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**MICHIGAN STATE
UNIVERSITY**

ASST PROV UNDERGRAD ED

August 17, 2007

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 September 13, 2007. Please mail the related materials referenced under the heading Attachments at the end of this memorandum to the members of the UCAP.

The academic program and course requests referenced above will be included on the agenda for the September 13, 2007 meeting of Subcommittee A, University Committee on Curriculum (UCC). Requests that are approved by Subcommittee A on September 13 will be before the Full Committee, UCC, for action on September 27, 2007. Requests that are approved by the Full Committee on September 27 will be included in the October 23, 2007, Report of the UCC to the Academic Council.

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**

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East Lansing, Michigan
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COLLEGE OF NATURAL SCIENCE

1. Request to change the requirements for the **Bachelor of Science** degree in **Clinical Laboratory Sciences** in the Biomedical Laboratory Diagnostics Program as published on page 382 of the 2007-2009 *Academic Programs*. The University Committee on Academic Policy (UCAP) will consider this request at its September 13, 2007 meeting.

- a. Under the heading **Admission as a Junior** make the following change in item 2. :

- (1) Replace Medical Technology 213 with Biomedical Laboratory Diagnostics 213.

- b. Add the following section following the Admission as a Junior statement:

Academic Standards

To progress to the clinical phase of the curriculum, students must earn a grade-point average (GPA) of 2.00 or higher in the following courses: Biomedical Laboratory Diagnostics 324, 416, 417, 434, 435; and Microbiology and Molecular Genetics 463. 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.

- c. Under the heading **Requirements for the Bachelor of Science Degree in Clinical Laboratory Sciences** make the following changes:

- (1) In item 1., the second paragraph, replace Medical Technology 455 with Biomedical Laboratory Diagnostics 455.

- (2) In item 4. b. , replace all subject codes of 'MT' with 'BLD'.

Effective Summer 2008.

View a Program

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Menu

Joy Speas, RO

Wednesday, 4/4/2007

Program Name: Clinical Laboratory Sciences Degree Name: BS Sequence Number: 2**Effective Dates: Spring 2008 - Open Status: Interim Initial Action: Change****Requested Date:** 1/23/2007 3:58:59 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:

Prev: Major

New:

5. Effective Start Semester:

Prev: Fall 2007

New: Spring 2008

6. Target student audience for the program:

Prev: no change

New:

7. Enrollment:

What is the expected enrollment per year:

Prev: 0

New: 18

What is the minimum enrollment acceptable:

Prev: 0

New: 10

8. Source of budget for the program:**9. Projected Costs as compared to other programs in unit:**

Prev:

New: 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:

13. Will additional space be required:**Type:**

Approximate amount:

14. Detailed Description:

Some of the changes requested are merely to change the major code for courses to match the new Program name which is Biomedical Laboratory Diagnostics - it should be changed in #1 above too. The second change is for the addition of a progression standard to the major. The rationale follows:

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.

The area of 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.

Provided separately on paper is a graph of student GPAs in selected major courses (i.e. core courses) since the new practice has been in place as plotted against performance on the national certifying examination that has a passing score of 400. (Fig 1) The courses selected represent core content across the major disciplines of the profession but include only courses that are expected to be completed by the end of fall semester of the senior year. That is, no spring semester senior courses are included. 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 slightly below 2.0.

What is not evident in this is the performance of students who did NOT choose to take the certifying examinations, which includes several with core GPAs below 2.0. (Table 1) Students rarely improve their performance once they get to the clinical phase. Extrapolating along the line from the graph, students with a core GPA less than 2.0 are not likely to pass the certifying examination unless they do something extraordinary to improve their overall performance. (There is the one example of that in the graph, but this student is unique. He took the core courses as Medical Technology major, and was not highly motivated at that time. He returned for a second degree in CLS. He was highly motivated and during the clinical phase, the grades of which are not shown, he worked to achieve a GPA of 2.4. He studied even harder for the certifying examination and he excelled. This is the exception, not the rule, however.)

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

Table 1. GPA campus core courses and clinical phase courses for students who have not taken the certifying examinations.

Student	Core Course GPA	Clinic course GPA
1	3.5	3.1
2	2.3	2.3
3	2.5	2.9
4	1.8	1.3
5	2.3	3.6
6	1.5	1.8
7	1.8	0.0

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. (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.

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 suffers.

Therefore, the faculty are requesting a progression standard for entry to the clinical phase of the curriculum. The requested standard is:

To progress to the clinical phase of the curriculum, students must earn a GPA of 2.0 or higher across **MT 324, 414, 416, 434, 435 and MMG 463** in order to progress to the clinical phase of the curriculum.

Students should have completed these courses by the end of the fall semester of their senior year. Students who do not meet the progression standard will know before the beginning of spring semester of their senior year. They would then have several options.

1. Repeat core courses with grades below 2.0. Depending on their course loads, 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.

2. Graduate on time with a major in Medical Technology (MT). 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 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 majors 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 preprofessional 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.

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 is 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.

The changes requested here would be reflected in the following revisions to Academic Programs:
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.

Academic Standards

To progress to the clinical phase of the curriculum, students must earn a grade point average (GPA) of 2.0 or higher across MT 324, 414, 416, 434, 435 and MMG 463. 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

BLD 417 per prog 6/8/07

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.

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

15. Type(s) of change(s):

Prev: Change unit codes to courses and implement a progression standard

New: Progression standard to clinical phase; major code changes

16. Students who will be affected by the proposed changes:

Prev: Students admitted to the program fall 2007 or later

New: CLS students admitted to the major after the effective date

17. Will the proposed change(s) have a negative impact on students? If so, which ones?:

Prev:

New: see detailed description

Describe impact and explain what accommodations will be made:

Prev:

New: see detailed description

18. Reason(s) for change(s):

Concern re: student academic progress and program name change

DEPARTMENT LEVEL APPROVAL STATUS

Approved by: Biomedical Laboratory Diagnostics Program
3/12/2007 11:27:37 AM by Kathryn Doig for Kathryn Doig, Director

COLLEGE LEVEL APPROVAL STATUS

Approved by: College of Natural Science
3/29/2007 12:46:52 PM by LaConya Murchison for Richard Schwartz, Associate Dean

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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 ~~Medical Technology 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.

Biomedical Laboratory Diagnostics

Insert 1

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3. The requirements of the College of Natural Science for the Bachelor of Science degree.

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4. The following requirements for the major:

	CREDITS
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(1) All of the following courses (42 credits):	
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BS 111 Cells and Molecules	3
BS 111L Cell and Molecular Biology Laboratory	2
CEM 141 General Chemistry	4
CEM 161 Chemistry Laboratory I	1

Biomedical Laboratory Diagnostics

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

55

BLD

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.

Academic Standards

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