Proposal for Establishing a BAS in Medical Laboratory Science Concentration

The College of Nursing and Health Innovation (CONHI) is proposing the establishment of a new concentration for an existing BAS degree. The degree program is "Bachelor of Applied Science"; the major is "Applied Science"; the new concentration is "Medical Laboratory Science". This BAS concentration is intended to replace the BS in Clinical Laboratory Sciences degree offered through the College of Liberal Arts and Sciences. The proposed BAS in Medical Laboratory Science represents a new model of collaborative programming between ASU and the Maricopa College District system, specifically Phoenix College [PC]. The student will complete a minimum of 90 designated credits at PC and will take 30 upper division ASU credits, specifically designated for this degree. Unique to this BAS degree is the sequencing of courses: after completion of four terms/semesters [and/or specific prerequisite courses], students admitted into the BAS in Medical Laboratory Science will be enrolled in both lower division PC courses and upper division ASU MDL courses within the same semester or term. This 90-30 partnership was approved at the March 11, 2010 Arizona Board of Regents meeting. The proposed BAS in Medical Laboratory Science was approved by the Academic Assembly of the College of Nursing and Health Innovation on March 19, 2009. A letter of support from Dean Melnyk accompanies this proposal. The BS in Clinical Laboratory Sciences degree offered through the College of Liberal Arts and Sciences is a nationally accredited CLS Professional Study Program; the proposed BAS in Medical Laboratory Science will seek accreditation according to the guidelines and criteria of the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) as a new program.

The BAS in Medical Laboratory Sciences [MDL] is designed to provide the academic knowledge and professional skills to allow students to advance their employment opportunities within the field of medical technology, cytology, clinical laboratory science, and related areas. Students will complete all graduation requirements of Arizona State University – lower division general studies requirements will be completed at PC and 9 upper division general studies credits will be taken at ASU.

Medical Laboratory Scientists, also known as clinical laboratory scientists, are highly skilled professionals who perform analytical tests on blood, tissue, and body fluids to provide laboratory information for the detection, diagnosis, and treatment of human diseases. They work independently and have skills and knowledge that are greater in depth and breadth compared to medical laboratory technicians, which typically are graduates of a 2-year or community college program. There also is a growing trend for medical laboratory scientists to perform wellness laboratory testing aimed at preventing disease. The Bureau of Labor Statistics reports that 13,000 new laboratory professionals will be needed in the United States each year; however, current training programs graduate only 5,000 students each year. The majority of medical laboratory scientists/technologists work in hospital laboratories. Others work in independent laboratories, reference laboratories, clinics, health maintenance organizations (HMO), public health agencies, pharmaceutical firms, research institutions, scientific equipment companies, physicians' offices, and as teachers in college clinical laboratory science programs. The working environment is as varied as the types of practice in which medical laboratory scientists are engaged.

ASU's BS in Clinical Laboratory Sciences program [which is being disestablished and replaced by the proposed BAS in Medical Laboratory Science] has been popular among students seeking entry into this

high demand professional field. The CLAS Clinical Laboratory Science program has enjoyed a steady enrollment over the past several decades with approximately 30 applicants per year. Over the past 3 years, approximately 20-25 students have graduated per year. Program enrollment has been kept artificially low due to the difficulty of identifying suitable clinical placement sites. Through the proposed alignment of the ASU BAS in Medical Laboratory Science with the Phoenix College AAS in Clinical Laboratory Sciences [which will be renamed Medical Laboratory Science, to synchronize with the ASU BAS program], access to clinical laboratory sites will be enhanced. Additionally, the Clinical Laboratory Science program at Phoenix College itself has been a popular career path for students for many years, with about 30 highly qualified applicants and approximately 15 graduates per year. The PC Clinical Laboratory Science program director anticipates an expansion of capacity and enrollment, ensuring a steady and strong pool of applicants for the BAS in Medical Laboratory Science. Due to the intensive nature of the courses and required supervision, it is anticipated that the ASU BAS in Medical Laboratory Sciences will graduate approximately 30 students per cohort. The demand for the proposed BAS degree will remain high as the salaries for Medical Laboratory Scientists is very competitive and, as noted above, the demand is strong.

The requirements for the BAS in Medical Laboratory Sciences include both admission and completion requirements. The 90 credits from Phoenix College include all admission requirements and certain completion requirements. The 30 credits from ASU include completion requirements only.

B.A.S. Degree Summary

Phoenix College General Studies, Prerequisite, and Clinical Laboratory Science Courses: Block Transfer	90
ASU Upper Division General Studies	9
ASU Upper Division Medical Laboratory Science Concentration	21
TOTAL	120

The admission requirements are based upon successful completion of specified courses as designated by the PC Clinical Laboratory Sciences program, both lower division general studies courses and lower division pre-professional science courses. All PC courses used for General Studies must satisfy AGEC (Arizona General Education Curriculum) to meet ASU GS requirements, including Awareness areas. Application to the ASU Medical Laboratory Sciences program will be made at the end of Term 4, providing for a decision after Term 4.

The completion requirements include core professional courses (lower division professional courses from PC [HCE prefix], upper division professional courses from ASU [MDL prefix]) and 9 upper division credits in specified GS areas from ASU. Once admitted to the BAS in Medical Laboratory Science after term 4, students will simultaneously complete specific lower division professional courses in the PC

Clinical Laboratory Sciences program and upper division professional courses from the ASU Medical Laboratory Science program. These students will be co-enrolled for at least four, and typically five, terms or semesters (including summer) in order to complete the 90/30 (credits) program of study.

While the program of study is described within the context of traditional semesters or terms, it is important to note that most of the lower division CLS professional courses [PC] and the upper division MDL professional courses [ASU] are scheduled as discreet "blocks" within the semester, meaning that at any one time, a student may be "taking" only 2 courses. For example, the sixth term (Spring) delineates a total of 24 credits, but some of the blocks actually begin in December and/or early January (e.g. winter intersession) and others run into June.

The majority of newly proposed MDL courses are actually modifications of existing courses now offered as CLS courses in the School of Life Sciences (see summary). Some course content has been reorganized. Each MDL course will be taught in alignment with one or more HCE course from PC, thus the combined credits of the MDL and HCE courses equal or exceed those of the current CLS courses for the entire program. New course submissions to ACRES will be phased in; the first four courses listed below [MDL 410, 420, 430, and 440] were submitted to ACRES in April 2010; additional submissions will follow in August and October 2010. CLS courses will be removed from the ASU inventory as soon as the students finish the program – probably at the end of Spring 2010 semester.

Comparison of Proposed MDL Courses and Current CLS Courses

Proposed MDL Course	Current CLS Course	Comments
MDL 410 Laboratory Leadership [1 cr]	CLS 450 Principles of Clinical Laboratory Management [2 cr]	Some components of CLS 450 are imbedded within the PC course HCE 190 [2 cr] that will be taken in the same term as MDL 410
MDL 420 Adv Clinical Urinalysis and Body Fluids [2 cr]	CLS 330 Principles of Clinical Hematology I/Body Fluids [3 cr]	Course content reorganized; practicum added as MDL 421 [2 cr]
MDL 430 Adv Hematology and Hemostasis [3]	CLS 430 Principles of Clinical Hematology II/Hemostasis [3]	MDL 430 includes portion of CLS 330 plus CLS 430; practicum added as MDL 431 [2 cr]
MDL 440 Adv Immunohematology and Immunology [3]	CLS 440 Principles of Clinical Immunology/Immunohematology [3] and CLS 441 Advanced Applications of Immunology/Immunohematology	CLS 440 and 441 content reorganized; practicum added as MDL 441 [2 cr]

	[3]	
MDL 421 Practicum: Advanced Clinical Urinalysis and Body Fluids [1]	No equivalent course	
MDL 431 Practicum: Advanced Hematology and Hemostasis [1]	CLS 431 Advanced Applications of Clinical Hematology [4]	Some content of CLS 431 now incorporated into MDL 421
MDL 441 Practicum: Advanced Immunohematology and Immunology [2]	CLAS 441 Advanced Applications of Immunology/Immunohematology [3]	Some components of CLS 441 are imbedded within the PC course HCE 245 Practicum on Clinical Immunohematology and Immunology [1 cr] that will be taken in the same term as MDL 441
MDL 450 Advanced Clinical Microbiology [3]	CLS 320 Principles of Microbiology I [6]	Some components of CLS 320 are imbedded within the PC course HCE 246 Clinical Microbiology [6 cr] that will be taken in the same term as MDL 450
MDL 460 Advanced Clinical Chemistry [3]	CLS 310 Principles of Clinical Chemistry [6]	Some components of CLS 310 are imbedded within the PC course HCE 248 Clinical Chemistry [6 cr] that will be taken in the same term as MDL 460
MDL 451 Practicum: Advanced Clinical Microbiology [1]	CLS 421 Advanced Applications of Clinical Microbiology [4]	Some components of CLS 421 are imbedded within the PC courses HCE 246 Clinical Microbiology [6 cr] and HCE 247 Practicum in Clinical Microbiology [1 cr] that will be taken in the same term as MDL 451

MDL 461 Practicum: Clinical Chemistry [1]	CLS 411 Advanced Applications of Clinical Chemistry [4]	Some components of CLS 411 are imbedded within the PC courses HCE 249 Practicum in Clinical Chemistry [1 cr] and HCE 248 Clinical Chemistry [6 cr] that will be taken in the same term as MDL 461

ADMISSION REQUIREMENTS: Only those students who have completed the following courses as defined by the Clinical Laboratory Sciences program from Phoenix College are eligible for entry into the BAS in Medical Laboratory Science degree. All courses must have a grade of C or higher. The Admission decision is made after term 4.

Prerequisite Courses – Science/Math 31 credits			
HCC 145AA Medical Terminology	1		
BIO 181 General Biology I	4		
BIO 182 General Biology II	4		
BIO 205 Microbiology/Laboratory	4		
BIO 247 Cellular Biology OR BIO 160 Introduction to Human Anatomy & Physiology	3		
MAT 142 College Mathematics or higher	3		
CHM151 General Chemistry I	4		
CHM 152 General Chemistry II	4		
CHM 230 Fundamental Organic Chemistry /Laboratory	3/1		
General Education Courses – Core 11 credits			
ENG101 or 107 First Year Comp.	3		
ENG102 or ENG 108 or ENG 111 – First Year Comp.	3		
COM 225 – Communication (L) (Literacy/Critical Inquiry)	3		
General Education Elective	2		
General Education Courses – Distribution 12 credits			
Humanities, Fine Arts & Design (HU) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H) – approved course to meet ASU General Studies	3		
Social & Behavioral Sciences (SB) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H) – approved course to meet ASU General Studies requirement	3		
Humanities, Fine Arts & Design (HU) OR Social & Behavioral Sciences (SB) AND Cultural Diversity in the US (C), Global Awareness (G), or Historical Awareness (H) – approved course to meet ASU General Studies requirement	3		
Humanities, Fine Arts & Design (HU) OR Social & Behavioral Sciences (SB) AND Cultural Diversity in the US (C), Global	3		

Awareness (G), or Historical Awareness (H) – approved course to meet ASU General Studies requirement			

COMPLETION REQUIREMENTS: There are three components to the completion requirements: [a] required professional HCE courses from Phoenix College's CLS program, [b] ASU upper division General Studies courses and [c] the BAS in Medical Laboratory Science Concentration.

[a] **Required Professional HCE courses from Phoenix College's CLS Program:**

HCE 190 Clinical Laboratory Operations	2		Completed in the December following Term Five in conjunction with MDL 410 Laboratory Leadership
HCE 240/241 Clinical Urinalysis and Body Fluids /Practicum	4/1		Completed in conjunction with MDL 420/421 Advanced Clinical Urinalysis and Body Fluids/Advanced Practicum
HCE 242/243 Clinical Hematology and Hemostasis /Practicum	6/1		Completed in conjunction with MDL 430/431 Advanced Clinical Hematology and Hemostasis /Advanced Practicum
HCE 244/245 Clinical Immunohematology and Immunology/ Practicum	6/1		Completed in conjunction with MDL 440/441 Advanced Immunohematology and Immunology /Advanced Practicum
HCE 246/247 Clinical Microbiology/ Practicum	6/1		Completed in conjunction with MDL 450/451 Advanced Clinical Microbiology/Advanced Practicum
HCE 248/249 Clinical Chemistry/Practicum	6/1		Completed in conjunction with MDL 460/461 Advanced Clinical Chemistry /Advanced Practicum
HCE 290 CLS Review	1		Taken in final term

[b] ASU General Studies Sequence (9 credits): Students must meet Global Awareness, Historical Awareness, Cultural Diversity, and Literacy course requirements of ASU.

	Credits	
Mathematical Studies: Upper division (CS)	3	Options: ABS 350, EDT 321, SOC 390, SWU 321
Upper Division Literacy (L) & Critical Inquiry	3	Options: ENG 301, ENG 302, TWC 301, TWC 401, TWC 446
Upper Division HU:	3	Options: PHI 306 or equivalent

[c] ASU Medical Laboratory Science Concentration (21 credits):

MDL 410 [1]	Medical Laboratory Leadership
MDL 420 [2]	Advanced Clinical Urinalysis and Hemostasis
MDL 430 [3]	Advanced Hematology and Hemostasis
MDL 440 [3]	Advanced Immunohematology and Immunology
MDL 421 [1]	Practicum: Advanced Clinical Urinalysis and Body Fluids
MDL 431 [1]	Practicum: Advanced Hematology and Hemostasis
MDL 441 [2]	Practicum: Advanced Immunohematology and Immunology
MDL 450 [3]	Advanced Clinical Microbiology
MDL 460 [3]	Advanced Clinical Chemistry
MDL 451 [1]	Practicum: Advanced Clinical Microbiology
MDL 461 [1]	Practicum: Advanced Clinical Chemistry

The draft syllabi for the first four courses to be offered (MDL 410, 420, 430, and 440) are provided as attachments to this document. The remaining courses will be developed and submitted to ACRES within the next several months as the program continues to roll out.

The CONHI faculty participating in this BAS in Medical Laboratory Science are as follows:

Jeffrey J. Wotz, MA, MT (ASCP), Clinical Assistant Professor (1 FTE) and adjunct professors as needed.