MICHIGAN STATE
UNIVERSITY

March 7, 2008

MEMORANDUM

TO: Dr. Douglas Estry, Associate Provost for Undergraduate Education and Dean of Undergraduate Studies

FROM: Dr. Linda O. Stanford, Associate Provost for Academic Services

RE: Request to Add an Academic Standards statement in the Bachelor of Science Degree in Clinical Laboratory Sciences

For Transmittal to the University Committee on Academic Policy (UCAP)

The request referenced above is being sent to you for action by the University Committee on Academic Policy (UCAP).

UCAP Response Requested:

Please ask the UCAP to consider the request referenced above at its meeting on March 27, 2008. Please mail the related materials referenced under the heading Attachments at the end of this memorandum to the members of the UCAP.

The UCAP alone will consider this request.

If you have any questions about this memorandum or the attached materials, please call me at 5-8420.

Thank you for your help.

Attachments:

1. Request for Changes in the Bachelor of Science Degree in Clinical Laboratory Sciences and attachments.

UNIVERSITY CURRICULUM and CATALOG

Michigan State University
176 Administration Building
East Lansing, Michigan
48824-1046

PH: 517/355-8420
FAX: 517/353-1935

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View a Program

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Joy Speas, RO | Tuesday, 2/19/2008

Program Name: Clinical Laboratory Sciences **Degree Name: BS** **Sequence Number: 3**

Effective Dates: Fall 2008 - Open **Status: Interim** **Initial Action: Change**

Requested Date: 2/10/2008 2:36:25 PM

1. Department/School/College:
Y 32580 .... Biomedical Laboratory Diagnostics Program

2. Name of Program:
Clinical Laboratory Sciences

3. Name of Degree:
BS

4. Type of Program:

5. Effective Start Semester:
Prev:Spring 2008
New:Fall 2008

6. Target student audience for the program:

7. Enrollment:
What is the expected enrollment per year:
18
What is the minimum enrollment acceptable:
10

8. Source of budget for the program:

9. Projected Costs as compared to other programs in unit:
Higher

10. Staff requirement:
How many additional staff will be required:
0
Who will provide the primary instruction. Describe any external linkages(industry, government, etc.):

11. Will additional equipment be required:
Approximate cost:
0
Source of funding:

12. Will additional library materials be required:
Approximate cost:
0
Source of funding:

Prev:
New: this change is not expected to affect student numbers or use of materials

13. Will additional space be required:
Type:

Approximate amount:

14. If the program requirements contain a named concentration, do you wish for the concentration to be noted on the student's transcript?:
Prev: -
New: No

15. Detailed Description:

Request for Progression Standard for CLS Major

Prior to 2001, the Biomedical Laboratory Diagnostics Program (BLD) (then Medical Technology Program) used a mastery grading system in the Clinical Laboratory Science (CLS) major that required all students to achieve a minimum score/grade in clinical phase courses in order to pass. The grading policy required remediations to achieve a 2.0 course grade. The policy, as implemented, was determined by the Associate Provost and Ombudsman to be unacceptable and thus the remediation requirement was discontinued. Since that time, the only progression standards have been the extant MSU standards applying to all students. In the period since the mastery criteria were discontinued, the faculty have monitored student academic performance to ascertain whether the loss of the mastery expectation has adversely affected student performance and we believe it has. To address this, the faculty would like to be able to implement a progression standard into the clinical phase of the curriculum. The rationale is presented here.

The area of greatest concern relates to student performance on the cognitive/content examinations during the clinical phase of the CLS major. These courses review campus course content and extend it based on the experiences students gain during the clinical phase. Ultimately, they prepare students for the content tested on the national certifying examinations, the passport to job entry nationwide.

The progression standard proposed here is:

> To progress to the clinical phase of the curriculum, students must earn a GPA of 2.0 or higher across **BLD 324, 417, 435 and MMG 463**.
>
> (Note the unit code designation changes in US 08 from MT to BLD)

The courses selected represent core content across the major disciplines of the profession. They were selected using four criteria: 1) a reasonable number of courses – 4 was selected; 2) broad representation across the

subdisciplines within the profession (clinical chemistry, hematology, microbiology, immunohematology); 3) positive statistical correlations between the campus course grades and the clinical phase course grades for the same discipline; and 4) scheduling of the courses so that they are expected to be completed by the end of fall semester of the senior year. That is, no spring semester senior courses are included, so if a student's performance prevents progress, they have time to consider and implement options (see below).

The next decision was whether to require a minimum of 2.0 grade in each course or whether an average of 2.0 is sufficient. Below is a graph of student GPAs in the four selected major courses (i.e. core courses) plotted against performance on the national certifying examination that has a passing score of 400. (Fig 1 – to be provided in hard copy as it will not upload) It is not surprising that there is a generally positive correlation between course performance and certification examination performance. The line of best fit passes the 400 mark at approximately 1.0. From this, the faculty conclude that a 2.0 GPA of the core courses, rather than a 2.0 in each course, is a sufficiently demanding requirement to help insure adequate performance in the clinical phase and on the certifying examination. This is consistent with other University policies requiring GPA minimums as graduation requirements.

Further examination of the graph shows two important features. Although some students with core course GPAs near 2.0 score high on the certifying examinations, they are the exception. There are individual stories that explain their unexpectedly strong performance. In fact, most students with core GPAs close to 2.0 score relatively low on the certifying examinations, putting them at risk for failing it. A second feature of the graph is the lack of data points much below 2.0 GPA. This is explained in part by the fact that low scoring students choose not to complete the program or challenge the certifying examination at all, thus hampering their career options. (See Table 1)

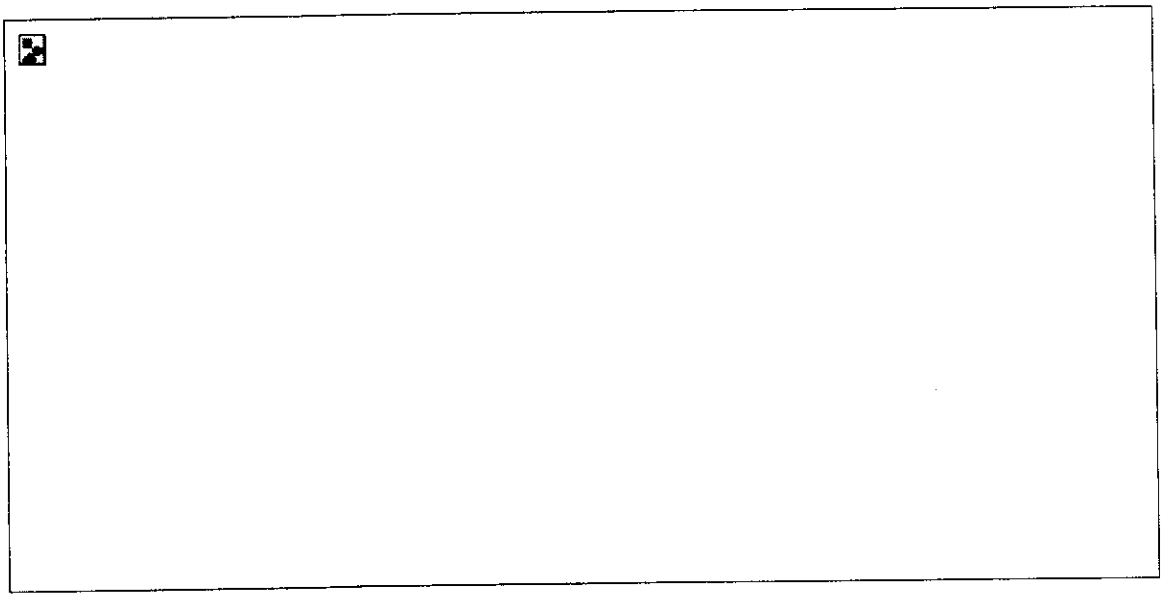

Figure 1. GPA in core courses vs the standardized scores on the certification examination of the American Society of Clinical Pathology Board of Registry.

Table 1. GPA campus core courses and clinical phase courses for students who with GPA below 2.0 who did not take the certifying examination.

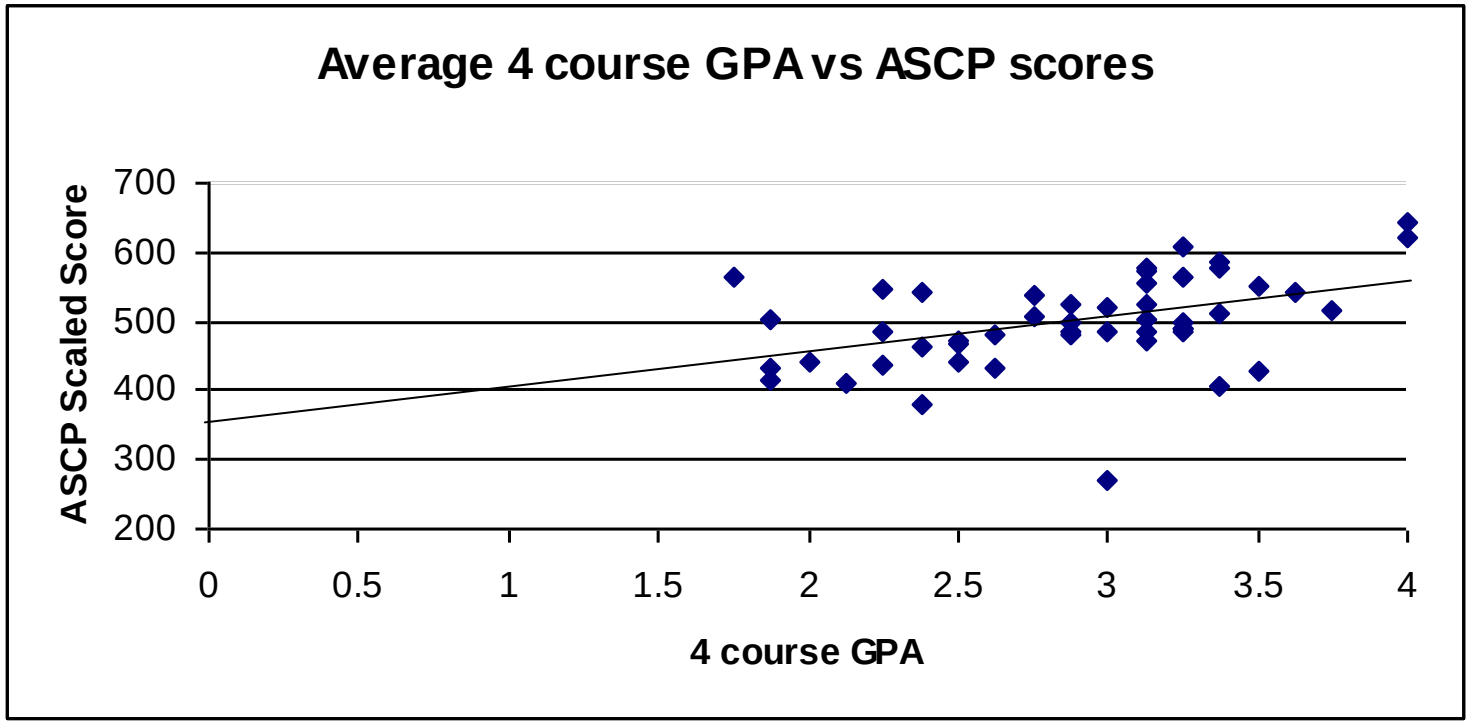

Figure 1. GPA in core courses vs the standardized scores on the certification examination of the American Society of Clinical Pathology Board of Registry.

Student	Core course GPA	Clinical phase course GPA	Student Outcome
1	1.625	0	Student failed to complete the program after failing three of the didactic courses in the clinical phase. This was a second bachelor's for this student.
2	1.625	0.75	Student chose to leave the program and graduate with Medical Technology major. Student was offered a job that requires certification as the employer expected her to complete the CLS program and she turned it down because she did not complete.

The faculty are concerned about students with core course GPAs below 2.0 whose likelihood of success in the didactic clinical-phase courses and on certifying examinations is low. The University's policy allows them to graduate since they have overall and major GPAs above 2.0. But this is not merely a major; this is a professional program. Permitting them to progress to the clinical phase when we know that they are likely to encounter these academic difficulties is ethically unacceptable to us. And of course, we have concerns for their performance in a patient care setting which poses an additional ethical concern.

The current policy which relies simply on the University's progression and graduation policies regarding course completions and repeats has had two effects. The first is that students are able to progress to the clinical phase without adequate content knowledge to pass clinical phase courses at a 2.0 level. (Actually, this is no different than when the prior policy was in place.) But, without a mastery expectation in the clinical phase of the program, they graduate with unacceptably low levels of content knowledge (didactic clinic grades <2.0). The second impact is that since they know they are weak academically, some students choose not to challenge the certifying examinations, which is alarming to us because their career options will be restricted as a result.

There is related concern generated by what we hear from students. One of the appeals of the CLS major is that the students are "guaranteed" a clinical experience. That's how they perceive it. If they are admitted, then their academic performance must meet the University's minimum (2.0 GPA overall) and they can go to clinic and get certified. Even though the College of Natural Science requires a 2.0 GPA, they can still under-perform in some critical major courses and progress to clinic. This is in contrast to the student perception among Medical Technology majors that they will need to achieve solidly throughout their curriculum to be competitive for a post-graduate internship program. So an unintended consequence is that we inadvertently select FOR some less motivated students who meet the minimum admissions requirements as junios but then feel they can relax, rather than excel through the remainder for their campus program.

The faculty have one other concern. That is related to the willingness of clinical sites to continue to teach our students. These clinical sites are under increasing pressures for productivity. They have less time to assist weak students to success. As a result, we fear losing clinical sites if the caliber of student placed with them is weak and

of course, our credibility within our profession and the reputation of MSU suffer. Therefore, the faculty are requesting the progression standard stated above.

There are several options for students who would be prevented from progressing to the clinical phase of the curriculum. Students who do not meet the progression standard will know before the beginning of spring semester of their senior year and they would then have several options.

1. Repeat core courses with grades below 2.0. Depending on their course loads and which course needs to be repeated, this may be possible without prolonging their time on campus. For some, it may mean extending their program six months to a year; more typically, 6 months. (Be it noted: For students who earn less than a 2.0 in any of the core courses, we already advise them to repeat. However, since there is no requirement to do so, they can choose not to. We would continue to recommend the repeat early, so it would not prevent them from progressing to clinic and with the progression standard we might expect greater compliance with the recommendation.)

2. Graduate on time with a major in Medical Technology (MT) major. The CLS and MT majors have a high degree of overlap so students would not be prevented from graduating from MSU or even delayed in doing so. (Through the years we have had several CLS students make this change voluntarily.) This option does not even prevent them from achieving national certification. They could still complete a post-baccalaureate accredited internship experience that will qualify them for certification. In fact, annually, 15-20 of the Medical Technology graduates who were never CLS students follow this path to a medical laboratory career. This route to certification is especially appropriate for weaker students for whom the content repetition in a post-baccalaureate program helps them achieve success on the certifying examinations.

It is reasonable to ask whether higher admissions standards might be a better way to address this issue. The problem in that stems from the difference between the pre-professional phase of the curriculum (freshman and sophomore years) and the professional phase. Students tell us that the rigor of classes in the professional phase is noticeably greater than the pre-professional phase. The result is that academic performance in the pre-professional phase, on which admissions decisions are made, is only partially predictive of later performance. Thus some students admitted to the program encounter unexpected academic problems with the professional courses. They are permitted to continue because there is no mechanism for dismissal from the major short of dramatic academic failure sufficient to lower the student's major GPA or overall GPA below a 2.0. For a student with a 2.5 GPA at entry, this level of wholesale failure is unlikely.

Another approach might be to raise the grading standards in the core courses so that even students earning grades of 1.0 or 1.5 would have a font of knowledge sufficient to earn passing scores in the clinical phase courses and on certifying examinations. This does not seem fair to other students enrolled in these courses and also unnecessary. As a sample, average grades in MT 417, MT 324 and MMG 463 are 2.3, 2.2 and 2.5 respectively. Furthermore, our experience is that students passing the core courses with a 2.0 as currently graded typically can do fine in the clinical phase when they apply themselves appropriately as evidenced by the data presented above.

It is entirely possible that students will meet the progression standard as proposed and still encounter difficulties in

the clinical phase. We cannot prevent this. (There are two examples in the plot above.) What we are concerned about are students that we can predict will struggle. Their failing grades in clinical phase courses will translate to poor performance on certifying examinations. And the impact goes beyond the individual student and his or her success. It affects the reputation of the MSU CLS program, places us at risk for losing clinical sites, and stymies our ability to recruit new sites.

16. Type(s) of change(s):
Prev: Progression standard to clinical phase; major code changes
New: Include an academic standard for progression to the clinical phase of the curriculum

17. Students who will be affected by the proposed changes:
Prev: CLS students admitted to the major after the effective date
New: students admitted to the degree program as juniors in fall 2008

18. Will the proposed change(s) have a negative impact on students? If so, which ones?:
Prev: see detailed description
New: no

Describe impact and explain what accommodations will be made:
Prev: see detailed description
New:

19. Reason(s) for change(s):
Prev: Concern re: student academic progress and program name change
New: See #16 which includes the rationale

DEPARTMENT LEVEL APPROVAL STATUS

Approved by: Biomedical Laboratory Diagnostics Program
2/10/2008 2:46:32 PM by Kathryn Doig for Kathryn Doig, Director

COLLEGE LEVEL APPROVAL STATUS

Approved by: College of Natural Science
2/18/2008 4:56:57 PM by Teri Roache for Kathryn M. Doig, Associate Dean

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Speas, Joy

From: Teri Roache [roache@msu.edu]
Sent: Tuesday, March 04, 2008 1:47 PM
To: Speas, Joy
Cc: Kathy Doig; 'Karen Hess'
Subject: CLS BS

Hi Joy,

The gpa statement should be added to the CLS BS in the same way it is presented in the Diagnostic Molecular Science BS. Under Clinical Laboratory Sciences, following Admission as a Junior and subsequent paragraphs, add:

Academic Standards

To progress to the clinical phase of the curriculum, students must earn a 2.0 or higher in Microbiology & Molecular Genetics 463 and Biomedical Laboratory Diagnostics 324, 417 and 435.

A specific statement of the policies for the clinical phase is provided in the *Student Policies for Clinical Laboratory Science Students*. These policies are provided to all students upon acceptance to the major, but may be obtained earlier from the Biomedical Laboratory Diagnostics Program, 322 N. Kedzie Hall. Admitted students are responsible for knowing and adhering to these program policies.

Teri Roache
Administrative Assistant
Academic and Student Affairs
College of Natural Science
Michigan State University

phone 517.432.1107
fax 517.432.1054

DRAFT

CLINICAL LABORATORY SCIENCES

The clinical laboratory sciences major is designed to prepare students for certification in medical technology/clinical laboratory science. The program includes courses in the biomedical laboratory sciences, communications, mathematics and statistics, and clinical laboratory sciences coupled with clinical practicum experiences. It is designed to prepare graduates for certification and immediate employment in clinical laboratories upon graduation by including a six-month hospital laboratory experience. Admission to this program is limited. Students seeking admission must complete the admission procedure outlined below.

The Bachelor of Science degree program in clinical laboratory sciences has been accredited by the National Accrediting Agency for Clinical Laboratory Sciences, 8410 West Bryn Mawr Avenue, Suite 670, Chicago, Illinois 60631.

Admission as a Junior

Enrollment in the clinical laboratory sciences major is limited. A new class is admitted at the junior level each academic year. Students beyond junior standing may be considered for admission contingent upon the projected schedule for completion of the degree requirements and availability of clinical placement sites. Applications for admission are accepted at any time.

To be considered for admission, the applicant must meet the following minimal criteria, in addition to the College of Natural Science admission requirements:

1. Have an overall grade-point average of 2.50 or better including courses taken at other institutions.
2. Have completed Biological Science 111 and 111L; Chemistry 251 and 252; and Biomedical Laboratory Diagnostics 213.

Students may apply before attainment of the above criteria in order to demonstrate their intentions to major in clinical laboratory sciences, however their applications will not be processed until all requirements are fulfilled. Students who present other exceptional credentials but do not meet the grade-point criterion noted above may be considered for admission on a probationary basis.

Applications for admission to the clinical laboratory sciences major are reviewed by a committee of faculty. Factors considered by the Admission Committee in the applicant's review and admission action are (1) academic record including grade-point averages in science and non-science courses, (2) grades for selected preclinical courses, (3) laboratory science exposure, (4) interview, and (5) compositions.

Insert (1)

Requirements for the Bachelor of Science Degree in Clinical Laboratory Sciences

1. A minimum of 136 credits is required for the Bachelor of Science degree in Clinical Laboratory Sciences.
2. The University requirements for bachelor's degrees as described in the *Undergraduate Education* section of this catalog.
   The University's Tier II writing requirement for the Clinical Laboratory Sciences major is met by completing Biomedical Laboratory Diagnostics 455. That course is referenced in item 4. b. below.
   Students who are enrolled in the College of Natural Science may complete the alternative track to Integrative Studies in Biological and Physical Sciences that is described in item 1. under the heading *Graduation Requirements* in the College statement. Certain courses referenced in requirement 4. below may be used to satisfy the alternative track.
3. The requirements of the College of Natural Science for the Bachelor of Science degree.
   The credits earned in certain courses referenced in requirement 4. below may be counted toward College requirements as appropriate.
4. The following requirements for the major:

		CREDITS
a.	Courses outside Medical Technology:	48 or 49
	(1) All of the following courses (42 credits):	
	BMB 401 Basic Biochemistry	4
	BS 111 Cells and Molecules	3
	BS 111L Cell and Molecular Biology Laboratory	2

Insert (1)

Academic Standards

To progress to the clinical phase of the curriculum, students must earn a 2.0 or higher in Microbiology and Molecular Genetics 463 and Biomedical Laboratory Diagnostics 324, 417, and 435.

A specific statement of the policies for the clinical phase is provided in the *Student Policies for Clinical Laboratory Science Students*. These policies are provided to all students upon acceptance to the major, but may be obtained earlier from the Biomedical Laboratory Diagnostics Program, 322 North Kedzie Hall. Admitted students are responsible for knowing and adhering to these program policies.

DRAFT

CEM 141 General Chemistry 4
CEM 161 Chemistry Laboratory I 1
CEM 162 Chemistry Laboratory II 1
CEM 251 Organic Chemistry I 3
CEM 252 Organic Chemistry II 3
CEM 333 Instrumental Methods and Applications 3
MMG 301 Introductory Microbiology 3
MMG 463 Medical Microbiology 3
MMG 464 Diagnostic Microbiology Laboratory 2
PHY 231 Introductory Physics I 3
PHY 232 Introductory Physics II 3
PSL 250 Introductory Physiology 4

(2) One of the following courses (3 credits):
MTH 124 Survey of Calculus I 3
MTH 132 Calculus I 3

(3) One of the following courses (3 or 4 credits):
STT 200 Statistical Methods 3
STT 201 Statistical Methods 4
STT 231 Statistics for Scientists 3
STT 351 Probability and Statistics for Engineering 3
STT 421 Statistics I 3

b. All of the following Medical Technology courses: 55

BLD 204 Mechanisms of Disease 3
BLD 213 Application of Clinical Laboratory Principles 2
BLD 220 Preparing for a Health Professions Career 1
BLD 324 Fundamentals of Hematology, Hemostasis and Urinalysis 3
BLD 324L Introductory Laboratory in Hematology, Hemostasis and Urinalysis 1
BLD 416 Clinical Chemistry 4
BLD 417 Quality Processes in Diagnostic Laboratory Testing 2
BLD 424 Advanced Hematology, Hemostasis, and Urinalysis 2
BLD 424L Advanced Laboratory in Hematology, Hemostasis, and Urinalysis 1
BLD 430 Molecular Laboratory Diagnostics 2
BLD 433 Clinical Immunology and Immunohematology Laboratory 1
BLD 434 Clinical Immunology 3
BLD 435 Transfusion and Transplantation Medicine 3
BLD 442 Education and Management in the Clinical Laboratory 3
BLD 450 Eukaryotic Pathogens 3
BLD 455 Integrating Clinical Laboratory Science Discipline (W) 2
BLD 471 Advanced Clinical Chemistry Laboratory 3
BLD 472 Advanced Clinical Chemistry 1
BLD 473 Advanced Clinical Hematology and Body Fluids Laboratory 4
BLD 474 Advanced Clinical Hematology and Body Fluids 1
BLD 475 Advanced Clinical Immunology and Immunohematology Laboratory 2
BLD 476 Advanced Clinical Immunology and Immunohematology 1
BLD 477 Advanced Clinical Microbiology Laboratory 3
BLD 478 Advanced Clinical Microbiology 1
BLD 496 Integrative Correlations in Clinical Laboratory Science I 1
BLD 498 Integrative Correlations in Clinical Laboratory Science III 2

During the clinical practicum, usually two semesters, the student may be required to relocate and/or commute to a clinical laboratory in an affiliated clinical facility.