Method Category:** Test - Internally □eveloped - Pre/Post or Post	□0□ of scored e□ams will show student earned □0□ or better		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Cou se Outcome CLLS 292 C c e e ce 1 o ML o ess o o e e Com ete c 1

Perform routine immunohematology, immunology, and microbiology testing at career entry level.

St t te 12/11/200
Outcome St tus Active

Me s o ssessme t			
ssessme t Met o	**C te o o Success**	**ssessme t Sc e u e**	**ct e**
Psychomotor check sheets completed by clinical instructors **ssessme t Met o C te o** ritten Product essay, research paper, ournal, newsletter, etc.	100 of students will achieve a score of 0 or better on check sheet items referring to routine testing		es

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
ritten Product essay, research paper, ournal, newsletter, etc. - 0/1/2010 - 100 of students earned 0 or higher **C ss c t o** Criterion Met			1 - No Action Required

Cou se Outcome CLLS 292 C c e e ce 1 o ML o ess o o e e Com ete c 2

Maintain laboratory instruments according to established protocols.

St t te 02/03/2010
Outcome St tus Active

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
o Resu ts e o te			

Cou se Outcome CLLS 292 C c e e ce 1 o ML o ess o t c e o s

emonstrate safe laboratory practices and professional behaviors in the normally stresful conditions of the clinical laboratory.

St t te 12/11/200
Outcome St tus Active

Me s o ssessme t			
ssessme t Met o	**C te o o Success**	**ssessme t Sc e u e**	**ct e**
Affective check sheets completed by clinical instructors **ssessme t Met o C te o** ritten Product essay, research paper, ournal, newsletter, etc.	100 of students will achieve a score of 0 or betterin on check sheet items referring to routine testing.		es

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
ritten Product essay, research paper, ournal, newsletter, etc. - 0/1/2010 - 100 of students earned 0 or higher **C ss c t o** Criterion Met			1 - No Action Required

Course Outcome: CLLS 292 Clinical Experience 1 for MLT Problem Solving

Recognize problems in laboratory results, and take appropriate action.

Start Date: 12/11/200
Outcome Status: Active

Results			
Result	**Action**	**Competency**	**Action**
No Results Entered			

Course Outcome: CLLS 292 Clinical Experience 1 for MLT Communication

Communicate with patients, providers, and other laboratory personnel.

Start Date: 12/11/200
Outcome Status: Active

Results			
Result	**Action**	**Competency**	**Action**
No Results Entered			

Course Outcome: CLLS 293 Clinical Experience 2 for MLT Professional Behaviors Competency 1

Perform routine hematology, coagulation, body fluid, and clinical chemistry testing at a career entry level.

Start Date: 12/11/200
Outcome Status: Active

Results			
Result	**Action**	**Competency**	**Action**
No Results Entered			

Course Outcome: CLLS 293 Clinical Experience 2 for MLT Professional Behaviors Competency 2

Maintain laboratory instruments according to established protocols.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Competency**	**Action**
No Results Entered			

Course Outcome: CLLS 293 Clinical Experience 2 for MLT Professional Behaviors Competencies

Demonstrate safe laboratory practices and professional behaviors in the normally stressful conditions of the clinical laboratory.

Start Date: 12/11/200
Outcome Status: Active

Results			
Result	**Action**	**Competency**	**Action**
No Results Entered			

Course Outcome: CLLS 293 Clinical Experience 2 for MLT Problem Solving

Recognize problems in laboratory results, and take appropriate action.

Start Date: 12/11/200
Outcome Status: Active

Results			
Result	**Action**	**Competency**	**Action**

No Results Reported

Course Outcome - CLLS 293 - Clinical Experience 2 - ML - Communication

Communicate with other healthcare professionals, patients and co-workers.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Course Outcome - CLLS 356 - Advanced Clinical Chemistry - Professional Knowledge - Competency 1

Deseribe hormones, tumor markers, and nutritional analytes measured in clinical chemistry.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Means of Assessment

Assessment Method	Criterion for Success	Assessment Schedule	Active
Analyte assignment **Assessment Method Category:** Written Product (essay, research paper, journal, newsletter, etc.)	[illegible] of the students will earn [illegible] or better		Yes

Results

Result	Action	Follow-Up	Action
Written Product (essay, research paper, journal, newsletter, etc.) - 0[illegible]/0[illegible]/2011 - 100[illegible] of the analyte assignment average is [illegible]3[illegible] **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 356 - Advanced Clinical Chemistry - Professional Knowledge - Competency 2

Discuss emerging technologies, such as molecular diagnostic applications and nanotechnology and their roles in routine clinical chemistry.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment

Assessment Method	Criterion for Success	Assessment Schedule	Active
Exam [illegible] **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	100[illegible] of the student will earn [illegible] or better on relevant test questions		Yes

Results

Result	Action	Follow-Up	Action
Test - Internally Developed - Pre/Post or Post - 0[illegible]/0[illegible]/2011 - 100[illegible] of the student averages [illegible] on relevant test questions **Classification:** Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 356□□□□ □□□□ce □C□□□c □□C□em st□□□□□ o□em So□□□□ 1

□stablish reference ranges for analytes in clinical chemistry.

St□t□□ te□ 12/11/200□
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	**C□te□o□□o Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Analyze reference range assignment. **□ssessme□t Met□o□ C□te□o□□□** Case Studies/Problem-based Assignments	□0□ of scored will show student earned □□□ or higher on this assignment.		□es
□uestion 1□ □□am 2 **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the student will earn 100□ on relevant test questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - □3□ of the student earned 100□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Add reference ranges assignment		2 - Pending Action
Case Studies/Problem-based Assignments - 0□/1□/2010 - 100□ of students earned □□□ or higher **C□□ss□□c□t□o□□** Criterion Met	0□/1□/2010 - Continue to follow-up		1 - No Action Required

Cou□se Outcome □CLLS 356□□□□ □□□□ce □C□□□c □□C□em st□□□□□ o□em So□□□□ 2

Apply predictive value theory to establishing cutoff values for laboratory results.

St□t□□ te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	**C□te□o□□o Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
□uestion 1□ □□am 2 **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the student will earn 100□ on relevant test questions		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□ □□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - 23□ of the student earned 100□ **C□□ss□□c□t□o□□** Criterion Not Met	0□/0□/2011 - Modify assignment to be individual assignment instead of group assignment		2 - Pending Action

Cou□se Outcome □CLLS 356□□□□ □□□□ce □C□□□c □□C□em st□□□□□ o□em So□□□□ 3

Calculate random, proportional, constant, and total error for an analytical method, compare them to allowable error, and make decisions about the method□s acceptability.

St□t□□ te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□uestion 1□ □□am 2 □ssessme□t Met□o□C□te□o□□□ Test - Internally □eveloped - Pre/Post or Post	100□ of the student will earn 100□ on relevant test questions		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
Test - Internally □eveloped - Pre/Post or Post - 0□/0□/2011 - 23□ of the student earned 100□ C□□ss□□c□t□o□□ Criterion Not Met	0□/0□/2011 - Modify assignment to be individual assignment instead of group assignment		2 - Pending Action

Cou□se Outcome □CLLS 357□□□□ □□C□□□c□□C□em□st□□L□□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□1

Run large automated analyzers, including documentation of performance checks, calibration, and basic trouble shooting procedures.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
□ocument maintenance, quality control and troubleshooting for automated analyzers □ssessme□t Met□o□C□te□o□□□ □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	100□ of the students will document maintenance, quality control and troubleshooting for automated analyzers		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□
□ ritten Product □essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 100□ of the students documented maintenance, quality control and troubleshooting for automated analyzers C□□ss□□c□t□o□□ Criterion Met			1 - No Action Required

Cou□se Outcome □CLLS 357□□□□ □□C□□□c□□C□em□st□□L□□□□□o□ess□o□□□□□o□ □e□□e□□ Com□ete□c□2

Apply new technologies to the detection and quantification of tumor markers, drugs of abuse, and hormones.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□te□o□□o Success	□ssessme□t Sc□e□u□e	□ct□□e
Laboratory report □ssessme□t Met□o□C□te□o□□□ □ ritten Product □essay, research paper, □ournal, newsletter, etc.□	100□ of the students will earn □□□ or higher		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□□□□	□ct□o□

Results			
Result	**Action**	**Notation**	**Action**
Written Product Essay, research paper, journal, newsletter, etc. - 0/0/2011 - 100 of the laboratory report will show students earn **Classification** Criterion Met			1 - No Action Required

Course Outcome CLLS 357 Clinical Chemistry Laboratory Problem Solving

Compare methods, including gathering data, performing calculations and making decisions.

Start Date 12/11/200
Outcome Status Active

Method Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Method comparison data **Assessment Method Criteria** Written Product Essay, research paper, journal, newsletter, etc.	0 of students will document the method comparison data		Yes

Results			
Result	**Action**	**Notation**	**Action**
Written Product Essay, research paper, journal, newsletter, etc. - 0/0/2011 - 100 of the students reported the data **Classification** Criterion Met			1 - No Action Required

Course Outcome CLLS 431 Advance Hematology Professional Competency 1

Evaluate hematology test data and follow up testing data to determine the most likely diagnosis of hematologic disease and suggest follow up testing based on initial hematology data.

Start Date 12/11/200
Outcome Status Active

Results			
Result	**Action**	**Notation**	**Action**
No Results Entered			

Course Outcome CLLS 431 Advance Hematology Professional Competency 2

Describe and summarize the pathophsiology of hematologic diseases.

Start Date 02/03/2010
Outcome Status Active

Results			
Result	**Action**	**Notation**	**Action**
No Results Entered			

Course Outcome CLLS 431 Advance Hematology Professional Competency 3

Describe and explain the principles of bone marrow analysis, cytochemistry, cytogenetics, flow dytometry and molecular analysis as used in the diagnosis and treatment of hematologic disease.

Start Date 02/03/2010
Outcome Status Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□□te□□o□□□o□Success	□ssessme□t Sc□e□u□e	□ct□□e
□□amination designated questions on this topic. **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will pass an e□amination covering these materials with a score of □□□ or better.		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □3.3□ of students earned □□□ or higher **C□□ss□□c□t□o□□** Criterion Not Met	0□/2□/2010 - Increase emphasis on this material in the upcoming course in 2011		2 - Pending Action

Cou□se Outcome □CLLS 431□□□□ □□□□ce □Hem□to□o□□□□□o□□em So□□□□□1

Analyze complete blood count data for the presence of abnormalities and discrepancies and suggest solutions to the problems detected.

St□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Me□□s□o□□ssessme□t			
□ssessme□t Met□o□	C□□te□□o□□□o□Success	□ssessme□t Sc□e□u□e	□ct□□e
□inal e□amination case study question on this topic. **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of students will correctly complete the case study portion of course e□aminations.		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
Test - Internally □eveloped - Pre/Post or Post - 0□/2□/2010 - □□.□□ of students correctly completed the case study portion of course e□aminations. **C□□ss□□c□t□o□□** Criterion Not Met			2 - Pending Action

Cou□se Outcome □CLLS 431□□□□ □□□□ce □Hem□to□o□□□□□o□□em So□□□□□2

□valuate hematology test data and follow up testing data to determine the most likely diagnosis of hematologic disease and suggest follow up testing based on initial hematology data.

St□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□o□□□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 431□□□□ □□□□ce □Hem□to□o□□□□Commu□□c□t□o□

Create a case study for formal presentation.

St□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Course Outcome - CLLS 432 - [illegible]ce Hematology Lab - Profession[illegible] Competency 1

Identify normal and abnormal blood cells and correlate their presence with associated disorders.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Laboratory cell identification quizzes. **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	[illegible]0% of students will score [illegible]0% or better		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Test - Internally Developed - Pre/Post or Post - 0[illegible]/2[illegible]/2010 - [illegible] of students earned [illegible]0% or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 432 - [illegible]ce Hematology Lab - Profession[illegible] Competency 2

Perform routine, automated and special hematology laboratory assays including bone marrow scans, cytochemistry and blood smear evaluation.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Course Outcome - CLLS 432 - [illegible]ce Hematology Lab - Problem Solving

Analyze complete blood count data for the presence of abnormalities and discrepancies and suggest solutions to the problems detected.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Laboratory exercises. **Assessment Method Category:** Written Product (essay, research paper, journal, newsletter, etc.)	[illegible]0% of students will score [illegible]0% or better.		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Written Product (essay, research paper, journal, newsletter, etc.) - 0[illegible]/2[illegible]/2010 - [illegible]3.[illegible] of students earned [illegible]0% or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 436 [illegible]ce[illegible] Diagnostic Microbiology - Professional Knowledge Competency 1

List the common pathogens associated with infectious disease of various human body sites.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Examination **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	[illegible] of students will score [illegible]0[illegible] or better on relevant examination questions.		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Test - Internally Developed - Pre/Post or Post - 0[illegible]/1[illegible]/2010 - [illegible]0[illegible] of students earned [illegible]0[illegible] or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 436 [illegible]ce[illegible] Diagnostic Microbiology - Professional Knowledge Competency 2

Discuss the antibiotic therapy common for a variety of etiologic agents of infectious disease.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Examination **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	[illegible] of students will score [illegible]0[illegible] or better on relevant examination questions.		Yes

Results			
Result	**Action**	**Follow-Up**	**Action**
Test - Internally Developed - Pre/Post or Post - 0[illegible]/1[illegible]/2010 - [illegible]0[illegible] of students earned [illegible]0[illegible] or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 436 [illegible]ce[illegible] Diagnostic Microbiology - Problem Solving

Describe the importance of infection control in a clinical setting.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Course Outcome - CLLS 436 [illegible]ce[illegible] Diagnostic Microbiology - Communications

Create a case study for formal presentation.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Course Outcome - CLLS 437 [illegible] Diagnostic Microbiology Lab [illegible] Professional [illegible] Competency 1

Process a variety of human microbiology specimens.

Start Date: 12/11/200[illegible]
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
proficiency demonstration. **Assessment Method Category:** Observations (e.g. Clinical or Field)	[illegible] of students will earn a grade of [illegible] or better on the unknown specimens.		[illegible]es

Results			
Result	**Action**	**Follow-Up**	**Action**
Observations (e.g. Clinical or Field) - 0[illegible]/1[illegible]/2010 - [illegible] of students earned [illegible] or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 437 [illegible] Diagnostic Microbiology Lab [illegible] Professional [illegible] Competency 2

Recover and identify common microorganisms found in a variety of human microbiology specimens.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Proficiency demonstration **Assessment Method Category:** Observations (e.g. Clinical or Field)	[illegible] of students will earn a grade of [illegible] or better on the unknown specimens		[illegible]es

Results			
Result	**Action**	**Follow-Up**	**Action**
Observations (e.g. Clinical or Field) - 0[illegible]/1[illegible]/2010 - [illegible] of students earned [illegible] or higher **Classification:** Criterion Met			1 - No Action Required

Course Outcome - CLLS 437 [illegible] Diagnostic Microbiology Lab [illegible] Professional [illegible] Competency 3

Report culture and antimicrobial susceptibility testing results from variety of human microbiology specimens.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Follow-Up**	**Action**
No Results Reported			

Cou□se Outcome□CLLS 456 □□S□mu□□te□□L□□o□□to□□□o□M□□□□□o□ess□o□□□□□□t□c□□□e□□□□o□s

□emonstrate professional behaviors in the laboratory by working with students, other faculty and guests to provide e□cellent laboratory service.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□□□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 456 □□S□mu□□te□□L□□o□□to□□□o□M□□□□□o□□em So□□□□

Perform and validate test results, including instrument fuction checks, review of quality control requirements, and correct documentation.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□□□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 456 □□S□mu□□te□□L□□o□□to□□□o□M□□□Commu□□c□□t□o□□1

Supervise other students within a laboratory section, and perform management tasks as assigned.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Me□□□s o□ □ssessme□t			
□ssessme□t Met□o□	**C□□te□□o□□□o□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Individual student management memo **□ssessme□t Met□o□ C□te□o□□□** □ritten Product (essay, research paper, □ournal, newsletter, etc.□	□0□ of students score great than □0□ on assigned managment tasks		□es

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□□□□**	**□ct□o□**
□ritten Product (essay, research paper, □ournal, newsletter, etc.□- 0□/0□/2011 - 2/1□□□□□□ **C□□ss□□c□□t□o□□** Criterion Met			1 - No Action Required

Cou□se Outcome□CLLS 456 □□S□mu□□te□□L□□o□□to□□□o□M□□□Commu□□c□□t□o□□2

Communicate as needed with other students, faculty and others to provide optimum laboratory service.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Resu□ts			
Resu□t	**□ct□o□**	**□o□□o□□□□**	**□ct□o□**
□o Resu□ts □e□o□te□□			

Cou□se Outcome□CLLS 456 □□S□mu□□te□□L□□o□□to□□□o□M□□□□□o□ess□o□□□□□□□o□□e□□e□□□Com□ete□c□□1

□emonstrate acquired knowledge by earning a score of □0□ or better on a comprehensive e□amination.

St□□t□□□te□ 12/11/200□
Outcome St□tus□ Active

Results			
Result	**□ct□o□**	**□o□o□□□**	**□ct□o□**
□o Results □e□o□te□□			

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□emonstrate knowledge by successfully completing section e□aminations.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

Results			
Result	**□ct□o□**	**□o□o□□□**	**□ct□o□**
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□se a laboratory information system to determine test orders, report results, and identify pending tests.

St□□t□□□te□ 02/03/2010
Outcome St□tus□ Active

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Choose appropriate techniques to resolve comple□ antibody identification problems.

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Outcome St□tus□ Active

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□ssessme□t Met□o□	**C□□te□o□□□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Assigned case studies **□ssessme□t Met□o□ C□te□o□□□** Case Studies/Problem-based Assignments	□0□ of students will successfully resolve assigned case studies.		□es
□□am **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the students will score □□□ or better on relevant test questions		□es

Results			
Result	**□ct□o□**	**□o□o□□□**	**□ct□o□**
□o Results □e□o□te□□			

Cou□se Outcome □CLLS 458□□□□ □□□□ce □Immu□o□em□to□o□□□□□o□ess□o□□□□□ o□ □e□□e□□ Com□ete□c □1

□escribe gel testing systems and their applications. Recognize and describe the resolution of A□□ and Rh typing problems.

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Outcome St□tus□ Active

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□ssessme□t Met□o□	**C□□te□o□□□ Success**	**□ssessme□t Sc□e□u□e**	**□ct□□e**
Test **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the students will score □□□ or better on relevant test questions		□es

Results			
Result	Action	Follow-Up	Action
No Results Reported			

Course Outcome - CLLS 458 - Advanced Immunohematology - Professional Development Competency 2

Describe HLA antigens and their applications in organ transplantation, parentage studies, and disease association.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Examination **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	[illegible] of students will score [illegible] or above on relevant examination questions.		Yes
Test **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	100% of the students will score [illegible] or better on relevant test questions		Yes

Results			
Result	Action	Follow-Up	Action
No Results Reported			

Course Outcome - CLLS 458 - Advanced Immunohematology - Professional Development Competency 3

Describe the three causes of positive direct antiglobulin tests, and the role of the transusion service in treating these patients.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Exam **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	100% of the students will score [illegible] or better on relevant test questions		Yes

Results			
Result	Action	Follow-Up	Action
No Results Reported			

Course Outcome - CLLS 458 - Advanced Immunohematology - Professional Development Competency 4

Given simulated transfusion data, calculate optimum blood inventory for a transfusion service.

Start Date: 02/03/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion for Success**	**Assessment Schedule**	**Active**
Exam **Assessment Method Category:** Test - Internally Developed - Pre/Post or Post	100% of the students will score [illegible] or better on relevant test questions		Yes

Results			
Result	Action	Follow-Up	Action

□o Resu ts □e □o te □□

Cou se Outcome □CLLS 459 □□□ Immu o em to o □□L □□□□ o ess o □□□□ o □ e □□e □□ Com ete c □

Practice testing using gel system.

St □t □□ te □ 12/11/200□
Outcome St □tus □ Active

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□ssessme □t Met □o □	**C □te □o □□□ o Success**	**□ssessme □t Sc □e □u e**	**□ct □□e**
Relevant laboratory e □ercise **□ssessme □t Met □o □C □te □o □□□** Performance □e.g. Music, Theatre□	100□ of the students will earn □0□ or better on the relevant laboratory e □ercise		□es

Resu ts			
Resu t	**□ct o □**	**□o o □ □□**	**□ct o □**
□o Resu ts □e □o te □□			

Cou se Outcome □CLLS 459 □□□ Immu o em to o □□L □□□□ o em So □□□□

Resolve comple □ problems such as typing discrepancies, antibody identification, and cases of patients with positive □AT.

St □t □□ te □ 12/11/200□
Outcome St □tus □ Active

Me □□s o □□ssessme □t			
□ssessme □t Met □o □	**C □te □o □□□ o Success**	**□ssessme □t Sc □e □u e**	**□ct □□e**
□ □am **□ssessme □t Met □o □C □te □o □□□** Test - Internally □eveloped - Pre/Post or Post	100□ of the students will earn □□□ or better on laboratory e □amination withh relevant activities		□es

Resu ts			
Resu t	**□ct o □**	**□o o □ □□**	**□ct o □**
□o Resu ts □e □o te □□			

Cou se Outcome □CLLS 459 □□□ Immu o em to o □□L □□□□ Commu □c t o □

Prepare and deliver a continuing education presentation about a topic of interest to the transfusion service.

St □t □□ te □ 12/11/200□
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□ssessme □t Met □o □	**C □te □o □□□ o Success**	**□ssessme □t Sc □e □u e**	**□ct □□e**
□valuation of Presentation. **□ssessme □t Met □o □C □te □o □□□** Presentation □□ral□	□0□ of students will score □0□ or better		□es
Presentation **□ssessme □t Met □o □C □te □o □□□** Presentation □□ral□	100□ of the students will earn □0□ or better on the in class presentation		□es

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□o Resu ts □e □o te □□			

Cou se Outcome CLLS 465 M eme t C c L o ess o o e e Com ete c 1

Perform routine laboratory management operations, such as scheduling, budgeting, documenting compliance, writing procedures, and evaluating employees.

St t te 12/11/200
Outcome St tus Active

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
o Resu ts e o te			

Cou se Outcome CLLS 465 M eme t C c L o ess o o e e Com ete c 2

Calculate the cost to perform a specific laboratory test.

St t te 02/03/2010
Outcome St tus Active

Me s o ssessme t			
ssessme t Met o	**C te o o Success**	**ssessme t Sc e u e**	**ct e**
Individual cost pretest e ercise **ssessme t Met o C te o** ritten Product essay, research paper, ournal, newsletter, etc.	0 will score greater than 0 on cost/test e ercise		es

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
ritten Product essay, research paper, ournal, newsletter, etc. - 03/1 /2011 - 1 /1 **C ss c t o** Criterion Met			1 - No Action Required

Cou se Outcome CLLS 465 M eme t C c L o em So 1

pore issues of productivity and improvement of laboratory productivity, comparing laboratory performance to established benchmarks.

St t te 12/11/200
Outcome St tus Active

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
o Resu ts e o te			

Cou se Outcome CLLS 465 M eme t C c L o em So 2

esign, plan, implement and evaluate a program for assessing the continuing competency of laboratory employees.

St t te 02/03/2010
Outcome St tus Active

Resu ts			
Resu t	**ct o**	**o o**	**ct o**
o Resu ts e o te			

Cou se Outcome CLLS 465 M eme t C c L Commu c t o 1

Prepare and evaluate educational materials for clinical laboratory students.

St t te 12/11/200
Outcome St tus Active

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Review a current book relating to laboratory management, healthcare, or career development.

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Outcome St□tus□ Active

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Complete assigned review material in body fluid analysis, clinical chemistry, coagulation, hematology, immunology, microbiology, transfusion medicine, and laboratory practice.

St□□t □□□te□ 12/11/200□
Outcome St□tus□ Active

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Cou□se Outcome □CLLS 480 □□C□□□c□□L□□Sc□□□eo□□□o□M□□□□o□ess□o□□□□□o□ □e□□e□□Com□ete□c□ 2

Complete e□aminations in the areas listed with a score of □0□ or better□blood bank, body fluids, clinical chemistry, coagulation, hematology, immunology and microbiology.

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Outcome St□tus□ Active

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□ssessme□t Met□o□	C□ite□o□□o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
□nline e□amination. **□ssessme□t Met□o□ C□te□o□□□** Test - Internally □eveloped - Pre/Post or Post	□0□ of e□ams will display a score of □0□ or better.		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
□o Resu□ts □e□o□te□□			

Cou□se Outcome □CLLS 491 □□C□□□c□□□□□e□e□ce□o□M□□□□o□ess□o□□□□□o□ □e□□e□□Com□ete□c□ 1

Perform routine testing in the various sections of a full - service clinical laboratory□transfusion service, hemostasis, body fluids, clinical chemistry, hematology, immunology, and microbiology.

St□□t □□□te□ 12/11/200□
Outcome St□tus□ Active

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□ssessme□t Met□o□	C□ite□o□□o□ Success	□ssessme□t Sc□e□u□e	□ct□□e
Psychomotor check sheets completed by clinical instructors. **□ssessme□t Met□o□ C□te□o□□□** □bservations □e.g. Clinical or □ield□	100□ of students will achieve a score of □0□ or better on check sheet items referring to routine testing.		□es

Resu□ts

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
□o Resu□ts □e□o□te□			

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Calibrate, operate, and maintain laboratory instrumentation according to established protocols.

St□□t □□□te□ 02/03/2010
Outcome St□tus□ Active

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Psychomotor check sheets completed by clinical instructors. **□ssessme□t Met□o□ C□te□o□□□** □bservations □e.g. Clinical or □ield□	□0□ of students will achieve a score of □□□ or better on check sheet items referring to problem solving items.		□es

Resu□ts			
Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
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□emonstrate safe laboratory practices and professional behaviors in the normally stressful conditions of the clinical laboraty.

St□□t □□□te□ 12/11/200□
Outcome St□tus□ Active

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Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
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Recognize problems in laboratory results, and resolve the problems before reporting.

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Outcome St□tus□ Active

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Communicate with other healthcare professionals, patients and co-workers.

St□□t □□□te□ 12/11/200□
Outcome St□tus□ Active

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Resu□t	□ct□o□	□o□o□ □□□	□ct□o□
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Carry out the pro□ect, including progress reports.

St□□t □□□te□ 12/11/200□
Outcome St□tus□ Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 494 Management Practice in Clinical Laboratory Science Problem Solving

Identify a project of interest to a clinical laboratory and prepare a proposal describing the project, including a budget, timeline and needed approvals.

Start Date: 12/11/2009
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 494 Management Practice in Clinical Laboratory Science Communication

Report on the outcome of the project, including recommendations for the laboratory and for future students who may choose a similar project.

Start Date: 12/11/2009
Outcome Status: Active

Methods of Assessment			
Assessment Method	**Criteria for Success**	**Assessment Schedule**	**Active**
Final paper.	80% of students will earn a grade of 80% or better		Yes
Assessment Method Criteria: Written Product Essay, research paper, journal, newsletter, etc.			

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 499 Clinical Laboratory Science Seminar Professional Competency 1

Design, plan and implement certification exam review materials.

Start Date: 12/11/2009
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

Course Outcome: CLLS 499 Clinical Laboratory Science Seminar Professional Competency 2

Create certification-style exam review questions.

Start Date: 02/03/2010
Outcome Status: Active

Results			
Result	**Action**	**Comments**	**Action**
No Results Entered			

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Legend□□A□- Program Assessment, □I□- Introduced, □M□- Mastery, □R□- Reinforced

Outcomes	CCHS1011	CCHS1012	CCHS3115	CLLS1011	CLLS1222	CLLS1223	CLLS2116	CLLS2117	CLLS2118	CLLS2119	CLLS2120	CLLS2231	CLLS2232	CLLS2236	CLLS2237	CLLS2241	CLLS2242	CLLS2252	CLLS2253	CLLS2256	CLLS2258	CLLS2259	CLLS3356	CLLS3357	CLLS4331	CLLS4332	CLLS4336	CLLS4337	CLLS4456	CLLS4458	CLLS4459	CLLS4465	CLLS4491	CLLS4494	CLLS4499	MRIS 102
Graduates will apply previously learned knowledge to the solution of new problems				I	I	I	I	I	I	I	I	I	R	I	R	I	R	I	R	M, R	I	R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	
Graduates will apply the knowledge/professional competencies to practice as entry-level MT	I	I		I	I	I	I	I	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	
Graduates will communicate effectively to acquire/develop/convey ideas □ information to diverse pops	I			I	I	I	I	I	I	I	I	R	R	R	R	R	R	R	R	R	R	R	R	R	R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	
Graduates of the Medical Technology Program will demonstrate professional and ethical behaviors	I	I		I	I	I	I	I	I	I	I	R	R	R	R	R	R	R	R	R	R	R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	M, R	
The Medical Technology Program will continue to meet the standards established by NAACLS																																			

□□□nit Assessment Report - □our Column

□erris State □niversity

Program - Medical Technology □□.S.□

M□ss□o□St□teme□t□ 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.

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Co□e□e□ CA□S

Outcomes	Me□□s□o□□□ssessme□t□□□C□□te□□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□ □□o□o□ □□□
Program - Medical Technology □□.S.□ - Graduates will apply previously learned knowledge to the solution of new problems - CA□S Theme□ Critical thinking and problem-solving **Outcome□□□es□** Learning **St□t□□□te□** 0□/0□/200□ **Outcome□St□tus□** Active	**□ssessme□t□Met□o□□** □mployer survey distributed one year following students□graduation **□ssessme□t□Met□o□□C□te□o□□□** Survey - □mployer **C□te□o□□□o□Success□** □□□ of the employers will rate graduates as □on item □of the employer survey	0□/0□/2011 - □mployer survey results are pending. **C□□ss□□c□t□o□□** Criterion Met **□ct□o□□** 2 - Pending Action **Re□□te□□□ocume□ts□** □mployer survey from □ronson, part 1 □mployer survey from □ronson, part 2 □mployer survey from □orgess	0□/1□/2010 - □mployer survey has been distributed. **□o□□o□□□□□** 0□/0□/2011 - □nly 3 distributed and 2 of those returned
	□ssessme□t□Met□o□□ □aculty evaluation during Simulated Laboratory **□ssessme□t□Met□o□□C□te□o□□□** Case Studies/Problem-based Assignments **C□te□o□□□o□Success□** □□□ of the students will receive a rating of 3.□ or above on their ability to solve problems posed during the simulated laboratory e□perience	0□/1□/2010 - Course not offered Spring Semester **C□□ss□□c□t□o□□** Inconclusive **□ct□o□□** 1 - No Action Required	

Outcomes	Me□□s□o□□ssessme□t□□ C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
Program - Medical Technology □□.S.□ - Graduates will apply the knowledge/professional competencies to practice as entry-level MT - CA□S Theme□ □nowledge and professional skills **St□□t□□ □te□** 0□/0□/200□ **Outcome St□tus□** Active	□ssessme□t Met□o□□ □mployer survey administered one year following students□graduation □ssessme□t Met□o□ C□te□o□□□ Survey - □mployer C□te□o□□o□ Success□ □□□ of the employers will rate graduates □ on items 1, 2, □, on employer survey	0□/0□/2011 - Item 1 □100□ of employers rated graduate □ Item 2□□0□ of employers rated graduate □ Item □□□0□ of employers rated graduate □ C□ss□□c□t□o□□ Criterion Not Met □ct□o□□ 2 - Pending Action Re□te□ □□ocume□ts□ □mployer survey from □ronson, part 1 □mployer survey from □ronson, part 2 □mployer survey from □orgess	0□/1□/2010 - □mployer survey has been distributed to only 3 employers and only 2 were returned
		0□/1□/2010 - Item 1 □100□ of employers rated graduate □ Item 2□□0□ of employers rated graduate □ Item □□□0□ of employers rated graduate □ C□ss□□c□t□o□□ Criterion Not Met □ct□o□□ 2 - Pending Action Re□te□ □□ocume□ts□ □mployer survey from □orgess □mployer survey from □ronson, part 1 □mployer survey from □ronson, part 2	
	□ssessme□t Met□o□□ □aculty members□evaluation of student□s performance in Simulated Laboratory □ssessme□t Met□o□ C□te□o□□□ Case Studies/Problem-based Assignments C□te□o□□o□ Success□ □0□ of the students will be able to demonstrate their ability to perform assigned roles in the simulated laboratory	0□/1□/2010 - Course not offered Spring 2010 C□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	

Outcomes	Me□□s□o□□ssessme□t□□C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
	□ssessme□t Met□o□□ National Certification □□amination □ssessme□t Met□o□C□te□o□□□ Test - □□ternal - Post or Pre/Post C□te□o□□□o□Success□ 100□ of the graduates will score at or above the national mean score on the national certifying e□amination	0□/0□/2010 - 2010□1□ of 20 pass □□0□ □□□ of 20 are above national mean □so far□ 200□□21 of 1□ pass □□□□ □□□ of 2□ are above national mean 200□□1□ of 22 pass □□□□ □□□ of 22 are above national mean 200□□11 of 12 pass □□2□ □□□ of 12 are above national mean C□□ss□□c□t□o□□ Criterion Not Met □ct□o□□ 1 - No Action Required	
		0□/1□/200□ - April - June 200□□two pass□both above national mean Jan - Mar 200□□□/□pass□none above national mean □ct - □ec 200□□2/□pass□both above national mean July - Sept 200□□□/□pass□three above national mean C□□ss□□c□t□o□□ Criterion Not Met □ct□o□□ 2 - Pending Action	
	□ssessme□t Met□o□□ Preceptor evaluation at the conclusion of the practical e□perience □ssessme□t Met□o□C□te□o□□□ Internship □valuation C□te□o□□□o□Success□ □□□ of the preceptors will rate students overall ability to perform required tests as a 3.□ or above on the clinical competency check list		
Program - Medical Technology □□.S.□ - Graduates will communicate effectively to acquire/develop/convey ideas □ information to diverse pops - CA□s Theme□ Communication	□ssessme□t Met□o□□ □mployer survey administered one year after students□graduation □ssessme□t Met□o□C□te□o□□□ Survey - □mployer	0□/0□/2011 - Item □□□0□ of employers rated students as □ on employer survey Item 1□□100□ of employers rated students as □ on employer survey C□□ss□□c□t□o□□	0□/1□/2010 - □mployer survey has been distributed

Outcomes	Me□□s□o□□ssessme□t□□C□te□□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□□o□o□ □□□
St□□t□□ □te□ 0□/0□/200□ **Outcome□St□tus□** Active	**C□te□o□□o□Success□** □□□ of the employers will rate students as □ on items □ and 1□ on the employer survey	Criterion Not Met **□ct□o□□** 1 - No Action Required **Re□te□□□ocume□ts□** □mployer survey from □ronson, part 1 □mployer survey from □ronson, part 2 □mployer survey from □orgess	
	□ssessme□t□Met□o□□ Preceptor evaluation of student at the conclusion of the internship e□perience **□ssessme□t□Met□o□□C□te□o□□□** Internship □valuation **C□te□o□□o□Success□** □□□ of the clinical preceptors will rate students□ability to communicate in the professional setting as 3.□ or above	0□/1□/2010 - □□□ of preceptors rated students ability to communicate in the professional setting at 3.□ or above Criterion being updated. **C□□ss□□c□t□o□□** Criterion Not Met **□ct□o□□** 2 - Pending Action **Re□te□□□ocume□ts□** Student survey of instruction	0□/1□/2010 - Program faculty will meet September 2010 to discuss a new criterion for success.
Program - Medical Technology □□.S.□ - Graduates of the Medical Technology Program will demonstrate professional and ethical behaviors - CA□S Theme□ Professional and ethical behaviors **Outcome□□□□es□** Learning **St□□t□□ □te□** 0□/0□/200□ **Outcome□St□tus□** Active	**□ssessme□t□Met□o□□** □aculty evaluation of affective behaviors at the conclusion of the simulated laboratory e□perience **□ssessme□t□Met□o□□C□te□o□□□** Case Studies/Problem-based Assignments **C□te□o□□o□Success□** □□□ of the students will receive an overall rating on the student affective evaluation of 3.□ or above	0□/1□/2010 - Course was not offered Spring 2010 **C□□ss□□c□t□o□□** Inconclusive **□ct□o□□** 2 - Pending Action	
	□ssessme□t□Met□o□□ Preceptor evaluation completed at the conclusion of the internship e□perience **□ssessme□t□Met□o□□C□te□o□□□** Internship □valuation **C□te□o□□o□Success□** □□□ of the students will receive a score of 2□ out of 2□ on the affective domain evaluation portion of the internship	0□/1□/2010 - Criterion for Success is currently being revised. **C□□ss□□c□t□o□□** Inconclusive **□ct□o□□** 2 - Pending Action	0□/1□/2010 - Program faculty will meet September 2010 to discuss a new criterion for success.

Outcomes	Me□□s□o□□ssessme□t□□ C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
	evaluation		
	□ssessme□t Met□o□□ □mployer survey distributed one year following students□graduation □ssessme□t Met□o□ C□te□o□□□ Survey - □mployer C□te□o□□o□ Success□ □□□ of the employers will rate graduates as □ on item 10 of the employer survey	0□/0□/2011 - Item 10□100□ of employers rated graduates as □ on the employer survey C□□ss□□c□t□o□□ Criterion Met □ct□o□□ 1 - No Action Required Re□□te□□□ocume□ts□ □mployer survey from □ronson, part 1 □mployer survey from □ronson, part 2 □mployer survey from □orgess	0□/1□/2010 - □mployer survey has been distributed.
Program - Medical Technology □□.S.□ - The Medical Technology Program will continue to meet the standards established by NAACLS - CA□S Theme□ Specialized accreditation **Outcome□□□es□** Learning **St□□t□□□te□** 0□/0□/200□	□ssessme□t Met□o□□ Review of university and program data □ssessme□t Met□o□ C□te□o□□□ □ata Analysis C□te□o□□o□ Success□ □0□ of the Medical Technology Students who enter the professional phase of the program complete it successfully within two academic years	0□/1□/2010 - □0□ of the MT students who enter the professional phase of the program complete it successfully with 2 academic years C□□ss□□c□t□o□□ Criterion Met □ct□o□□ 1 - No Action Required	0□/1□/2010 - Results will be available by 10/1/10
Outcome St□tus□ Active	□ssessme□t Met□o□□ □0□ of the Medical Technology Students who enter the professional phase of the program complete it successfully within two academic years □ssessme□t Met□o□ C□te□o□□□ □ata Analysis C□te□o□□o□ Success□ Pass rates for □erris State □niversity graduates will meet or e□ceed national averages	0□/1□/2010 - □ata not yet available. C□□ss□□c□t□o□□ Inconclusive □ct□o□□ 2 - Pending Action	0□/1□/2010 - □ ill contact certifying agency by 10/1/10
	□ssessme□t Met□o□□ Alumni survey distributed one year after students□graduation □ssessme□t Met□o□ C□te□o□□□ Survey - Alumni □after one year□	0□/0□/2011 - 100□ of the graduates report they are employed within one year of their graduation C□□ss□□c□t□o□□ Criterion Met □ct□o□□	0□/1□/2010 - Alumni survey has been distributed.

Outcomes	Me□□s□o□□ssessme□t□□C□te□□□o□ Success□□□s□s	Resu□ts	□ct□o□□□o□o□ □□□
		1 - No Action Required	
	C□te□o□□o□Success□ □□□ of the graduates of the Medical Technology program report they are either employed as MT□s or continuing their education within one year of graduation		
	□ssessme□t□Met□o□□ Graduate survey distributed on year after students□graduation **□ssessme□t□Met□o□□C□te□o□□□** Survey - Graduate □Current □ear□ **C□te□o□□o□Success□** □0□ of graduates responding to the survey will indicat that they are prepared for professional practice		
	□ssessme□t□Met□o□□ □mployer survey distributed one year after students□graduation **□ssessme□t□Met□o□□C□te□o□□□** Survey - □mployer **C□te□o□□o□Success□** □0□ of the employers who respond to the survey will rate □erris State □niversity graduates of the Medical Technology program as performing as well or better than graduates of other programs		

Your Name____

Clinical Laboratory Sciences Programs
Survey of Advisory Committee

Please complete the following survey as part of the Academic Review Process at [illegible]S[illegible]. Use the following rating scale for questions 1-4:

5 – excellent, nearly ideal, top 5-10%
4 – Good, strong, top one-third
3 – Acceptable, average, the middle third
2 – Below expectations, fair, bottom one third
1 – Poor, seriously inadequate, bottom 5-10%
NA – not applicable, unknown

	5	4	3	2	1	NA
1. Instructional program content is a. Based on performance objectives that represent job skills and knowledge required for successful entry level employment						
b. Designed to provide students with practical job application experience.						
c. Periodically reviewed and revised to keep current with changing job practices and technology						
2. Instructional equipment is current and representative of that used on the job.						
3. Instructional facilities allocate sufficient space to support quality instruction						
4. Job opportunities exist for students completing the program.						

5. From your perspective, what are the major strengths of the MT and MLT programs?

6. From your perspective, what are the major areas of improvement that you WOULD LIKE TO SEE in the MT and MLT programs.

□our Name□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

□. □rom your perspective, what are the ma□or areas of improvement that you □A□□ S□□N in the MT and MLT programs.

□. Any other comments□

Thanks for you time□

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6□ **□o□□ou□□o□□□□□ee□e□□s□**

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- ○ No

7 **Ho** **e** **ue** **t**

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- No

9 **Ho** **e** **ue** **t**

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- lood bank
- Chemistry
- Coagulation
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- Molecular
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Please Specify

11 **e** **e** **se** **e** **ou** **o** **e** **s** **ce** **ou** **u** **te**

12 **s** **t** **cu** **t** **to** **o** **e** **ou** **u** **te** **e** **se** **e** **o** **te**

c e s o ou o c m us e uc t o est e e ou o ou o t e c c o to

13 Comme ts o CLS cou ses

14 Comme ts o sc e ce m t cou ses

15 Comme ts o C HS cou ses

16 Comme ts o ot e e u e cou ses s e ect es M eme t St t st cs etc

17 c e s o ou o c m us e uc t o ee s m o eme t Ho c t e e m o e

18. **Please indicate how often you do each of the following:**

	Never	Sometimes	Often
Routine phlebotomy	○	○	○
Drawing arterial samples	○	○	○
Drawing donors	○	○	○
Specimen processing	○	○	○
Instrument maintenance	○	○	○
Instrument calibration	○	○	○
Instrument troubleshooting/repair	○	○	○
Problem-solving (difficult antibody identification, identifying unusual organisms, coagulation work-ups, etc.)	○	○	○
Proficiency testing	○	○	○
Evaluation of instruments/procedures	○	○	○
Assay validation	○	○	○
Training employees	○	○	○
Teaching students	○	○	○
Supervising employees	○	○	○
Scheduling personnel	○	○	○
Ordering supplies/maintaining inventory	○	○	○
Preparing/processing blood components	○	○	○
Outreach (cholesterol screening programs, etc.)	○	○	○
Point of care testing	○	○	○
Quality assurance teams/projects	○	○	○
Competency assessment (having yours assessed)	○	○	○
Competency assessment (assessing others)	○	○	○
Consultation with physicians, nurses, etc.	○	○	○
Outcomes assessment	○	○	○
Design of critical care paths/clinical paths	○	○	○

19. [illegible]

20. **Describe any social or cultural practices that are relevant to your research and how you will respect them.**

21. **Should your research activities affect the environment, describe how you will minimize any negative impact.**

22. **Comment on the potential for misuse of your research (e.g., for bioterrorism, proliferation, or other military applications). How could you minimize the risk of misuse?**

23. **Have you discussed your research with your local community? If so, describe the process and the outcome. If not, explain why not.**

24. **Please list any comments you would like to make about your research that you think may be relevant to the Committee on Human Research.**

[illegible] e [illegible] ou [illegible] e to su [illegible] e [illegible] ou su [illegible] e [illegible] so to [illegible] ete m [illegible] e [illegible] s o [illegible] e [illegible] o [illegible] o [illegible] o [illegible] o [illegible] e [illegible] ou [illegible] e e [illegible] e [illegible] e [illegible] o [illegible] ou [illegible] ese t [illegible] os t o [illegible] Resu ts [illegible] om t e em [illegible] o e su [illegible] e [illegible] s [illegible] e [illegible] s t e esu ts o t [illegible] s su [illegible] e [illegible] e [illegible] e t co [illegible] e t [illegible] s [illegible] e [illegible] ot e [illegible] c u [illegible] e [illegible] t e esu ts [illegible]

25 I [illegible] ee t [illegible] t t e C [illegible] c [illegible] L [illegible] o [illegible] to [illegible] Sc e [illegible] ces [illegible] o [illegible] m [illegible] t [illegible] e [illegible] s St [illegible] te [illegible] e s t [illegible] m [illegible] se [illegible] su [illegible] e [illegible] to m [illegible] su e [illegible] so [illegible]

- [illegible] es
- No

26 [illegible] t [illegible] ou [illegible] me [illegible] e e [illegible] ou [illegible] e co [illegible] m [illegible] t [illegible] t [illegible] ou co [illegible] se t to [illegible] su [illegible] e [illegible] e [illegible] se t to [illegible] ou [illegible] su e [illegible] so [illegible]

27 [illegible] ou [illegible] cu [illegible] e t su [illegible] e [illegible] so [illegible] s [illegible] me [illegible]

[illegible] o t [illegible] e [illegible] u [illegible] oses o [illegible] ou [illegible] um [illegible] t [illegible] se [illegible] e [illegible] se [illegible] o [illegible] e t [illegible] e [illegible] o [illegible] o [illegible]

28 [illegible] ou [illegible] cu [illegible] e t [illegible] me [illegible] ome [illegible] ess [illegible] e m [illegible] ess [illegible] te [illegible] e [illegible] o [illegible] e [illegible] um [illegible] e [illegible]

[illegible] ou [illegible] o [illegible] ou [illegible] t me [illegible] ut [illegible]

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Imagine More

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4. [illegible]

	Rarely	Occasionally	Usually	Consistently
Demonstrates the required technical skills for the position	○	○	○	○
Applies theoretical knowledge	○	○	○	○
Meets workload demands after orientation	○	○	○	○
Solves problems/troubleshoots	○	○	○	○
Prioritizes/organizes, and completes multiple tasks	○	○	○	○
Is adaptable and flexible	○	○	○	○
Shows a positive attitude	○	○	○	○
Interacts well with others	○	○	○	○
Functions as a team player	○	○	○	○
Behaves professionally	○	○	○	○
Recognizes limitations and seeks help when appropriate	○	○	○	○
Shows initiative	○	○	○	○
Is customer-service oriented	○	○	○	○
Communicates effectively	○	○	○	○

5. [illegible]

- ☐ Blood bank
- ☐ Chemistry
- ☐ Coagulation
- ☐ Hematology
- ☐ Histology
- ☐ Molecular
- ☐ Serology/Immunology
- ☐ Urinalysis/Body Fluids
- ☐ Other

Please Specify:

6. [illegible]

	Never	Sometimes	Often
Routine phlebotomy			
Drawing arterial samples			
Drawing donors			
Specimen processing			
Instrument maintenance			
Instrument calibration			
Instrument troubleshooting/repair			
Problem-solving (difficult antibody identification, identifying unusual organisms, coagulation work-ups, etc.)			
Proficiency testing			
Evaluation of instruments/procedures			
Assay validation			
Training employees			
Teaching students			
Supervising employees			
Scheduling personnel			
Ordering supplies/maintaining inventory			
Preparing/processing blood components			
Outreach (cholesterol screening programs, etc.)			
Point of care testing			
Quality assurance teams/projects			
Competency assessment (having yours assessed)			
Competency assessment (assessing others)			
Consultation with physicians, nurses, etc.			
Outcomes assessment			
Design of critical care paths/clinical paths			

7. [illegible]

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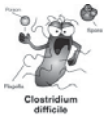
Clostridium difficile

A "difficult" human pathogenic bacterium

Presented by Hieu-Hanh



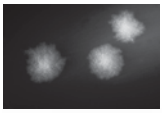
Case Study

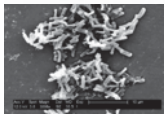
- Mary I., a 72-year-old female admitted to the emergency department with fever, nausea, abdominal distention, severe diarrhea and blood in stool . Her medical history showed that she had hypertension, diabetes, chronic obstructive pulmonary, and coronary artery disease. She was placed on medications for these diseases at the time of admission. Four weeks ago, she also received a course of ciprofloxacin for a urinary tract infection.

Lab Tests

- Urinalysis
  - unremarkable
- A radiography
  - demonstrated marked distension of the colon but no obvious obstruction or free air under the diaphragm
- Blood test
  - Laboratory studies revealed a WBC of 34.2, hemoglobin level of 8.9, and platelets of 95. Prothrombin time was prolonged. Serum chemistries are notable for a BUN of 77 and a creatinine of 4.4
- Stool sample
  - Positive for Clostridium difficile

What about Clostridium difficile?

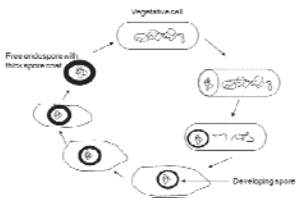




- Clostridium
  - "kloster" in Greek meaning spindle
  - "difficile" in Latin means "difficult"
    - due to the difficulties encountered in its isolation and culture
- Gram positive bacilli
- Temperature
  - Ideal condition for growth is around 37°C (98.6°F)
- Flagella
  - evenly spread around the surface
  - highly motile
- Heterotrophic
  - requiring complex organic compounds of nitrogen and carbon
- Virulent factors
  - enterotoxin A and B
- Anaerobic, but can survive in the presence of oxygen
  - vegetative form of C. difficile can survive up to 24
  - Spore forms can survive up to 2 years

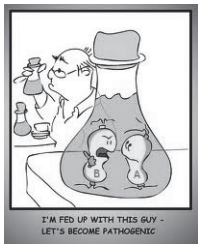
Vegetative v.s Spore

- *Exists in 2 states*
  - *Vegetative state*
    - able to use nutrients to grow and divide
  - *Spore state*
    - when conditions become unfavorable, *C. difficile* is able to enter a dormant state and form a highly resistant spore
    - resistant to heat, radiation, drying, chemicals, and even oxygen
    - A spore is a hard shell to protect themselves in harsh environments.
    - This hard shell can make C. difficile more difficult to treat
- When conditions become favorable again, the C. difficile spore is able to return to its vegetative state



Enterotoxins: A v.s B

- Both C. difficile toxin A and C. difficile toxin B strains are in spore forms
- Both have the same virulent mechanism
- Toxin B is generally 1,000 times more potent than toxin A

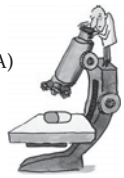


Where is C. difficile found?

- Lives naturally in soils
- Colonizes in colon
  - Around 3% of healthy and not taking antibiotic people
  - Millions of normal flora in the system keep C. difficile under control and in smaller number
- Pathogens
  - Older adults in hospital
  - Use of antibiotic medications (e.g clindamycin)
- Overpopulation of C. difficile will cause **antibiotic-associated diarrhoea (AAD)** and can lead to **pseudomembranous colitis**

Lab Tests

- Direct stool culture
  - most sensitive diagnostic measure
  - not commonly used clinically because of cost and turnaround time
- Additional identification needed
  - Enzyme-linked immunosorbent assay (ELISA)
    - Most common
  - Cytotoxic assays (EIA)
  - PCR technology

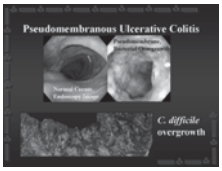


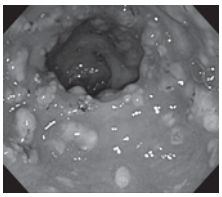
Enzyme-Linked Immunosorbent Assay (ELISA)

- Turnaround time of less than one day
- High sensitivity and specificity
- 2 rapid steps
  - First step detects the presence of C. difficile
    - Not all C. difficile are toxigenic
- The second step involves detecting toxigenic strains of *C. difficile*
  - A and B toxins

Pathology

- Both toxin A and B strains of C. difficile are pathogenic and cause *C. difficile*- associated disease (CDAD)
  - **Antibiotic-Associated Diarrhoea (AAD)**
    - Mild CDAD
    - taking significant amounts of antibiotics to treat another illness
    - the antibiotics kill off the normal microflora of the intestines
    - *C. difficile* that has been colonized the intestine will grow out of control
  - **Pseudomembranous Colitis**
    - Severe CDAD
    - Server inflammation and mucosal injury to the colon
    - Toxins actually kill the lining of the intestine
      - The dead lining falls off and mixes with the WBCs
      - Appearance of yellow plaques (patches)





AAD v.s Pseudomembranous Colitis

Clinical manifestations	AAD	Pseudomembranous Colitis
Diarrhea	Watery, non-bloody (5-10 times per day)	Bloody watery (>10 times per day)
Fever	Low-grade	High (102°F—104°F)
Pain	Abdominal cramping	Severe abdominal pain and tenderness
Prognosis	Dehydration	Death (6%-30% mortality rate)

Treatment

- Stop the antibiotics that caused the infection
  - If it is safe to do so
- Metronidazole is used to treat mild CDAD
- vancomycin is used to treat severe CDAD
- Plenty fluids (are given to the patient to help re-hydrate the patient from the fluids lost from the diarrhea)
- About 7 to 10 days, the patients will get better
- In severe cases of pseudomembranous colitis
  - surgery may be performed to remove the infected portion of the colon

How Does The Bacteria Enter The Body?

- Spread via the fecal-oral route
- Spores can survive up to two years on the surface of an object
- Ingestion of the spores
  - touching a surface contaminated *C. difficile* spores and then touching their mouth with the contaminated hand
  - spores travel unharmed through the acidic environment of the stomach and germinate into the vegetative form

Prevention

- The best way to prevent is:

  WASH YOUR HANDS

References

- http://bioweb.uwlax.edu/bio203/s2009/
- http://www.labtestsonline.org/understanding/analytes/cdiff/test.html
- http://www.drtummy.com/index.php?option=com_content&task=view&id=139
- http://emedicine.medscape.com/article/226645-workup#a0719

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Advanced course covering the theoretical and laboratory aspects of clinical microbiology with an emphasis on pathogenic manifestations of disease in humans, correlation of laboratory data, quality assurance in the clinical laboratory, and e□tensive problem solving techniques used in the identification of clinical significant microorganisms. □□e□e□u□s□te□CLLS 23□ and 23□ □C or better□or my official okee-dokee

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Pocket Guide to Clinical Microbiology, 3rd □dition Author□ Patrick R. Murray, National Institutes of □ealth and □vonne R. Shea, National Institutes of □ealth□ □ook IS□N or Item Number□1-□□□□1-2□□-0 □ou probably don□t have this one, yet□

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This course will teach organism identification, from specimen processing to susceptibility testing, using a case-based approach. □ e will discuss many different specimen types in the conte□t of a clinical case□s□. □ou will receive two copies of each case, which also includes a set of study questions. □ne copy of the study questions will be turned in □□□□R□ the classroom session begins. They will N□T be accepted after I begin. The second copy of the question set will be for you to make notes on. □ach question set will be worth 10 points. I will return your original question set after I have graded them.

There will also be □ lecture e□ams, about every other week. I don□t know e□actly how many points these will be worth because I haven□t written them yet. They are usually around □0 points each.

□h yeah, I almost forgot, □□□ will also be doing a case study presentation. It will be worth □0 points. It will work something like this□you will draw, at random, from a container, the organism name and the order in which you will present. It may be a bacterium, virus, fungus, or parasite. Then □□□ will choose a body site in which your organism would be of clinical significance. Ne□t, you will proceed to create a plausible case study and present it to the class using Microsoft PowerPoint. □our case presentation should have at least □ no more than 10 slides. Please include□patient history, other lab data if it is necessary, and information about your organism such as growth requirements, cultural characteristics, biochemical identification, clinical significance, mechanisms of pathogenicity, and antimicrobial susceptibility. Then you will supply, to your classmates, and me, □ original, unique, and challenging questions. Mi□ up the style of question□in other words, don□t write □ True or □alse. □ou must include at least one short answer.

I will choose 2 questions from each presentation to create the final e□am. These cases will be presented to the Supreme □eing of Microbiology and, anyone else interested, during the last week or so of the course. They don□t have to be very long, maybe 10-1□ minutes with a few minutes at the end for questions □from me and your fellow students□. I am looking forward to this.

Please supply me with an electronic copy of the presentation.

So, let□s recap what we have so far□

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□mm, that should do it. □id I leave anything out□ I know everyone is moaning and groaning about this case presentation. □ ell, stop your whining. It won□t be that bad. I will give you more information later. I□m looking forward to it... have I said that□□.

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□□am 3□skin/tissue, genitals, CNS
□□am □□case presentation, infection control

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A. College Policy□The faculty of CA□S adopted the following attendance policy on □ebruary 12, 2002□

Class attendance in the College of Allied □ealth Sciences is a privilege and is e□pected. The right to attend class is gained through programmatic admission after successful completion of a selective admissions process. Through attendance, students acquire knowledge and skills related to profession-specific procedures, are introduced and socialized into the professional environment in which they will function, and develop into individuals who understand and model the professional behaviors that will be e□pected of them in the workplace. □ecause of the comple□ and critical nature of professional education provided by the faculty of the College, students are not at liberty to choose whether to attend class meetings. In the event a student is unable to attend a lecture, laboratory, or clinical e□perience, the student is e□pected to notify the instructor □the clinical instructor should also be notified in clinical courses□in as timely a fashion as possible as specified by the instructor. At the ne□t scheduled class meeting, the student is e□pected to provide written documentation of the reason for the absence. If the student does not provide adequate documentation in a timely manner, the instructor reserves the right to apply the appropriate actions. These actions can range from receiving no grade for missed assignments to stopping the progression of a student through the program. The actions applied will be class specific and applied equitably and diligently by the instructor to all enrolled in the course. The actions imposed will also be consistent with the respective programmatic attendance policies that will be included in the course syllabi and reviewed at the beginning of the course.

□. Clinical Laboratory Sciences Attendance Policy□I will take attendance in this course. □ou□re learning techniques to use on the □ob. □hen you leave □erris for clinical e□perience, the instructors will e□pect that you have learned these procedures, and the theory behind them. Therefore, I e□pect you to attend every class. I also e□pect you to be here □N TIM□. Think of this as your □ob. If you must be absent, as with a □ob, telephone IN A□□ANC□ and leave a message. If you don□t, I will assume that you are absent due to lack of interest, and are also not interested in making up the work. It is time to be serious about your work.

C. CLS promptness policy□Class begins at 12□00. I e□pect to see you present, with materials available, and ready to go. If you□re not, e□pect to lose points.

□. If you must miss a class□telephone IN A□□ANC□ to 231.□□1.232□ and leave a message.

□. Acceptable e□cuses include□

- □niversity sponsored events in which an e□cused absence form from the □niversity is presented to me.
- □eath in the family.
- □□tended hospitalization. Appropriate verification will be needed. This does not include emergency room or doctor appointments.
- □eing called to testify in court, not for being arrested.
- □angerous weather conditions in which driving is considered by local police to be unsafe. This applies to commuter students only.

□. Come to class. Remember□you□re paying to take this course. □ou might as well show up and get your money□s worth.

G. If you miss class with an e□cuse reported ahead of time□See the instructor. I□ll figure out a way for you to learn the content that you missed.

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Student Dignity

The □niversity e□pects all students and employees to conduct themselves with dignity and respect for students, employees, and others. It is each individual□s responsibility to behave in a civil manner and make responsible choices about the manner in which they conduct themselves. □arassment of any kind is ***not acceptable*** at □erris State □niversity. The □niversity does not condone or allow harassment of others whether engaged in by students, employees, supervisors, administrators, or by vendors or others doing business with the □niversity.

□arassment is the creation of a hostile or intimidating environment in which verbal or physical conduct, because of its severity or persistence, is likely to significantly interfere with an individual□s work or education, or adversely affect a person□s living conditions.

To assist with the understanding of what harassment is, this policy contains specific definitions of two of the more prevalent types of harassment □ racial harassment and se□ual harassment.

Harassment

Racial harassment includes any conduct, physical or verbal, that victimizes or stigmatizes an individual on the basis of race, ethnicity, ancestry, or national origin. Such behavior could involve
verbal conduct, intentional or otherwise, that has the purpose or effect of □or e□plicitly or implicitly threatens to□interference with an individual□s personal safety, academic efforts, employment, or participation in □niversity-sponsored activities.

The attributes of racial harassment described above are also the attributes of most other types of harassment that can occur. □arassment may be based upon a person□s status that is protected by law □i.e., religion, veteran status, handicap, etc.□, or may be for some other reason not specifically covered by law. In any event, harassment of any type is ***not acceptable*** at □erris State □niversity.

Sexual Harassment

□sing the definition contained in the □qual □mployment □pportunity Commission guidelines, adapted to include educational environments, se□ual harassment is defined as follows□

□nwelcome se□ual advances, requests for se□ual favors, and other verbal or physical conduct of a se□ual nature constitutes se□ual harassment when□

1□ submission to such conduct is made either e□plicitly or implicitly term or condition of an individual□s employment or academic advancement□
2□ submission to or re□ection of such conduct by an individual is used as a factor in employment or academic decisions affecting such individuals□
3□ such conduct has the purpose or effect of substantially interfering with an individual□s work or academic performance, or creating an intimidating, hostile, or offensive working, living, or academic environment.

□hile se□ual harassment most often takes place in situations of power differential between the persons involved, se□ual harassment may also occur between persons of the same status, e.g., student-to-student. The person e□hibiting se□ually harassing conduct need not realize or intend the conduct to be offensive for the conduct to constitute se□ual harassment.

Harassment Concerns

Any person who believes he or she has been sub□ected to harassment <u>of any kind</u> □se□ual, racial, or otherwise□should approach the individual whom they believe is responsible. □e or she should identify the specific behavior, e□plain that he or she considers the behavior to be offensive and/or harassing, and ask the individual to stop the behavior. If assistance is needed to approach the individual, contact either an Academic □ean, the □ean of Students, the □irector of Minority Student Affairs, or the □irector of Affirmative Action.

If approaching the individual is not possible □i.e., you are uncomfortable or uncertain as to how the situation should be handled or concerned the situation may become volatile□or does not resolve the matter, it should then be reported immediately to an Academic □ean, the □ean of Students, the □irector of Minority Student Affairs, the □irector of Student Judicial Services, or the □irector of Affirmative Action. If, for some reason, you are uncomfortable discussing your situation with any of these individuals, please report your situation to any member of □niversity administration. The circumstances surrounding the matter will be fully investigated, including the nature of the harassment and the conte□t in which it occurred.

All reports of harassment and subsequent investigations will be kept as confidential as possible. Anyone found to have violated this Policy will be sub□ect to discipline up to and including discharge and dismissal that may include, but not be limited to, official reprimand, official apology, sensitivity training, and/or other disciplinary action including dismissal. Likewise, because intentionally false accusations of harassment can have serious effects on innocent people, anyone found to have intentionally falsely accused another person of violating this Policy will be sub□ect to discipline up to and including discharge or dismissal.

Disruptive Behavior Policy Statement

The College of Allied □ealth Sciences strives to maintain a positive learning environment and educational opportunity for all students. Consequently, patterns of behavior which obstruct or disrupt the learning environment of the classroom or other educational facilities will be addressed.

1. The instructor is in charge of the course. This includes assignments, due dates, methods and standards of grading, and policies regarding attendance, tardiness, late assignments, outside conferences, etc.
2. The instructor is in charge of the classroom. This includes the times and e□tent to which they allow questions or discussion, the level of respect with which they and other students are to be treated, and the specific behaviors they will allow within their classes. □pen discussion of an honest opinion about the sub□ect of a course is encouraged, but the manner in which the class is conducted is a decision of the instructor.
3. If a student persists in a pattern of recurrent disruptive behavior, then the student may be sub□ect to administrative action up to

and including an involuntary withdrawal from the course, following administrative review by the Allied □ealth Sciences □ean's □ffice, and/or □niversity disciplinary proceedings.

□. □isruptive behavior cannot be sanctioned by a lowered course grade □e.g., from a □ to a C□e□cept insofar as quality of classroom participation has been incorporated into the instructor's grading policy for all students. □Note□ Academic misconduct, which is covered by other regulations, can be a legitimate basis for lowering a grade or failing the student.□

□. Students as well as employees are bound by the □niversity's policy against harassment in any form. □arassment will not be tolerated.

□. The office of the student's dean will be notified of any serious pattern or instance of disruptive behavior.

Honesty Policy

The purposes of this policy are to encourage a mature attitude toward learning to establish a sound academic morale, and to discourage illegitimate aid in e□aminations, laboratory, and homework.

C□e□t□□ is defined as using or attempting to use, giving or attempting to give, obtaining or attempting to attain, products or prepared materials, information relative to a quiz or e□amination or other work that a student is e□pected to do alone and not in collaboration with others. Plagiarism □copying□of themes or other written work shall also be considered an infraction.

Students are required to present the results of their own work e□cept under circumstances in which the instructor may have requested or approved the □oint effort of a number of students.

The penalty for the first offense of willful cheating consists of the student receiving a zero for the assignment in which the infraction occurs. □owever, cheating on quizzes or e□aminations means failure in the course. The student may appeal the decision to the □isciplinary Committee.

□urther offenses may result in suspension or dismissal from the □niversity.

O□□ect□□es□

At the end of this course the student will be able to□

1. □escribe the best techniques for proper specimen collection, transport, and processing of clinical microbiology specimens, including but not limited to□

    a. upper respiratory tract,
    b. lower respiratory tract,
    c. gastrointestinal tract,
    d. urinary tract,
    e. genital tract,
    f. central nervous system
    g. blood
    h. skin and wound infections
    i. Misc specimens

2. □iscuss indications for re□ecting clinical specimens.
3. Identify routine and specialized media used to isolate and cultivate bacteria from clinical specimens.
□. □iscuss how long plates are to be held before finalizing culture reports.
□. Identify clinical specimens that are normally sterile.
□. □efine normal flora and identify which clinical specimens contain normal flora.
□. Recognize normal flora in clinical specimens.
□. □iscuss each type of clinical specimen listed in number one above and outline what pathogens may be recovered from each.
□. Set up each of the cultures listed in number one and identify bacteria from the clinical specimens using both classical biochemical and rapid commercial identification schemes.
10. Summarize quality management in the clinical microbiology lab and perform routine □C including but not limited to□
    a. recording temperatures of incubators, freezers, refrigerators, etc.
    b. biochemical media□commercial and laboratory prepared.
    c. culture media□commercial and laboratory prepared
    d. routine stains
    e. antimicrobial susceptibility tests

Sample Case

C□se □um□e□ O□e □□ C□se o□ □□□□□□□t□s □□ □ou□□ □o □□ot □□ □ou□□ □□ So□ □□ □□t□s t□e □uest□o□□□

Lisa Marie P. a healthy 10-year-old complained of a sore throat as she left for school one morning in March. Later that day she became feverish, with nausea and vomiting. □er mother picked her up from school and took her to a pediatrician who found her to be flushed and distressed, with a temperature of 3□.□. □er tonsilar lymph nodes were enlarged, firm, and tender, with several swollen lymph nodes nearby. □er pharyn□ was diffusely reddened, with enlarged tonsils that showed several small patches of gray-white e□udate on their surface.

The pediatrician swabbed LP throat with a sterile swab, which was used to make a streak plate on blood agar. After 1□-hour incubation, scattered among other colonies representing the normal throat flora, were many small grayish colonies surrounded by areas of clearing □beta hemolysis□. After this report from the lab, LP□s mother was given a prescription for 10 days treatment with oral penicillin with firm instructions to finish the treatment no matter how LM felt. □ithin 2 days of treatment, LP□s sore throat had resolved and she felt so well that she forgot to take most of her remaining tablets. □hen this was discovered at a later visit, the pediatrician was pissed off.

1. □hat is the number one cause of pharyngitis□

2. □oes this patient□s age have anything to do with this disease□ □hy/□hy not□
   □oes the time of year have anything to do with this disease□ □hy/□hy not□

3. □ow is a throat culture collected and processed□

□. After e□amining the S□A, what organism would you suspect□ □hy □hat tests are used to confirm this organism as GAS□

□. □ ould you e□pect to see normal flora on this plate□ If so, describe two□

□. □ hat other organisms may be responsible for pharyngitis□

□. □ hat is causing the beta hemolysis□

□. □ hy did the physician give this kid penicillin□ □ hat was significant about this patient stopping her treatment□

□. □ hat are some of the sequelae that may develop from untreated strep throat□

10. List four other clinical syndromes encountered in the upper respiratory tract and name the etiologic agents.

Notes

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CO□RS□□□□SCRI□□IO□□□ Theory of contemporary blood banking, including collection, storage and processing of blood components, role of R□C antigens and antibodies in compatibility testing and transfusion practice, application of test results in conditions such as hemolytic disease of the newborn and transfusion reactions, and beginning problem solving.

I□S□R□C□OR□ Mariane Setyabudi, MS MLS□ASCP□CM
□ffice□□□S 311
□ffice Phone□231.□□1.31□2
□-mail□setyabm□ ferris.edu
□ffice □ours□ 0□00-1100 TR or by appointment

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□□ □armening, □enise M. *Modern Blood Banking and Transfusion Practices*, □ifth □dition. □A □avis, 200□. **Re□□□□□□ss□□□me□ts□□□e□□ou□□□o□□t□e□c□□ss□sc□e□u□e□□□□**

□□ Setyabudi, Mariane. *CLLS 258/259 Course Manual*. Available at Lundberg □ookstore, Rankin Center.

C□ □ne □LAC□ indelible marker. I recommend Sharpie brand.

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Lab □□ercises	11 □ 10, 1 □ 20	130	3□□
□uestions about crossmatching	1 □ 10	10	3□
Competency Assessments	□□ 20	□0	22□
Attendance	13 □ □plus □as a bonus for perfection	□0	1□□
□inal □□am	1 □ □0	□0	20□
Total	Points	3□0	100□

The standard grading scale of the CLS programs will be used. Refer to the CLS Student □andbook.

Co□e□e□□o□c□□The faculty of CA□S adopted the following attendance policy on □ebruary 12, 2002□

Class attendance in the College of Allied □ealth Sciences is a privilege and is e□pected. The right to attend class is gained through programmatic admission after successful completion of a selective admissions process. Through attendance, students acquire knowledge and skills related to profession-specific procedures, are introduced and socialized into the professional environment in which they will function, and develop into individuals who understand and model the professional behaviors that will be e□pected of them in the workplace. □ecause of the comple□ and critical nature of professional education provided by the faculty of the College, students are not at liberty to choose whether to attend class meetings. In the event a student is unable to attend a lecture, laboratory, or clinical e□perience, the student is e□pected to notify the instructor □the clinical instructor should also be notified in clinical courses□in as timely a fashion as possible as specified by the instructor. At the ne□t scheduled class meeting, the student is e□pected to provide written documentation of the reason for the absence. If the student does not provide adequate documentation in a timely manner, the instructor reserves the right to apply the appropriate actions. These actions can range from receiving no grade for missed assignments to stopping the progression of a student through the program. The actions applied will be class specific and applied equitably and diligently by the instructor to all enrolled in the course. The actions imposed will also be consistent with the respective programmatic attendance policies that will be included in the course syllabi and reviewed at the beginning of the course.

CLLS□259□c□□ss□□o□c□□□□□ou M□ST come to lab, and you must be on time, and ready to go with the materials and supplies you need. □ou may N□T come to the other section of lab if it happens to be more convenient for you. Labs are planned and prepped assuming you are going to be present as scheduled. □ e don□t have the time, the samples, or the budget to let you make up a lab. If you miss a lab, you lose the points and you□re on your own to learn the material.

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1. Apply knowledge of safe laboratory practice to all laboratory assignments.
2. □ocument review of chemical hygiene and blood borne pathogens safety training.
3. Correctly use equipment and procedures to assure safety, including□

    a. □isposable gloves
    b. □isinfectant cleaner
    c. hand washing
    d. laboratory coats

□. Leave centrifuges closed while running.
□. □ispose of glassware, contaminated samples, contaminated supplies, and other items correctly, as instructed.
□. □emonstrate or describe proper use of the following safety equipment, as assigned□

    a. □ye wash station
    b. □ire blanket
    c. □ire e□tinguisher
    d. Gloves
    e. Laboratory coat
    f. Safety glasses
    g. Safety shower

□. □istinguish between class A, □, and C fire e□tinguishers and describe use of each, as assigned.

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□. □escribe or demonstrate proper technique for cleaning up spilled chemicals, including concentrated acids, caustics, to□ic compounds, and infectious agents, as assigned.
□. Locate and use appropriate MS□S sheets in the use, disposal, and cleanup of chemicals.
10. □evelop laboratory techniques that consistently adhere to established safety practices.

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1. □ollow safety rules in the laboratory, as previously instructed and practiced.
2. □ollow established laboratory procedures, including reading and following directions, using correct samples, preparing samples for testing, and recording and interpreting test results.
3. Given a blood sample and a test request, correctly assess the suitability of the sample for analysis, including sample labeling, type, volume, and presence of reasons for re□ection, such as hemolysis or collection in a gel tube.
□. Separate serum or plasma from R□Cs, as assigned, including correct labeling of transfer tubes.
□. Correctly prepare cell suspensions of a given concentration.
□. □se proper techniques to wash a cell suspension, by manual and automated methods.
□. Correctly read, grade, and record agglutination reactions.
□. □□amine and interpret agglutination reactions microscopically, as assigned.
□. □emonstrate the use of the agglutination viewer.
10. Interpret hemolysis, when seen in a reaction.
11. Record reactions as they are read.

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1. Perform routine A□□ and Rh tube typing, recording and interpreting results.
2. □iscuss and perform testing to differentiate between A_1 and A_2.
3. Recognize discrepancies in A□□ typing results, such as disagreement between cell and serum testing, mi□ed field results, and/or weak agglutination.
□. Perform the test for weak □, when indicated.
□. Perform the tests for other common Rh antigens.
□. Given the results of Rh typing, record the phenotype and possible genotypes.
□. Recognize discrepancies in Rh typing results, such as mi□ed field reactions, weak reactions, and/or positive Rh control tube.
□. Test for other blood group antigens, as assigned.
□. Given typing results for a given blood group system, correctly write the phenotype and possible genotypes.

□□□t C□□□ □t□□o□u□□□ □est□□□□

1. Perform antibody screens, including correctly interpreting and reporting results.
2. Perform direct antiglobulin tests, including correctly interpreting and reporting the results.
3. Given a sample with a positive □AT, test it with anti-IgG and anti-C3d, as assigned, including correctly interpreting and reporting results.

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Clinical Laboratory Sciences
CLLS 2□□
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1. □ollow safety rules in the laboratory, as previously instructed and practiced.
2. Select appropriate donors for a given recipient.
3. □emonstrate the importance of clerical accuracy by recording test results, following written procedures.
□. Perform routine compatibility testing, interpreting and reporting the results correctly.
□. Choose, for each A□□ and Rh type, alternative blood types that may be transfused when type specific blood is not available.
□. □ollow the procedure for provision of appropriate blood for a patient with a history of and/or currently detectable antibody.
□. □emonstrate concern for accuracy, timeliness, and patient safety in laboratory practice.

□□t□□□□ t□□o□□ I□e□t□□c□t□o□□

1. Given the results of an antibody screening test, outline how he/she would identify the antibody, including□

   a. Check patient history
   b. Consider temperatures and media of reactions
   c. Type patient R□Cs for corresponding antigen□s□

2. Perform antibody identification tests, including, where necessary□

   a. Adding proper amounts of cells, serum, and other reagents
   b. Correct reading and recording of results
   c. Correct interpretation of results
   d. Incubation of tubes under proper conditions and for correct amount of time
   g. Correct interpretation of results

3. Given the results of an antibody identification panel, identify the antibody or antibodies present.
□. Suggest, and perform where possible, confirmatory tests, including typing patient□s cells for corresponding antigen□s□.
□. Recall the e□pected reactions of each antibody under each set of conditions, using this information to interpret test results.
□. □iscuss the clinical significance of an identified antibody.
□. □etermine if an identified antibody is an autoantibody or alloantibody.
□. Perform an antibody titration, if assigned.

Sect□o□□□□C□□□c□□Co□□e□t□o□□

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1. □utline a method of prenatal screening to predict and monitor possible □□N.
2. □escribe the investigation of cord bloods.
3. Perform prenatal and cord blood studies, as assigned.
□. State requirements for a candidate to receive Rho□□□immune globulin.
□. Perform preliminary testing of Rho□□□immune globulin candidates, and correctly interpret the results.
□. Perform and interpret a test for estimation of fetomaternal bleed.

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Clinical Laboratory Sciences
CLLS 2[illegible]
Fall 2010

Section [illegible] Transfusion Reactions

1. Perform tests involved in the investigation of a suspected transfusion reaction, including interpreting and reporting results.
2. Relate tests performed in other laboratory departments to investigation of suspected transfusion reactions.
3. Discuss the importance of absolute clerical accuracy in preventing transfusion reactions.

Section [illegible] Collection, Preservation, Storage and Use of Blood and Blood Components

Upon completion of these units the student will be able to demonstrate the following [illegible] with a score of 73% (C) or better [illegible] completed [illegible] test [illegible]

[illegible] Processing of the Collected Unit

1. As assigned, interpret results of donor testing to determine if specific donors may be used for transfusion with a score of 73% (C) or better.

[illegible] Component [illegible]

1. Given a hypothetical clinical situation, select appropriate component therapy and justify the choice with a score of 73% (C) or better.
2. Discuss problems involved with massive transfusion of blood, and how component selection can minimize the problems.

Section [illegible] Quality Assurance

Upon completion of this section the student will be able to perform the following [illegible] procedures [illegible] score of 73% (C) or better [illegible]

1. Demonstrate the appropriate quality control procedures for monitoring daily and non-routine test results.
2. Maintain accurate quality control records.
3. Describe and demonstrate appropriate equipment control and daily maintenance procedures including the following, as assigned:

   a. Centrifuges
   b. Glassware
   c. Timers
   d. Pipettes
   e. Refrigerators and freezers
   f. Water baths and heating blocks

4. Perform periodic maintenance and performance checks on centrifuges and cell washers, as assigned.

□□□□□□**I**□□□**SCH**□□□**L**□□□ **sc**□□**me**□□The instructor reserves the right to change, at any time, the schedule of assignments, required material to be completed and/or read, dates assignments are due, and other course responsibilities with the issuance of a notice of the changes and dates of implementation.

□□**te**□	□□**s**□**s**□	□**o**□□**ts**□
0830□**M**□ **0903**□□□	Introduction	
0906□**M**□	**L**□□**o**□□□ □□□□□**o**□□□□	□□□□
0910□□□ **0913**□**M**□	□asic Techniques□Preparing a Cell Suspension, Reading and Grading Agglutination Reactions	Lab□10
0917□□□ **0920**□**M**□	A□□ and Rh Typing	Lab □10
0924□□□ **0927**□**M**□	Rh Phenotyping Typing for □ther □lood Group Antigens	Lab□10
1001□□□ **1004**□**M**□	Antiglobulin Testing	Lab□10
1008□□□ **1011**□**M**□	Reagent □uality Control **Com**□**ete**□**c**□□Making a Cell Suspension	Lab□10 Competency□20
1015□□□ **1018**□**M**□	Type and Screen Compatibility Testing	Lab□10
1022□□□ **1025**□**M**□	Incompatible Crossmatch	Lab□10
1029□□□ **1101**□**M**□	Crossmatch□Patient with □istory of Antibody	Lab□10 □uestions□10
1105□□□ **1108**□**M**□	Antibody Identification **Com**□**ete**□**c**□□Reading and Grading Reactions	Lab□10 Competency□20
1112□□□ **1115**□**M**□	Crossmatch□Patient with Antibody **Com**□**ete**□**c**□□□ ashing Cells	Lab□20 Competency□20
1119□□□ **1122**□**M**□	Transfusion Reaction □ orkup	Lab□10
1126□□□	□□□□□**s**□□□□□□□□**e**□□□□**o**□□□□	□□□
1129□**M**□ **1203**□□□	Prenatal Testing **Com**□**ete**□**c**□□Assessing Samples	Lab□10 Competency□20
1206□**M**□ **1210**□□□	Lab □inal	□inal□□0

CO□RS□□□O□LS□□In keeping with the CLS program goals listed in the CLS Student □andbook, goals for this course are to provide you, the student, with opportunities to□

1. Practice safe laboratory procedures, applying knowledge of blood borne pathogens and chemical hygiene.
2. □evelop technical competence, including the ability to integrate theory and practice.
3. Test reagents for e□pected reactivity, and to maintain instruments in common use in the transfusion service laboratory.
□. □valuate the suitability of samples submitted for testing.
□. Perform blood bank tests, interpret and evaluate the validity of results, recognize unusual results and perform or recommend follow-up testing when indicated.
□. Practice procedures used daily in transfusion service laboratories, including communication of test results to physicians and others, as needed.
□. □e aware of e□ternal regulatory requirements for quality laboratory operations, and apply them as assigned.
□. Correlate results from other laboratory sections with transfusion service results, and relate all to the clinical condition of the patient.
□. Practice professional behaviors, including maintaining confidentiality of patient data, neatness in work habits, performing to the best of your abilities, following established program policies, and assuming responsibility for your own learning in this course.

CO□RS□□R□□□IR□M□□□S□

□□**L□□s**□Most labs will require you to turn in documentation of the work you did and the results you got for your tests, including your interpretations. I am very picky about documentation, because clerical errors are the cause of most fatalities related to blood bank practices. □ou must record results IN IN□, and you must come to conclusions. Remember to record date, time, and your initials. □or most labs, you will have your own workstation and you are e□pected to do your own work. I□m also picky about being on time□lab starts at 0□00, and I e□pect you to be in your seat, with lab coat buttoned, ready to go.

□□□**Com□ete□c□□□ssessme□ts**□□uring the term, you will be asked to demonstrate that you can complete a common laboratory task correctly, including e□plaining what you are doing and why. Competencies to be assessed are listed on the lab schedule. The final assessment will be a laboratory quiz. □or any competency assessment, you may use your lab manual or any source other than the instructor or another student.

R□SO□RC□S□R□□□R□□C□S□S□□□LI□S□□

□□□ **e□□Resou□ces**□□□

http://rex.nci.nih.gov/behindthenews

A terrific site with an easy tutorial about immunology. If you need a review with great illustrations, this is the site for you. Also available en □spa□ol.

http://www.biology.arizona.edu/human_bio/problem_sets/blood_types/Intro.html

A wonderful tutorial about A□□ types and how they are inherited. Also new tutorials about the Rh system, including how to figure out genotypes after you□ve typed somebody. It will help with lab□ □n □spa□ol, if you want it that way. There□s also a tutorial about □LISA testing, if you need to review that.

□ e□□esou□ces□□co□t□□ue□□□

http://www.aabb.org

The official site of the American Association of □lood □anks. It includes sections about donating and receiving blood, written for patients□All About □lood and □onate and Receive □lood. There are also links to other professional societies, and government agencies such as the □□A and C□C,

http://www.Pall.com

The site of a corporation that makes all kinds of filters, including leukocyte reduction filters for blood components. They have an online newsletter, as well as information about the ongoing discussion about whether all transfusions should have leukocytes removed □but remember, they□re selling the filters, so they have a strong opinion about this□ Look under M□□ICAL.

http://www.miblood.org

The Michigan Community □lood Centers. Includes information about their stem cell collection and transplant program. Look under A□□ □T □L□□□

http://www.redcross.org/services/biomed

The blood donation activities of the American Red Cross

http://www.cc.nih.gov/dtm

The □lood Center of the National Institutes of □ealth, and all the testing and services that it provides.

http://www.bloodctrwise.org

The □lood Center of S□ □isconsin, with lots of links to lab tests and such.

http://www.vh.org

The □irtual □ospital site at the □niversity of Iowa. Search on blood bank and see what you can find.

Let me know if you find other useful sites□

□ □□Su□□□es□t□□t□□ou□□ee□□□o□t□□s□cou□se□□

□ ear your lab coat to each lab, unless instructed otherwise. □ ear your nametag. □ring a □LAC□ indelible marker, to write on test tubes □Sharpie is a good brand□. □ring your timer.

□ □I□□LI□□S□□OR□S□□□□□□□CO□□□C□□

1. Come on time and be ready to start.
2. □ ear your lab coat, long pants, and shoes with closed toes and heels to lab. N□ □ATS□
3. □ ear your nametag.
4. □ring the supplies you need□Sharpie, timer, and lab manual, something to write with.
5. Clean up after yourself.
6. Cooperate.
7. □ave fun, and learn all you can.

R L CO RS OLICI S s cou se o o t e e e o c es o t e e s t t e Co e e o e He t Sc e ces

A. A A A copy of the services provided by the university is found in the CLS Student andbook. Refer to http://www.ferris.edu/HTMLS/academics/course.offerings/clinlabs/handbook/adaaccomodations.html

. arassment The niversity e pects its employees and its students to treat each other with respect and civility. or the policies, refer to http://www.ferris.edu/htmls/administration/president/generalcounsel/AffirmativeAction/employeedignity.htm and http://www.ferris.edu/htmls/administration/president/generalcounsel/AffirmativeAction/studentdignity.htm.

C. Religious olidays refer to http://www.ferris.edu/HTMLS/administration/academicaffairs/vpoffice/policyLetters/religHol.htm for a copy of this policy.

. isruptive Student Policy Refer to the CLS Student andbook http://www.ferris.edu/HTMLS/academics/course.offerings/clinlabs/handbook/disruptivebehavior.html

. Plagiarism Policy Plagiarism is a writer s use of someone else s words or ideas as his own without adequate and accurate acknowledgment of the source either copying word-for-word or paraphrasing or summarizing. Any instance of plagiarism will result in failing the course completely and may lead to referral to the department or university. Just to demonstrate that we practice what we preach, we took this policy from the epartment of Languages and Literature, the local e perts. Refer to http://www.ferris.edu/HTMLS/academics/Departments/langandlit/SYLE325.HTM.

G. ther policies refer to the CLS Student andbook for policies on Classroom Rights and Responsibilities, Safety, Program Progression, and other policies.