## **Brothers, Sheila**

From: Cramer, Aaron

**Sent:** Wednesday, January 02, 2019 5:17 PM **To:** Bird-Pollan, Jennifer; Brothers, Sheila

Cc: Mellon, Isabel

**Subject:** NEW Master of Forensic Toxicology and Analytical Genetics

Attachments: Master of FTAG with Concentrations in FTAG to SAPC Dec 27 FINAL.PDF

Proposed New Master of Forensic Toxicology and Analytical Genetics

This is a recommendation that the University Senate approve, for submission to the Board of Trustees, the establishment of a new Master of Forensic Toxicology and Analytical Genetics degree, in the Department of Toxicology and Cancer Biology within the College of Medicine.

Rationale: The Master of Forensic Toxicology and Analytical Genetics will prepare professionals with an advanced training in forensic science and develop highly valued workplace skills. There are two areas of concentration: Forensic Toxicology/Chemistry and Forensic/Analytical Genetics. The curriculum will include common coursework in advanced forensic science, writing, communication, professionalism, ethics, legal perspectives, and laboratory skills and specialized coursework including an internship experience. This professional master's program and its student learning outcomes were developed with input from potential employers, consultants, and faculty outside the program and university. The program is expected to launch with a cohort of 12 students, growing to cohorts of 20 students over four years.

#### Aaron

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Office of Strategic Planning and Institutional Effectiveness (OSPIE). The new program approval process begins when a contact persons submits a "Notification of Intent" (NOI) and substantive change checklist (available HERE) to OSPIE. Units have six months from the point of NOI submission to the time when the completed proposal is approved by Senate. After the NOI is submitted, a contact person should begin working to complete this form. Contact persons should work with OSPIE to identify the program's degree designation and CIP, as well as to solicit a letter of administrative feasibility from the Provost (per SR 3.2.3.A.2).

**Pre-proposal.** The CPE requires that a pre-proposal be submitted after a proposed program has achieved approval at the college level. Answers to questions identified with a \* by the question number on this form will be used by OSPIE staff to submit the pre-proposal to the CPE (Council on Postsecondary Education).

Form structure. This form has two sections. The first half (white background) contains information required by the University Senate and Registrar's office and the second half (beige/brown background) contains information required by two external entities, the CPE and SACSCOC (Southern Association of Colleges and Schools Commission on Colleges). Although only the first half is required for University Senate approval, every question must be answered to receive CPE approval. Please do not leave any area blank, but instead write "not applicable" wherever that is the appropriate response.

Approval process. Once approved at the college level, your college will send the proposal to the appropriate Senate academic council (possibly HCCC and/or GC) for review and approval. Once approved at the academic council level, the academic council will send your proposal to the Senate Council office for additional review via a committee and then to the SC and University Senate. (The contact person listed on the form will be informed when the proposal has been sent to committee and other times as appropriate.) Once approved by the Senate, the Senate Council office will submit the proposal for it to be placed on an agenda for the Board of Trustees. After approval by the Board, OSPIE will ensure the proposal is submitted to the CPE for final approval. Generally, a new program proposal must have received approval from the Senate by early spring (February or March) in order for the new program to be effective for the following fall semester.

1. Bas	ic Information: Program Background and Overview		
1a	Home College: College of Medicine		
1b	Home Educational Unit (school, department, college¹): Department of Toxicology and Cancer Biology		
1c*	Office of Strategic Planning and Institutional Effectiveness (OSPIE) (Please contact OSPIE (OSPIE@L.uky.edu) for help with questions in this section.)		
	Date of Contact with OSPIE: March 23, 2018		
	Appended to the end of this form is a PDF of the reply from OSPIE.		
	Appended to the end of this form is a letter of administrative feasibility from the Provost.		
	Appended to the end of this form is a letter(s) of administrative feasibility from the dean(s) of the college(s) offering the degree.		
	CIP Code (confirmed by OSPIE): 40.0510		

<sup>&</sup>lt;sup>1</sup> Only interdisciplinary graduate degrees may be homed at the college level.

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	Degree Type (MA, MS, etc.) <sup>2</sup> : Master of Forensic Toxicology and Analytic	ical Gene	tics		
	Is this degree designation on the CPE's list of degree designations <sup>2</sup> ?	Yes	No		
	If "No," please provide an explanation for OSPIE's use in external reporting purposes.				
	The CPE in 2012 newly included in its definitions of degree categories the 'professional Master's degree.'  At this time, CPE has not yet recognized any degrees in KY as a professional degree at the Master's level. Hence, the Master's degree proposed here is the first post-baccalaureate professional degree in the Master's category, and so there are no existing degree titles in this category of Master's degree.				
1d*	Major Name (Biology, Finance, etc.): Forensic Toxicology and Analytical Genetics				
4		,	N. SZ		
1e	Is there a specialized accrediting agency related to this program?  Y  If "Yes," name:	res	No 🔀		
		res 🗍	No 🔀		
	Do you intend to seek accreditation from this agency:	163	NO 🖂		
1f	suspended?	res 🗌	No 🖂		
	If "Yes," describe. (300 word limit)				
1g*	Requested effective date:	fic Date <sup>3</sup> :	Fall 20 19		
1h*	Anticipated date for granting first degree(s): May 2021				
1i*	Contact person name: Isabel Mellon Email: mellon@uky.edu	Phone: 2	257-6253		
2. Prog	ogram Overview				
2a*	Provide a brief description of the proposed program. (300 word limit)				
	The Master of Forensic Toxicology and Analytical Genetics degree is designed to prepare padvanced training in focused areas of forensic science while developing workplace skills hig employers in related fields. Requirements for admission to the program will include an under biology, chemistry, forensic science or a closely related discipline. The program will have two concentration: one concentration will focus on Forensic Toxicology/Chemistry and the secon Forensic/Analytical Genetics. The program is designed to be completed in 4 consecutive fall semesters with a requirement of the completion of 36 or 37 credits for the two different concatoman core curriculum, students in both concentrations will have foundational informate advanced forensic science, writing, communication, professionalism, ethics, legal perspective specific laboratory skills. Through a rigorous targeted finishing curriculum in either concentrations internship (practicum) experiences and an individualized program of cognate cour will be competitive for workforce deployment in the areas of private industry drug testing, pada DNA analysis, forensic governmental divisions, and hospital clinical labs. The faculty of reprogram is the Graduate Faculty in Toxicology and Cancer Biology. The department has exing the education and training of graduate students and longstanding training programs lead Master of Science degree in Toxicology and a Doctor of Philosophy degree in Toxicology and Biology. This proposed program is unique and focused on professional employment directly differing from existing programs in the department that provide training most relevant to re-	ghly valuergradua wo areas ond on all and sprecentration and of ves and vestation, rses the private record for extensive ding to a and Cancely upon g	ted by te degree in of ring ns. Through a skill set in workplace- including graduates r the experience er		

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<sup>&</sup>lt;sup>2</sup> Visit <a href="http://dataportal.cpe.ky.gov/cpedegreedesignations.aspx">http://dataportal.cpe.ky.gov/cpedegreedesignations.aspx</a> for the CPE's list of approved degree designations.

<sup>&</sup>lt;sup>3</sup> Programs are effective the semester following approval. No program will be made effective unless all approvals, up through and including Board of Trustees and CPE approval, are received.

	List the program objectives of the proposed program. These objectives should deal with the specific institutional
2b	and societal needs that the program will address, such as how students will benefit from the program, both
	tangibly and intangibly. (Please note that "program objectives" are different from "student learning outcomes." (300 word limit)
	The goal of this program is to train graduates to be highly competitive for workforce deployment in areas of
	Forensic Toxicology/Chemistry and Forensic/Analytical Genetics. As the flagship university in the
	Commonwealth, the University of Kentucky will provide the only Master of Forensic Toxicology and Analytical
	Genetics (or degree of comparable nature) in the state. This leading-edge program will be instrumental in
	training professionals to work in industry, government and medical forensic and genetic analysis laboratories.
	In-state employers include the Central Lab of the Kentucky State Police, city/county governments across the
	state for crime scene investigation, University and Hospital DNA testing laboratories across the state, Hospital
	forensic laboratories, LabCorp, Dynacare Laboratories, Apex Life Sciences, Ethos Laboratories, LGC Standards,
	United States Equestrian Foundation, Eurofins Lancaster Laboratories, DNA Diagnostics Center, Accurate Drug
	and DNA Testing, LB Genetics, DNA Services of America, Lexar Laboratories, Evolva, Piramal Pharma Solutions,
	Catalent Pharma Solutions and a large number of additional DNA and drug testing laboratories across the state.
	In addition, we plan to recruit a diverse pool of domestic and international students and expect the unique
	program to attract numerous applicants. According to the Occupational Outlook Handbook published by the
	Bureau of Labor Statistics, the US demand for forensic analysts is rapidly expanding with a 17% projected
	increase in jobs from 2016-2026. https://www.bls.gov/ooh/life-physical-and-social-science/forensic-science-
	technicians.htm
2c*	List the intended student learning outcomes (SLOs) for the proposed program. Address one or more of the five areas of learning: 1. broad, integrative knowledge; 2. specialized knowledge; 3. intellectual skills; 4. applied learning; and 5. civic learning. (300 word limit) (More detailed information will be addressed in a subsequent question.)
	Student learning outcomes are based on required skills needed by professionals to facilitate employment in forensic chemistry and genetics laboratories in industry, government, and medical settings.
	Outcome #1: Students will demonstrate advanced knowledge of the theory and practice of a range of core disciplines in the Forensic Sciences.
	Outcome #2: Students will demonstrate knowledge of ethical principles, professional practices, law-enforcement
	and courtroom testimony required for professionals employed in Forensic Toxicology/Chemistry or Forensic/Analytical Genetics.
	Outcome #3: Students will demonstrate knowledge of theoretical and practical applications of modern
	instrumentation and laboratory techniques required for professionals employed in Forensic
	Toxicology/Chemistry or Forensic/Analytical Genetics.
	Outcome #4: Students will integrate the use of theory from their didactic coursework within an experiential
	setting in forensic chemistry and genetics laboratories in industry, government, or medical settings.
2d	Describe the rationale and motivation for the program. Give reference to national context, including equivalent
	in benchmark institutions. (150 word limit)  In 1997, the Sloan Foundation and Keck Foundation partnered with research universities to establish a
	"Professional Science Master's" (PSM) initiative of nationwide scope, toward producing scientists trained to
	translate basic advances into practical applications to improve human health. In 2001, the Council of Graduate
	Schools began even broader efforts to make the PSM degree a normal feature encompassing all science discipling
	Since 2001, a number of universities have established 332 PSM degrees that are recognized by the National

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	Professional Master's Association (NPMA). However, that national list shows only four in KY and, as of 2017, the KY Council of Postsecondary Education did not yet record in I degree at the Master's level. We propose here a professional Master's-level degree in Found Analytical Genetics that will offer a combination of academic features that is national	XY any pro orensic Tox	fessional cicology
2e	Describe the proposed program's uniqueness within UK. (250 word limit)	/61	
	The University of Kentucky does not currently offer any programs in Forensics Toxicolog		•
	Forensic/Analytical Genetics. The proposed program would be the first to offer such prog	•	O
	either the graduate or undergraduate level. The requirement for rigorous internships in		
	and/or industrial forensic drug or genetic testing laboratories will provide unique training students. Notably, forensic internships available at state laboratories have largely trained		•
	Commonwealth since no graduate level forensic programs are available within the state.		•
	discussions with these state laboratories, they greatly welcome the opportunity to train in		
	The state of the s		
2f	Describe the target audience. (150 word limit)		
	Candidates for this program will be students with an undergraduate bachelor's degree in		•
	forensic science or a related field of study. Students with other bachelor's degrees or the		would be
	considered if judged to be highly competitive. These candidates should be focused on obtaining the control of t	_	
	knowledge and technical skills required for employment in forensic toxicology and/or gen		
	specifically, the goals of each candidate will be to obtain advanced training in a forensic		_
	communication, professionalism, ethics, legal perspectives and workplace-specific laboration them for immediate job placement in the areas of private industry drug testing, p	•	
	forensic governmental divisions, and hospital clinical forensic labs.	rivate Divi	t anaiysis,
	Jorenste governmentar arristons, and nospitar emitearjovenste taes.		
2g*	Does the program allow for any concentrations?	Yes 🖂	No 🗌
	If "Yes," name the concentration(s). (Specific course requirements will be described in Sec	ction A, pa	rt 7.)
	Concentration #1: Forensic Toxicology/Chemistry		
	Concentration #2: Forensic/Analytical Genetics		
	Concentration #3:		
2h	Are necessary resources available for the proposed new program? (A more detailed answer is requested in Section A, part 4.)	Yes 🖂	No 🗌
	положения в положе		
2i	Describe how the proposed program will be administered, including admissions, student etc. (150 word limit)	advising, r	etention,
	The faculty of record for the proposed program is the Graduate Faculty in the Department Cancer Biology. Students will have regular advisory meetings with the DGS, Director, and Advisor to monitor progress and success. The DGS and Program Directors will be appoint department with input from the department faculty. The DGS in consultation with the Proposed Director will identify a Major Advisor for each student during the fall semester of the first Advisor will consult with the student on progress through course work, choice of electives	nd with the nted by the gram Cond t year. The	ir Major Chair of the centration Major
	and profession development/securing employment. A Major Advisor will be chosen who hexpertise in both the area of concentration and the long-term interests of the student. The chosen from the departmental faculty. The departmental faculty have a wide range of exp	as the mos Major Adv	t appropriate

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2j	Are mu	Itiple units/programs collaborating to offer this program?	Yes 🖂	No 🗌		
	· ·	'please discuss the resource contribution(s) from each participating unit/program of support will be addressed in Part A, section 7.)	n. <i>(150 wo</i>	ord limit)		
	There a	re no other significant resources from other departments, other than core facility	fee-for-sei	rvice		
2k	is not d	JK programs <sup>4</sup> that the proposed program could be perceived as replicating. Give a uplication, or is a necessary duplication. (250 word limit)	a rationale	e for why this		
	None					
21		faculty of record for the proposed new master's degree be the graduate of the department/school offering the proposed new degree?	Yes 🔀	No 🗌		
	term of	please describe the faculty of record for the proposed master's program, includi service; and method for adding/removing members. Will the existing director of epartment/school be the DGS for this proposed master's degree?				
		S of The Department of Toxicology and Cancer Biology will be the DGS of this pro	posed deg	ree and will		
		ith the two Directors of the program.	h			
2m	Will the	program have an advisory board <sup>5</sup> ?	Yes 🖂	No 🗌		
	If "Yes," please describe the standards by which the faculty of record will select members of the advisory board,					
	the duration of service on the board, and criteria for removal. (150 word limit)					
	The advisory board will advise the two Program Directors and the DGS of the program. They will be selected					
	from course directors in the program, leaders in forensic toxicology, leaders in drug testing, leaders in DNA					
	testing and current or past directors in the Kentucky State Police Lab. They will serve for terms of 3 years that					
		ewable and criteria for removal would include lack of participation in oversight a	nd failure	to attend		
	-	neetings.		11		
	_	$^\prime$ please list below the number of each type of individual (as applicable) who will be a set of the second of t	be involve	d in the		
	3	y board.  Faculty within the college who are within the home educational unit.				
	1	Faculty within the college who are outside the home educational unit.				
	1	Faculty outside the college who are within the University.				
	1	Faculty outside the college and outside the University who are within the Unite	d States			
	0	Faculty outside the college and outside the University who are outside the Unit				
	1	Students who are currently in the program.	- States.			
	0	Students who are currently in the program.  Students who recently graduated from the program.				
	3	Members of industry.				
		Community volunteers.				
		Other. Please explain:				
	10	Total Number of Advisory Board Members				
		10 Total Number of Advisory Board Members				

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<sup>&</sup>lt;sup>4</sup> You must include a letter of support from any other program's home unit. Please convert the letter to a PDF and append to the end of this form.

<sup>&</sup>lt;sup>5</sup> An advisory board includes both faculty and non-faculty who are expected to advise the faculty of record on matters related to the program, e.g. national trends and industry expectations of graduates.

3. Deliv	very Mode				UK DL	P and eLearning Office 6
3a*	1	will any portion ( learning <sup>7</sup> ?	of the proposed prog	gram's core courses be o	ffered via	Yes No No
	If "Yes,"	please indicate b	elow the percentage	e of core courses that wi	II be offered via dis	tance learning.
(check one)	1 1% = 74%   1					100%
	NOTE: Pr	ograms in which	25% or more of the	program will be offered	l via distance learni	ng may need to submit
	a <u>substantive change prospectus</u> to SACS. Please contact <u>institutionaleffectiveness@uky.edu</u> for assistance.				<u>.edu</u> for assistance. <i>The</i>	
	prospect	us is required by	SACS, but it is NOT r	equired for Senate revie	w.	
	If any ne	rcentage of the I	orogram will he offer	ed via the alternative le	arning formats held	ow check all that apply
3b*	below.	recitage or the	orogram will be one.	ed vid the diterrative re	arring formats ben	ow, check an that apply,
		Distance learning				
				of interaction, such as fa		•
			•	nail, interactive televisio	n, or World Wide V	Veb.
			nced instruction.			
			d/early morning class	Ses.		
		Accelerated cour			•.	
	=			s, such as employer work	ksite.	
			tiple entry, exit, and	reentry points.		
	[]   [	Modularized cou	rses.			
	Give ned	agogical rationa	le for the use of alter	rnative delivery modes i	n the proposed pro	gram. Consider the
			rate as appropriate.	•	ir tire proposed pro	grann consider the
3c			l asynchronous comp			
		-	traditional and non-			
		Hybrid elements.		·		
	Since ha	nds-on training i	n the day-to-day ope	ration and technical asp	ects of drug testing	and genetic analysis
	laborato	ries is key in pre	paration of graduate	s in this program for im	nediate employmen	t, substantial internship
	(practicu	ım) periods are d	a critical component	of this graduate progran	n. These internships	s will be designed to
	provide p	practical educati	on and training with	state-of-the-art methodo	ologies and instrum	entation, and help
	students	network with em	ployers and other pe	rsonnel that will facilita	te their future empl	oyment in these fields.
4. UK F	Resources					
4a*	Will the	program's home	educational unit red	juire new or additional f	aculty?	Yes 🔲 No 🗌
		•	• • • • • • • • • • • • • • • • • • • •	culty resources are available		
	program. I	Note whether the n	new and additional facul	ty will be part-time or full-tir	ne faculty. If "No," exp	plain why. (150 word limit)
		The faculty of record in the Department of Toxicology and Cancer Biology have the expertise and training to				
				They will work together v		
		-	· ·	eliver the required course	-	
	1	•		eir salaries will be suppo	rted by tuition reve	nue generated by the
	proposed	l program (see P	arts 1/ and 18).			

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<sup>&</sup>lt;sup>6</sup> For questions about alternative delivery modes, please contact UK's Distance Learning Programs and e-Learning office (http://www.uky.edu/DistanceLearning/).

<sup>&</sup>lt;sup>7</sup> Per the Southern Association of Colleges and Schools Commission on Colleges (SACS) definition of distance education, distance education is a formal educational process in which the majority of the instruction (interaction between students and instructors and among students) in a course occurs when students and instructors are not in the same place. Instruction may be synchronous or asynchronous.

	If "Yes," when will the faculty be appointed? (150 word limit)		
	They will be appointed Spring 2020.		
	Will the appearance have advertised with require additional year fearly recovered		
4b	Will the program's home educational unit require additional non-faculty resources, e.g. classroom space, lab space, or equipment?	Yes 🖂	No 🗌
	If "Yes," provide a brief summary of additional non-faculty resources that will be needed program over the next five (5) years. If "No," explain why. (150 word limit)	to implen	nent this
	Classroom space will be required to hold new courses developed as part of this program and is being identified by the COM Dean's Office. Start-up funds provided by the COM Dean's office will be used to purchase the equipment to initially furnish the teaching labs. In addition, the program will take advantage of many existing instrumentation resources available within the department, college and University, and Core Facilities.  Additional instrumentation may be needed as the program develops and expands and will be supported by tuition revenue. Based on conversations with the COM Dean's office, classroom laboratory space will be identified likely in RB2 and used for laboratory modules in TOX 800, TOX 910 and TOX 920.  In addition, laboratory facilities in Environmental Research and Training Laboratories in the College of Engineering will also be used for TOX 920 (Instrumentation Techniques in Forensic Chemistry) and in the Genomics Core Facility for TOX 910 (Analytical and Forensic DNA)		
4 -	Mill the consequence in all the consequence from a continuous distribution of the continuous	V N	N. T
4c	Will the program include courses from another educational unit(s)?	Yes 🖂	No L
	If "Yes," list the courses and identify the other educational units and subunits that have a of their courses. (150 word limit)	approved	the inclusion
	Dept of Molec. Cell. Biochem: BCH 401G Fundamentals of Biochemistry; Integrated Bio IIBS 602 Molec. Biolo. Gen, IBS 611: Practical Statistics Agric.Biotech. Program: ABT 4 As Electives: MBA 624 and PA 651		
	<ul> <li>If "Yes," append to the end of this form a letter of support from the appropriate education from whose unit individual courses will be used. A letter must include the following:         <ul> <li>Demonstration of true collaboration between multiple units<sup>8</sup>;</li> <li>Impact on the course's use on the home educational unit; and</li> <li>Verification that the chair/director has consent from the faculty members of the</li> </ul> </li> </ul>		hair/director
	•		

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<sup>&</sup>lt;sup>8</sup> Show evidence of detailed collaborative consultation with such units early in the process.

4d Fill out the faculty roster below for full-time and part-time faculty teaching major core courses in the proposed program.				
NAME	COURSES TAUGHT	ACADEMIC DEGREES AND COURSEWORK	OTHER QUALIFICATIONS AND COMMENTS	
List name & identify faculty member as "F" (full-time) or "P" (part-time).	Include term; course prefix, number and title; & credit hours. Identify courses as D, UN, UT or G.	List relevant courses taught, including institution and major.	Note qualifications and comments as they pertain to course taught.	
Dr. Isabel Mellon, F	TOX 910 Analytical and Forensic DNA; 4 credit hours (D), TOX 880 Ethics and Professional Practice; 3 credit hrs (D), IBS 602 Molecular Biol. and Genetics; 3 credit hr (G), TOX 850: Advanced Human Gen.	Ph.D. IBS 602 Molecular Biology and Genetics (UK), TOX 600 Ethics in Scientific Research, BCH 611Nucleic Acids, HON 151 Science, Ethics and Society		
Dr. Davy Jones, F	TOX 800 Fundamentals in Forensic Science; 4 credit hours (D), TOX 840 Forensic Science Standards and Practices; 3 credit hours (D), TOX 980 Internship in Forensic Toxicology and Analytical Genetics; 6 credit hours (D)	Ph.D. TOX 509 Environmental and Regulatory Toxicology (UK), TOX 780 Grant-writing in Toxicology (UK)		
Dr. Zhigang Wang, F	TOX 663: Drug metabolism and Disposition; 2 credit hours (G), TOX 860 Forensic and Analytical Toxicology 3 credit hours (D), TOX 980 Internship in Forensic Toxicology and Analytical Genetics; 6 credit hours (D)	PhD, TOX 663 Drug Metabolism And Disposition (UK), TOX 680: Molecular Toxicology And Carcinogenesis (UK)		
Dr. David Orren, F	TOX 780: Special Problems in Toxicology: Drug metabolism and Disposition; 2 credit hours (G), TOX 860 Forensic and Analytical Toxicology 3 credit hours (D), TOX 980 Internship in Forensic	Ph.D. TOX 509 Environmental and Regulatory Toxicology (UK), TOX 780 Grant-writing in Toxicology (UK)		

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	Toxicology and Analytical Genetics; 6 credit hours (D)		
Dr. David Orren, F	TOX 800 Fundamentals in Forensic Science, 4 credit hours (D), TOX 840 Forensic Science Standards and Practices; 3 credit hours (D), IBS 602 Molecular Biology and Genetics; 3 credit hours (G)	PhD, TOX 680: Molecular Toxicology And Carcinogenesis (UK)	
Dr. Nathan Vanderford, F	TOX 810 Communicating in the Forensic Science Profession; 1 credit hour (D) TOX 820: Preparing Professionals in Forensic Science and Analytical Genetics; 1 credit hour (D)	PhD, MBA Graduate School 600 Preparing Future Professionals, Toxicology 780 Preparing Science Professionals	
Dr. Rick Higashi, F	TOX 820 Communicating in the Forensic Science Profession; 1 credit hour (D)	PhD, TOX 780 Systems Biochemistry: Principles and Practices	Co-Director The Center for Environmental and Systems Biochemistry (CESB) was established at UKY in 2014 and houses advanced analytical instrumentation for metabolism- based research.
Dr. David Cunningham, P	TOX 860 Forensic and Analytical Toxicology 3 credit hours (D), TOX 840 Forensic Science Standards and Practices; 3 credit hours (D), TOX 920 General Instrumental Techniques in Forensic Chemistry; 4 credit hours (D)	PhD, CHE 501/802 Topics in Analytical Chemistry Bioanalytical Chemistry (EKU), FOR 349 Applied Learning in Forensic Science (Internship) (EKU), FOR 411L Forensic Instrumental Lab (EKU), CHE 425 / FOR 411 Instrumental Analysis (EKU) FOR 430/442 Forensic Analytical	

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	TOX 800 Fundamentals in Forensic	Toxicology (EKU) FOR 442L Drugs and Toxicology Lab (EKU), FOR 490 Introduction to Research (EKU), (Forensic Independent Research) FOR 499 Forensic Science Capstone (EKU) PhD	
Dr. Michael Ward, P	Science; 4 credit hours (D), TOX 840 Forensic Science Standards and Practices; 3 credit hours (D)	FOR 301 Intro to Forensic Science (EKU); FOR 401 Forensic Professional Practice (EKU)	
Ms. Lucy Davis, P	TOX 910 Analytical and Forensic DNA; 4 credit hours (D), TOX 880 Ethics and Professional Practice; 3 credit hours (D)	BHS West Virginia University Lecturer On Forensic Dna Issues – College Of Law Instructor Crime Scene/Blood Spatter Class Instructor Quality Assurance Class University Of Kentucky Introduction To Population Genetics, Lecturer On Forensic Dna Statistical Analysis University Of Kentucky, Department Of Agriculture, Applications Of Forensic Science Certificate Program Lecturer On Forensic Biology Techniques California State At Fullerton, Fullerton, California University Of Kentucky Law School, Lecturer On Dna Technology And Forensic Evidence University Of Kentucky, Lexington, Kentucky, Naval Criminal Investigative Service - United States Armed Forces	Applied Biosystems Validation, Program Team, Analytical Services Inc. (Anser), Defense Forensic Enterprise Division; Dna Instructor And Subject Matter Expert, Organization Of Scientific Area Committees (Osac) 2016-2018 For Forensic Science – Aafs Representative Forensic Science Standards Board; Kentucky State Police Forensic Laboratory Frankfort, Kentucky Quality Assurance Supervisor Dna Section Supervisor – Technical Leader Forensic Serologist; Center For Advanced Forensic Dna Analysis Greenville, North Carolina Director Of Forensic Programs;

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		Lecturer On Forensic Dna Techniques Cold Case Seminar - Glynco, Georgia,	Nerfi Forensic Dna Academy Instructor State University Of New York - Albany, New York, Lecturer
Michael Murphy	IBS 611 Practical Statistics; 1 credit hour (G)		
Craig Vander Koo	BCH 401G Fundamentals of Biochemistry; 3 credit hours (G)		
Charles Fox	ABT 461G Population Genetics; 3 credit hours, G in progress		
FT - full time	D = developmental		
FT = full time PT= part time	UN = undergraduate nontransferable UT = undergraduate transferable G = graduate		

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5. Ass	sessment – Program Assessment and Student Learning Outcomes (SLOs)
	Referring to program objectives, student benefits, and the target audience (questions 2b and 2f), explain how
5a	the program will be assessed, which is different from assessing student learning outcomes. Include how the
	faculty of record will determine whether the program is a success or a failure. List the benchmarks, the
	assessment tools, and the plan of action if the program does not meet its objectives. (250 word limit)
	The program will have two concentrations. Our objective is to begin the program with a cohort of six students in each concentration with a total of 12 students in the program and build each year over the subsequent 4 years to a cohort of 10 students in each concentration or 20 students in the program. The objective is to recruit students with an undergraduate bachelor's degree in biology, chemistry, forensic science or a related field of study who have excellent undergraduate records in their field of scientific study. Each year we will evaluate our applicants and target enrollment in terms of numbers, undergraduate degrees and undergraduate GPAs. The overall success of the program will be evaluated by average time to graduation, graduation rates, exit questionnaires of graduates, job placement areas and statistics, average starting salaries, and career development after graduation through questionnaires requested of alumni. The Program Directors and DGS will use the annual reporting periods as a formative assessment opportunity and will use a summer review of program data to make necessary program revisions annually. The Program Directors, DGS and Advisory Board will meet in the fall and submit annual reports describing program progress, successes and identify and address areas in need of improvement.
5b	(related to section 15) Append an assessment plan <sup>9</sup> for the SLOs to the end of this form. (Click <u>HERE</u> for a sample assessment plan.)
5c	Explain how the curriculum achieves the program level student learning outcomes by describing the relationship between the overall curriculum or the major curricular components and the program objectives. (300 word limit)
	Four broad learning outcomes have been developed for this program that are incorporated throughout the required coursework. More detailed course level objectives have been developed for each course and are described in each syllabus that map up to the four broader program learning outcomes. Course objectives guide the development of course and session content, in a reverse instructional design. Course-level assessments will be developed that align with and ensure course-level objectives are met. Selected course and other program assessments will be used to determine whether students have met the overall program learning outcomes.
5d	Append a PDF of the program's course map <sup>10</sup> to the end of this form. (Click <u>HERE</u> for a sample curricular map.)
5e	(related to 2c) Based on the SLOs from question 2c, which components will be evaluated, i.e. course mapping? For each student learning outcome identify in which courses it is covered in the curriculum and note whether
	employers, students, alumni, and/or faculty outside of the program were involved in the development of student learning outcomes. (300 word limit).
	See Curriculum Map Appendix C and below
	Several potential employers, consultants and faculty outside of the program and university were involved in the development of the curriculum and student learning outcomes: Dr. Mike Ward, Dr. David Cunningham and Ms Lucy Davy contributed detailed content to the SLOs present in several of the new course syllabi.

<sup>&</sup>lt;sup>9</sup> An assessment plan is typically a tabular grid that illustrates the artifacts, rubrics, assessment team, and periods of assessment for the SLOs.

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<sup>&</sup>lt;sup>10</sup> Course mapping (or "curricular mapping") is a representation of how faculty intend to approach and assess each of the student learning outcomes identified for the courses for the degree program, with an emphasis on courses required for all degree candidates. It is a master chart that indicates which objectives are being met, to what extent, and how often. This identifies whether an objective is "introduced," "developed," and/or "mastered" within a given course; it may be helpful also to chart any classroom-based assessment measures used to demonstrate that claim.

	They did so by email or during meetings with the faculty of record. Their specific contributions to the course SLO were used and mapped to develop the program SLOs.
5f	When will components be evaluated? Identify the review cycle for each student learning outcome. (e.g, every semester or each year) (150 word limit)
	Each student learning outcome will be evaluated annually as described in the Assessment Plan for the Program. (Appendix B)
5g	When will the data be collected? (This may or may not be different from when the assessment is <i>conducted</i> .) (150 word limit)
	The data will be collected after the completion of each semester and annually as described in the Assessment Plan for the Program. (Appendix B)
5h	How will the data be collected? (150 word limit)
	The data will be collected by a manual collection and collation of data from transcripts, course evaluations, etc. and stored on the departmental share drive.
5i	What will be the benchmarks and/or targets to be achieved? (150 word limit)
	The Program Directors, DGS and curriculum committee will establish appropriate benchmarks for each assessment measure and these will be revised, as needed, over time.
5j	What individuals or groups will be responsible for data collection? (150 word limit)  The DGS and the Administrative Assistant to the DGS will be responsible for data collection and storage of original files and compiled files on the department's share drive.
5k	How will the data and findings be shared with faculty? (150 word limit)
J.K.	The annual reports provided by the DGS, the Directors of the Programs and the Advisory Boards will be summarized and submitted to the Faculty of Record for their review.
51	How will the data be used for making programmatic improvements? (150 word limit)
	Student Advisor reports will be collected at the end of each semester and reviewed by the Program Director each semester. The rubrics for oral and written presentations, scores on block exam questions, laboratory practicums and internship reports will be collected by each course director and stored on the departmental share drive. These measures will be evaluated at the completion of each year for the first two years of the program and then every other year in subsequent years of the program. Reports will include scaled metrics with the following ratings: A = Outstanding; B = Above Average; C = Average; D = Below Average; E = Poor. The standard will be ratings to fall in the outstanding and above average categories as an indication that the outcome is meeting expectations. The Program Directors, DGS and Advisory Board will meet in the fall and submit annual reports describing program progress, successes and identify and address areas in need of improvement.
5m	What are the measures of teaching effectiveness? (150 word limit)
	All instructors will use the University Teacher Course Evaluation (TCE) process to be evaluated by their students each semester. Additionally, each course will be peer reviewed at least once a year by the Education and Curriculum Committee. Each instructor will be asked to provide a self-reflection which will include areas of improvement.
5n	What efforts to improve teaching effectiveness will be pursued based on these measures? (150 word limit)  The Program Directors and DGS will review the TCE results, any available peer review forms, and the self-
	reflection with the instructors and provide feedback to the instructor. This will occur on an annual basis.
5o	What are the plans to evaluate students' post-graduate success? (150 word limit)

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The program will look at data provided by job placement statistics, the Alumni Questionnaire and will work with the Office of Institutional Research to looks at other possible methods. 6. Miscellaneous Is there anything else about the proposed program that should be mentioned? This Master's program complies with 6a SACS accreditation that "postbaccalaureate professional degree programs" are more advanced in academic content than an undergraduate degree, and with appropriate professional training (SACS 2018). For reporting purposes, IPEDS (2018-9). defines "graduate student" as "a student who holds a Bachelor's degree ... and is taking courses at the postbaccalaureate-level." 7. Non-Course Requirements Will the program require completion of a bachelor's degree from a fully 7a Yes 🖂 No accredited institution of higher learning? If "No," explain below. (150 word limit) The Graduate School requires applicants to have an overall GPA of 2.75 on No 🖂 7b undergraduate work. Will the program have a higher undergraduate GPA Yes requirement? If "Yes," describe below. (150 word limit) Will the proposed program include requirements for testing (e.g. GRE, GMAT, Yes 🔀 No 7с TOEFL) to be considered for admission? If "Yes," name each test and describe the specific requirements, scores, etc. below. (150 word limit) TOEFL as used by the graduate school. 7d No  $\boxtimes$ Will the program have a world language requirement? Yes If "Yes," describe below. (150 word limit) The Graduate School allows transfer of up to nine credits or 25% of course work. Please describe transfer credit 7e limitations below for the proposed program. (150 word limit) Students will be allowed to transfer up to 9 postbaccalaureate credits into the program. To be transferred, a course will need to be an advanced level undergraduate (i.e. UK 400G series), or graduate (500-700 level), or professional (800-900) level course that closely duplicates a course that is required for the proposed program. Transfer of credits will require approval of the DGS and the concentration-specific program directors. Will the program have a thesis requirement (Plan A)? (If "Yes," explain the 7f Yes No 🔀 requirements below. If "No," proceed to question 6g) 7g Will the program have a non-thesis requirement (Plan B)? (If "Yes," explain the requirements below. If "No," proceed to guestion 6h) No  $\square$ If "Yes," explain the requirements below.This professional Master's has neither a Plan A or Plan B program pattern in the meaning of a research/scholarship Master's. However the degree does not require a thesis. 7h Provide the final examination criteria. This question appears not to apply to a Prof. Master's. The final event ending the internship is a poster presentation analyzing the internship activities. As convenience to use existing record mechanisms, we will submit a graduate school final exam card on which is Yes X No

NEW MASTER'S DEGREE documented the completion of this degree-culminating activity.

7i	Describe termination criteria.	Yes 🖂	No 🗆					
/1		res 🖂	No					
	The following are the requirements for successful completion of the program:							
	(1) The grading scale for all courses shall be A, B, C (which are passing) or E (not passing)							
	(2) A grade of B or above in at least 24 of the 30 didactic credit hours (i.e., cred 980 internship/practicum) required for Concentration 1 or in at least 25 of the 31 d for Concentration 2. Students who receive a C grade or lower in more than six cred the program will be terminated from the program,	dactic cred	it hours required					
	(3) A grade of B or above for the TOX 980: Internship in Forensic Toxicology and Analytical Genetics,							
	(4) An overall GPA of at least 3.0,							
	(5) Students will maintain a full-time status (at least 9 credit hours per spring a	nd fall seme	ester), and					
	(6) All program requirements must be fulfilled within 5 years of successful comcoursework. If all degree requirements are not met within 5 years, then upon the partner of the concentration, the Director of Graduate Studies may approve an provide compelling evidence of the likelihood of completion of requirements during extension cannot be longer than 5 years.	ositive reco	ommendation of for students who					
8. Cour	se Requirements.							
8a	Document the total credit hours required by level below. At least two-thirds of the the master's or specialist degree must be in regular courses, and at least half of the requirements (excluding thesis, practicum, or internship credit) must be in 600- or 7	minimum c	course					
	<b>400G</b> -3 hr conc #1 <b>600</b> - 3 hr conc #1 <b>600-700</b> - 5 hr conc#1; electives <b>800</b> - 15 hr		<b>900</b> -10 credits					
	<b>400G</b> -6 hr conc #2 <b>600</b> - 4 hr conc #2 <b>600-700</b> - 3 hr conc#2; electives <b>800</b> - 14 hr		each, conc. #1, #2					
8b*	What is the total number of credit hours required for the degree? (e.g. 24, 32)	36 hr con	c.#1; 37 hr conc#2					
	If an explanation about the total credit hours is necessary, use the space below. (15	0 word limi	t)					
	Use the grids below to list core courses, electives, courses for a concentro							
	Use the course title from the Bulletin or from the most recent new/change of	ourse form						
	Durana Maia Cara Cara Cara Than an ann an iad fa all at death in the	~~~~~~ <del>~</del>						
8c*	<b>Program Major Core Courses.</b> These courses are required for <u>all</u> students in the proprerequisite courses. Check the appropriate box to describe the course as either "prerequisite."							

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<sup>&</sup>lt;sup>11</sup> A non-thesis option (Plan B) requires that six or more graduate credit hours of course work be submitted in lieu of a thesis.

Prefix & Number	Course Title	Type of Course	Credit Hrs	Соц	urse Status <sup>12</sup>
TOX 800	Fundamentals in Forensic Science	Pgm Core Prerequisite	4	New	
TOX 810	Communicating in the Forensic Science Profession	Pgm Core Prerequisite	1	New	
IBS 611	Practical Statistics	Pgm Core Prerequisite	1	No Char	ge
BCH 401G	Fundamentals of Biochemistry	Pgm Core Prerequisite	3	No Char	ige
TOX 840	Forensic Science Standards and Practices	Pgm Core Prerequisite	3	New	
TOX 880	Ethics and Professional Practice in Forensic Science and Analytical DNA	Pgm Core Prerequisite	3	New	
TOX 980	Internships in Forensic Science and Analytical DNA	Pgm Core Prerequisite	6	New	
TOX 820	Preparing Professionals in Forensic Science and Analytical Genetics		1	New	
		Pgm Core Prerequisite		Select o	ne
		Pgm Core Prerequisite		Select o	ne
		Pgm Core Prerequisite		Select o	ne
		Pgm Core Prerequisite		Select o	ne
		Pgm Core Prerequisite		Select o	ne
		Pgm Core Prerequisite		Select o	ne
		Pgm Core Prerequisite		Select o	ne
	Total <b>Core C</b>	Courses Credit Hours:			
8d Is there any narrative about prerequisite courses for the program that should be included in the Bulletin? If "Yes," note below. (150 word limit)					
Xe	Is there any narrative about core courses for the prograin the Bulletin? If "Yes," note below.	am that should be inclu	uded	Yes 🔀	No 🗌
	BCH 401G, IBS 611, TOX 800, TOX 810, 820, 840, 880 Master of Forensic Toxicology and Analytical Genetics	•		v	

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<sup>&</sup>lt;sup>12</sup> Use the drop-down list to indicate if the course is a new course ("new"), an existing course that will change ("change"), or if the course is an existing course that will not change ("no change").

	knowledge in biochemistry, statistics, advanced forensic science, communication, professional practices in							
	forensic science and analytical genetics and culminate in on the job employment training through intensive internship (practicum) experiences.							
	thiernship (practicum) experiences.							
	Program Guidad Electives 13 (Guidad electives for all students in the program	1						
	Program Guided Electives <sup>13</sup> (Guided electives for <u>all</u> students in the program. Does the program include any guided electives? (If "Yes," indicate and note the							
8f*	* specific courses in the grid below. If "No," indicate and proceed to question 7i.)							
	specific courses in the grid below. If two, indicate and proceed to question?	1.,						
8g*	Using the grid provided, list the guided electives below.							
Prefix & Numbe	Course Title	Credit Hrs	Cou	urse Status <sup>14</sup>				
TOX 78	TOX 780 Special Problems in Toxicology,		No Char	nge				
MBA 62	Entrepreneurship And Management Technology Commercialization	3	No Change					
PA 65	The Policy Process	3	No Change					
TOX 79	Research in Toxicology	1-5	No Change					
			No Char	nge				
	T. 1.1.0.12.11							
	Total Credit Hours as Guided Electives:							
8h	Is there any narrative about guided electives courses that should be included Bulletin? If "Yes," note below. (150 word limit)	in the	Yes 🖂	No				
	Candidates will choose 5 hours (Forensic Toxicology/Chemistry Concentratio	n) or 3	hours (For	ensic/Analytical				
	Genetics Concentration) of elective courses from the list of course options or a		,	•				
	Selection of a TOX 780 section as an elective will require approval by the DO		-	-				
	<b>Program Free Electives</b> 15. (Free electives for <u>all</u> students in the program.)							
8i*	Does the program include any free electives? (If "Yes," indicate and proceed to question 7j. If "No," indicate and proceed to 7l.)	:0	Yes 🗌	No 🖂				
'								

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<sup>&</sup>lt;sup>13</sup> Guided electives are available to all students in the program and are organized as groups of elective courses, from which a student chooses one (or two, or three, etc.).

<sup>&</sup>lt;sup>14</sup> Use the drop-down list to indicate if the course will be newly proposed as a new course ("new"), if the course is an existing course that will change ("change"), or if the course is an existing course that will not change ("no change").

<sup>&</sup>lt;sup>15</sup> Program free electives are available to all students in the program (regardless of any concentration(s)) and the choice of which course(s) to take is up to the student. Courses are not grouped but can be described as "student must take three courses at the 600-level or above."

8j*	What is the total number of credit hours in free election	ves?					
8k	Provide the free electives courses language that will be included in the Graduate School Bulletin. (150 word limit)						
	Courses for a program's concentration(s).  Click HERE for a template for additional concentration	nc 16					
	Does the program include any concentrations? (If "Yes		d to				
81	question 7m. If "No," indicate and proceed to 7p.)	s, maioate ana proces	Y	es No 🗌			
			I				
8m	Concentration #1 name: Forensic Toxicology/Chemist	try					
Prefix 8	Course Title		Credit				
Numbe	(Check the appropriate box to describe the course		Hrs	Course Status <sup>17</sup>			
	the concentration" or "an elective course for the	Core					
TOX 86	Forensic and Analytical Toxicology	Elective	3	New			
TOX 92	General Instrumentation Techniques in Forensic Chemistry	Core Elective	4	New			
TOX 66	Drug Metabolism and Disposition	Core	2	No Change			
ΤΟΛ 00		Elective	2	No Change			
		Core Elective		Select one			
		Core		Select one			
		Elective		Select Offe			
		Core Elective		Select one			
		Core Elective		Select one			
		Core Elective		Select one			
		Core Elective		Select one			
		Core Elective		Select one			
8n	Provide concentration-related language that should b limit)	e included in the Gradu	ate Schoo	ol Bulletin. (150 word			
	TOX 663, 860, and 920 are required courses for stude	ents in the Master of Fo	rensic To	xicology and Analytical			
	Genetics degree program who are enrolled in the con		• • • • • • • • • • • • • • • • • • • •	•			
	expand foundational knowledge in advanced forensic toxicology, forensic chemistry and forensic						

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<sup>&</sup>lt;sup>16</sup> Append a PDF with each concentration's courses to the end of this form.

<sup>&</sup>lt;sup>17</sup> Use the drop-down list to indicate if the course will be newly proposed as a new course ("new"), if the course is an existing course that will change ("change"), or if the course is an existing course that will not change ("no change").

	chemistry instrumentation in general and integrate these disciplines to enhance practical skills and understanding in these professional fields of forensics.					
80	Does the program have an ad proceed to question 7p. If "No	•			Yes No 🗌	
8p	Concentration #2 Name:	Forensic/Analytical Gen	etics			
Prefix 8 Numbe	(Check the appropriate bo	Course Title ix to describe the course an elective course for th		Credit Hrs	Course Status <sup>18</sup>	
TOX 830	Advanced Human Genetics	i		2	New	
ABT 461G	Population Genetics		Core Elective	3	Change	
IBS 602	Molecular Biology and Gen	etics	Core Elective	3	No Change	
TOX 910	Analytical and Forensic DN	Α	Core Elective	4	New	
			Core Elective		Select one	
			Core Elective		Select one	
			Core Elective		Select one	
			Core Elective		Select one	
			Core Elective		Select one	
			urs, Concentration #2:			
8q	Provide concentration-related		e included in the Gradu	ate Schoo	ol Bulletin for the second	
	concentration. (150 word limi	<u> </u>			Auston of Foundia	
	ABT 461G, IBS 602, TOX 830 Toxicology and Analytical Ge	•	v		v	
	Genetics. These courses expan	- 1			-	
	technologies in general and in		-			
	professional fields of forensics		1		S	
8r	Is there anything else about the pro	oposed program that should	be mentioned? (150 word	limit) The	work/learning arrangement	
	is supervised by a program fac		•		•	
	will be a private industry, gove					
	An "Internship Agreement" must	be signed by all three parti	es and the student have a	attended a	n internship orientation.	
9. Degr	ee Plan					

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<sup>&</sup>lt;sup>18</sup> Use the drop-down list to indicate if the course will be newly proposed as a new course ("new"), if the course is an existing course that will change ("change"), or if the course is an existing course that will not change ("no change").

				•	_	w the courses that a typical stude	/IC	
9a			•			f multiple concentrations are		
			•		• •	a PDF with each concentration's		
	semester-by-sem		<del>-</del> .	o the end of t	his form.			
	YEAR 1 - FALL:	See app			YEAR 1 - SPRING:	See appendix		
	YEAR 2 - FALL :	See app	pendix	,	YEAR 2 - SPRING:	See appendix		
	YEAR 3 - FALL:			,	YEAR 3 - SPRING:			
9b	With reference to	the degr	ree plan above,	explain how t	here is progressior	n in rigor and complexity in the		
90	courses that make	e up the p	program. <i>(150 v</i>	word limit)				
	The fall semester	of year or	ne is comprised	of foundation	al courses in Forei	nsic Science, Communication Skill	<i>S</i> ,	
					•	oundations are built upon with a		
	progression in rig	gor and co	omplexity for bo	oth concentrat	ions with Forensic	Science Standards and Practices		
	which builds upon the Fundamentals of Forensic Science Course, the Ethics and Professional Practice course							
	builds upon the introductory Communication Skills course and ultimately the Internships which build sequentially							
	on all of the foundational courses. For the Forensic Toxicology Chemistry concentration the Forensic and							
	Analytical Toxicology builds upon the Fundamentals and Standards and Practices courses and the General							
		-		•		theories and practices of modern		
				•		on, the Human and Population		
		-		•		ology and Genetics, and the Forer	ısic	
	and Analytical DI	VA course	es sequentially i	build upon eac	ch other and increa	se in complexity and rigor.		
10 4	provals/Reviews							
						of accompant from a decastional cost		
l				-		of support from educational unit		
				uity support (t	ypically takes the i	form of meeting minutes).		
	Reviewing Gro	-	Date	Contact Per	son Name/Phone/	Email		
	Name		Approved	nting balance	******			
10-	_ ·		-			on of department and college		
10a		-		meeting minut	es but may also be	an email from the unit head repo	rung	
	department- and		evei votes.	T				
	Dept. of Toxico		April 18, 2018	Dr. Daret St.	Clair / 257-3956 /	daret.stclair@uky.edu		
	and Cancer Bio	ology				- ,		
	Biomed Curr. C		July 2, 2018		<u>*                                    </u>	cas.beatty1@uky.edu		
	Faculty Counci	il J	July 17, 2018	Julie Monse	es / 323-7404 / j.m	onsees@uky.edu		
				/	/			
10b	(Collaborating and	d/or Affe	cted Units)					
				/	/			
				/	/			
				/	/			

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/

		/ /	
10c	(Senate Academic Council)	Date Approved	Contact Person Name
	Health Care Colleges Council (if applicable)		
	Graduate Council	Nov. 8	Roshan Nikou

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#### **INFORMATION REQUIRED BY CPE AND SACS**

## 11. Program Overview – Program Quality and Student Success

Highlight any distinctive qualities of the proposed program. Are any faculty nationally or internationally recognized for expertise in this field? Does this program build on the expertise of an existing locally, nationally, or internationally recognized program at UK? (300 word limit)

This program is designed to prepare professionals with an advanced training in focused areas of forensic science and DNA Analytics while developing workplace skills highly valued by employers in related fields. As the flagship university in the Commonwealth, the University of Kentucky will provide the only professional Master of Forensic Toxicology and Analytical Genetics (or degree of comparable nature) in the state. The program will have two areas of concentration: one concentration will focus on Forensic Toxicology/Chemistry and the second on Forensic/Analytical Genetics. This leading-edge program will be instrumental in training professionals to work in industry, government and medical forensic and genetic analysis laboratories. Relatedly, there are only Professional Science Master's in Forensics in the nation. The professional Master of Forensic Toxicology and Analytical Genetics will offer a combination of academic features that is nationally unique. The requirement for rigorous internships in government, medical, and/or industrial forensic drug or genetic testing laboratories will provide unique training opportunities for the students. The faculty of record in the Department of Toxicology and Cancer Biology have national and international recognition for conducting highly innovative research in toxicology and genetics. They have extensive experience in the education and training of graduate students and longstanding training programs leading to a Master of Science degree in Toxicology and a Doctor of Philosophy degree in Toxicology and Cancer Biology.

11b Clearly state the student admission, retention, and completion standards designed to encourage high quality. (300 words)

Candidates for the program will be students with an undergraduate bachelor's degree in biology, chemistry, forensic science or a related field of study who have excellent undergraduate records in their field of scientific study. Students with a different bachelor's degree or the equivalent would be considered if they were judged to be highly competitive. In addition, international students will have a score greater than 79 on the TOEFL. Candidates will submit transcripts, a writing sample, a statement of purpose and three letters of recommendation. These will be used to evaluate the required goals to obtain advanced training in a forensic sciences area, writing, communication, professionalism, ethics, legal perspectives and workplace-specific laboratory skills in order to position them for immediate job placement in the areas of private industry drug testing, private DNA analysis, forensic governmental divisions, and hospital clinical forensic labs. Students will be expected to complete 36 or 37 credit hours for the two different concentrations in 4 consecutive fall and spring semesters. However, allowances will be available for students to complete the degree requirements over a time period greater than two years. Students will be dismissed from the program if they receive a C grade or lower in more than 6 credit hours of the didactic degree requirements. Assessments of the Student Learning Outcomes and regular meetings with the faculty advisor will be used to carefully evaluate the progress and success of each student and they will be used to determine if a student requires additional support or resources to achieve success.

Describe how the proposed program will articulate with related programs in the state. Include the extent to which student transfer has been explored and coordinated with other institutions. Note: Convert all draft articulation agreements related to this proposed program to PDF and append to the end of this form. (300 word limit)

This program will be the only Master of Forensic Toxicology and Analytical Genetics (or degree of comparable nature) in the state. Eastern Kentucky University offers a B.S. in forensic science and our proposed program could provide advanced job-placement specific training for students in that program as well as students graduating with undergraduate degrees in Biology, Chemistry and similar programs at Universities and Colleges throughout the state. Two consultants for the development of the proposed program are currently faculty at EKU and they are associated with the EKU B.S. in Forensic Science. Students will be allowed to transfer up to 9 credits into the program from other programs. To be transferred, a course will need to be an advanced level undergraduate, graduate or professional course that closely duplicates a course that is required for the proposed program. Transfer of credits will require approval of the DGS and the concentration-specific program directors.

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### 11d Identify the applicant pool and how applicants will be reached. (300 word limit)

The applicant pool will be predominantly students with an undergraduate bachelor's degree in biology, chemistry, forensic science or a related field of study who have excellent undergraduate records in their field of scientific study. Students will be recruited from universities and colleges across the state, region, US and internationally. A web site will be developed that describes the admissions requirements, curriculum of the program, structure of the program, program faculty, student accomplishments, job placement and links to national organizations relevant to the program. Regular yearly mailings of brochures describing the program will target state, regional and national universities and colleges. Faculty will participate in conferences and organizations focused on relevant areas of forensic sciences and DNA analytics and use these opportunities to advertise the program to reach applicants.

#### 12. Mission: Centrality to the Institution's Mission and Consistency with State's Goals

12a\* (related to 2b) Explain how the program objectives support at least two aspects of UK's institutional mission and academic strategic plan? (150 word limit)

This program aligns with the University of Kentucky Strategic Plan by strengthening the quality and distinction of post-baccalaureate professional education to transform students into accomplished professionals who contribute to the Commonwealth, the nation and the world. The novelty of this program will expand our scholarship across a new discipline and will significantly improve employment opportunities beyond those that are currently available.

(related to 2b) How do the program objectives support at least two aspects of the Council on Postsecondary Education's (CPE) Strategic Agenda and the statewide implementation plan? (300 word limit)

This professional degree will produce highly trained graduates capable of fulfilling a wide variety of jobs in Forensic Toxicology/Chemistry and Forensic/Analytical Genetics. The innovative degree leverages existing resources to create highly trained professionals to enhance secure employment futures for an improved economic impact on the Commonwealth.

If an approval letter from an Education Professional Standards Board (EPSB) is required, check the box below and append a PDF version of the letter to this form. 

(E.g. any program leading to teacher, principal, or superintendent certification, rank change, etc.)

### 13. Resources

How will the program support or be supported by other programs within the institution? For example, shared faculty, shared courses, collaborative research, etc. (300 word limit)

This program draws on existing programs in the Colleges of Medicine, Arts and Sciences, Agriculture and Law. Faculty from several programs in the college of Medicine including Toxicology and Cancer Biology, the Integrated Biomedical Sciences Program, Pathology and Laboratory Medicine, and Biochemistry will work together with faculty in programs in other colleges including Biology, Plant and Soil Sciences, Veterinary Science and Law. Members of the contributing programs will collaborate in the teaching of core and elective courses and serve as Primary Student Advisors and members of the program advisory board.

What will be the projected "faculty-to-student in major" ratio? (150 word limit)

*The projected faculty-to-student ratio is 1:2* 

Describe the library resources available<sup>19</sup> to support this program. Access to the qualitative and quantitative library resources must be appropriate for the proposed program and should meet recognized standards for study at a particular level or in a particular field where such standards are available. Adequacy of electronic access, library facilities, and human resources to service the proposed program in terms of students and faculty will be considered. (300 word limit)

The University of Kentucky libraries provide the necessary resources for this program. It has an extensive collection of journals and books relating to biology, chemistry, forensic science and analytical DNA.

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13c

<sup>&</sup>lt;sup>19</sup> Please contact Institutional Effectiveness (institutionaleffectiveness@uky.edu) for more information.

13d

Describe the physical facilities and instructional equipment available to support this program. Physical facilities and instructional equipment must be adequate to support a high-quality program. Address the availability of classroom, laboratory, and office space, as well as any equipment needs. (300 word limit)

Classroom space will be required to hold new courses developed as part of this program and is being identified by the COM Dean's Office. Start-up funds provided by the COM Dean's office will be used to purchase the equipment to initially furnish the teaching labs. In addition, the program will take advantage of many existing instrumentation resources available within the department, college and University, and Core Facilities. Additional instrumentation may be needed as the program develops and expands and will be supported by tuition revenue.

### 14. Demand and Unnecessary Duplication

Provide justification and evidence to support the need and demand for this proposed program. Include any data on student demand, career opportunities at any level, or any recent trends in the discipline that necessitate a new program. (300 word limit)

14a\*

- This evidence is typically in the form of surveys of potential students and enrollments in related programs at the institution.
- Anecdotal evidence is insufficient. Demonstrate a systematic collection of data, thorough study of the data, and a reasonably estimated student demand for the program.

Provide evidence of student demand at state and national levels.

In 1997, the Sloan Foundation, Keck Foundation and research universities partnered to establish a "Professional Science Master's" (PSM) national initiative, toward producing scientists trained to translate basic advances into practical applications. In 2001, the Council of Graduate Schools began even broader efforts to make the PSM degree a normal feature for all science disciplines. Furton et al. (1999) nationally surveyed Directors of forensic crime labs and reported their preference to hire applicants with a strong chemistrybackground. Tregar and Proni (2010) and Springer and Melino (2011) found that crime lab Directors continued to prefer hires with a strong chemistry background (Rushton et al. 2016). Since 2001, universities have established 332 PSM degrees recognized by the National Professional Master's Association (NPMA). That national list does not contain any professional degrees at the Master's level in Kentucky and the KY CPE (2018) does not recognize any Master's degree in Kentucky as a professional Master's degree. Our proposed Master of Forensic Toxicology and Analytical Genetics will offer a combination of academic features that is unique nationally. In 2016 only 3 of 17 master's programs in forensic science required an internship (Rushton et al. 2016). Our program appears unique in requiring 2 internship practica experiences. According to the Occupational Outlook Handbook of the Bureau of Labor Statistics, the US demands for forensic analysts is rapidly expanding with a 17% projected increase in jobs from 2016-2026. At Marshall University, which toffers he related but more research oriented Master of Science in Forensic Science, of the 82 students that have graduated from the MSFS Program between 2010-2014, 71 were employed in forensic science or a related field, 5 of the most recent graduates were awaiting pre-employment background checks, and *3 chose to pursue further graduate study.* 

14b Clearly state the degree completion requirements for the proposed program. (150 word limit)

- (1) Grading Scale: A, B, C (passing) or E (not passing)
- (2) A grade of B or above in at least 24 of the 30 didactic credit hours required for Concentration 1 or in at least 25 of the 31 didactic credit hours required for Concentration 2. C grade or below in more than six credits in the didactic courses results in termination from the program.
- (3) B or above for internship TOX 980
- (4) Overall GPA of at least 3.0,
- (5) Students maintain full-time status (at least 9 credit hours per spring and fall semester), and

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	(6) All program requirements must be fulfilled within 5 years of successful completion of didactic coursework. If all degree requirements are yet not met, then upon recommendation of the concentration Director, DGS may approve an extension for students who provide compelling evidence of the likelihood of completion of requirements during the extension. Max 5yr extension.					
	NACH Abia and an analasa an an ba					
14c*	concentrations or specializations)	nce any existing program(s) or tracks (or within an existing program? (300 word lim	it) Yes 🗌	No 🖂		
	If "Yes," explain:					
		(				
14d	Identify the primary feeders for th	, ,	· ,	Y • 1 1 , 1		
		in Biology, Chemistry, Toxicology, Biochen ersities across the state, region and nation.	iistry, Forensic S	cience and related		
		(000 (11 11)				
14e		and selection process. (300 word limit) iversities and colleges across the state, regi	: IIC 1 :			
	program, program faculty, student to the program. Regular yearly monational universities and colleges. areas of forensic sciences and DN applicants. Candidates for the prochemistry, forensic science or a rescientific study. Students with a dijudged to be highly competitive. It TOEFL. Candidates will submit to	es the admissions requirements, curriculum to accomplishments, job placement and links wilings of brochures describing the program. Faculty will participate in conferences and A analytics and use these opportunities to a gram will be students with an undergradual lated field of study who have excellent under ferent bachelor's degree or the equivalent in addition, international students will have anscripts, a writing sample, a statement of will be used by the Admission's Committee of succeed in the program.	to national organs will target state of a will target state of the progression of the pro	nizations relevant , regional and ocused on relevant gram to reach gree in biology, ds in their field of ered if they were than 79 on the		
14f*		the proposed program. (300 word limit)	1	1.1		
	unique in its combination of focus	d in Kentucky, a professional Master's Prog on training the students in the advanced lo ic/Analytical DNA with a requirement for t	aboratory skills i	n Forensic		
14g	proposed program. (300 word lim		·			
		evel professional science programs, or any ntucky with a major in forensic application				
14h	Use table below to estimate stude	ent demand for the first five years following				
	Academic Year	# Degrees Conferred	Majors (headco Fall Semester	ount)		
	20 <i>19</i> - 20 <i>20</i>	0	12			
	20 <i>20</i> - 20 <i>21</i>	12	26			
	2021 - 2022	14	30			
	2022 - 2023	16	34			
	2023 - 2024	18	38			
14i	Clearly describe all evidence justif academic reasons. (300 word limit	ying a new program based on changes in the	ne academic disc	ipline or other		
	As recently research by Rushton (2)	2016), and the Bureau of Labor Statistics (c t for Master's level graduates with training				

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	specifically in the areas using forensic chemistry, but there are as yet no professional Master's Degree programs in the state of Kentucky in Forensic Toxicology and Analytical Genetics.				
14j	Has the Council on Postsecondary Education identified similar programs? <sup>20</sup>	Yes	No 🔀		
	If "Yes," the following questions (14jh1 – 14jh5) must be answered.				
(1)	Does the program differ from existing programs in terms of curriculum, focus, objectives, etc.? (150 word limit)	Yes 🗌	No 🗌		
	If "Yes," explain:				
(2)	Does the proposed program serve a different student population (e.g., students in a different geographic area or nontraditional students) from existing programs? (150 word limit)	Yes 🗌	No 🗌		
	If "Yes," explain:				
(3)	Is access to existing programs limited? (150 word limit)	Yes	No		
	If "Yes," explain:				
(4)	2 (450 - 450	,	🗆		
(4)	Is there excess demand for existing programs? (150 word limit)	Yes	No		
	If "Yes," explain:				
	Will there be collaboration between the proposed program and existing				
(5)	programs? (150 word limit)	Yes	No 🗌		
	If "yes," explain the collaborative arrangements with existing programs. If "no," ex	volain why th	ere is no		
	collaboration with existing programs.	.,			
14k*	Are there similar programs in other <u>Southern Regional Education Board (SREB)</u> states in the nation?	Yes 🖂	No 🗌		
	If "Yes," please answer the questions below to demonstrate why this proposed pr to the one(s) currently in existence.	ogram is nee	ded in addition		
14k	. i* Identify similar programs in other SREB states and in the nation.				
	The very distant Florida International University is the only SREB institution that Degree in forensic disciplines. Academically, our program is distinguished from our curriculum provides in depth credit-bearing laboratory training in the foreign Chemistry and Genetics, whereas the FIU curriculum provides only a single we addition, FIU requires a single internship experience, whereas our program un (practica) experiences to ensure graduates have a broad experiential training in the state of the	n the FIU pronsic areas of ek of 'wet be iquely requir nactivities, is	ogram in that Toxicology, nch' training. In es two internship ssues and		
	resolutions that arise in a variety of work place settings. We are also informed forensic technicians that because KY does not have a program in the state to their hires come from out of state, who frequently then leave employment in has become available back in their home state. By training our own Kentucky will mitigate this issue faced by Kentucky employers of forensic specialists.	rain these stu Kentucky onc	idents, most of e a similar job		
	Does the program differ from existing programs in terms of curriculum,				
14k	focus, objectives, etc.?	Yes 🔀	No 🗌		
	If "Yes," explain. (300 word limit)				
	There are no professional Master's Programs of this type, or of any time, curre	ntly in the st	ate of Kentucky.		

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<sup>&</sup>lt;sup>20</sup> Please contact OSPIE (OSPIE@L.uky.edu) for help with this question.

14k.iii	Does the proposed program serve a different student population (e.g., students in a different geographic area and non-traditional students) from existing programs?	Yes 🔀	No 🗌					
	If "Yes," explain. (300 word limit)							
	The program is designed to attract qualified applicants from a wide range of geographic areas. Students will be recruited from universities and colleges across the state, region, US and internationally. A web site will be developed that describes the admissions requirements, curriculum of the program, structure of the program, program faculty, student accomplishments, job placement and links to national organizations relevant to the program. There will be regular yearly mailings of brochures describing the program will target state, regional and national universities and colleges. Faculty will participate in conferences and organizations focused on relevant areas of forensic sciences and DNA analytics and use these opportunities to advertise the program to reach applicants.							
14k.iv	Is access to existing programs limited?	Yes 🖂	No 🗌					
141.11	If "Yes," explain. (300 word limit)	163	140					
	There are currently no professional Master's Degrees of this kind, or of any kir state of Kentucky.	nd, recognized	d by CPE in the					
14k.v <sup>-</sup>	Is there excess demand for existing similar programs?	Yes 🖂	No 🗌					
2	If "Yes," explain. (300 word limit)	. 65 🔼						
There are currently no existing programs of this type in the state of Kentucky, and only four Professional Science Master's programs in forensics nationally								
14k.vi	programs?	Yes 🔀	No 🗌					
	If "No," explain. (300 word limit)							
171	Would your institution like to make this program available through the Academic Common Market <sup>21</sup> ?	Yes 🗌	No 🖂					
14m	Clearly describe evidence of employer demand or discipline needs. Such evidence surveys, current labor market analyses, and future human resources projections. Should demonstrate employers' preferences for graduates of the proposed prograduternative existing credentials and employers' willingness to pay higher salaries to program. (300 word limit)	Where appro am over perso	priate, evidence ons having					
	Since 2001, a number of universities have established 332 PSM degrees that are recognized by the National Professional Master's Association (NPMA). However, that national list does not contain a single professional Master's degree in Kentucky and, as of 2017, the KY Council of Postsecondary Education did not recognize any Master's degree at the professional level in the state. Our proposed professional Master's degree in Forensic Toxicology and Analytical Genetics will offer a combination of academic features that is nationally unique.							
	Although crime lab Directors have noted that forensic degree programs with interdires to reach on the job competency in a faster time, in 2016 only 3 of 17 master's required an internship (Rushton et al. 2016). Our proposed program appears uniquinternship experiences.	s programs in	forensic science					

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<sup>&</sup>lt;sup>21</sup> Please contact OSPIE (OSPIE@L.uky.edu) for more information.

We have attached letters from private industrial and government employers enthusiastically attesting to the need for Master's level graduates with the forensic training that our program will provide. (See examples in the appendix)

14n\*

Describe the types of jobs available for graduates, average wages for these jobs, and the number of anticipated openings for each type of jobs at the regional, state, and national levels.

According to the Occupational Outlook Handbook published by the Bureau of Labor Statistics, the US demand for forensic analysts is rapidly expanding with a 17% projected increase in jobs from 2016-2026. https://www.bls.gov/ooh/life-physical-and-social-science/forensic-science-technicians.htm. This program will train professionals to work in industry, government and medical forensic and genetic analysis laboratories. Instate employers include the Central Lab of the Kentucky State Police, city/county governments across the state for crime scene investigation, University and Hospital DNA testing laboratories across the state, Hospital forensic laboratories, LabCorp, Dynacare Laboratories, Apex Life Sciences, Ethos Laboratories, LGC Standards, United States Equestrian Foundation, Eurofins Lancaster Laboratories, DNA Diagnostics Center, Accurate Drug and DNA Testing, LB Genetics, DNA Services of America, Lexar Laboratories, Evolva, Piramal Pharma Solutions, Catalent Pharma Solutions and a large number of additional DNA and drug testing laboratories across the state.

### 15. Assessment and Oversight

15a\*

Describe *program* evaluation procedures for the proposed program. These procedures may include evaluation of courses and faculty by students, administrators, and departmental personnel as appropriate. Program review procedures shall include standards and guidelines for the assessment of student outcomes implied by the program objectives and consistent with the institutional mission. *(300 word limit)* 

Assessments will utilize specific and detailed rubrics to evaluate the following: 1) Each student's performance on selected block exam questions in selected courses, selected written and oral presentations and selected laboratory practicums will be evaluated. 2) General progress of each student will be carefully monitored and reported by regular meetings of the student and their primary advisor. 3) Each course will be evaluated based on reports of yearly student evaluations, instructor self-assessments, and curriculum reviews. 4) Overall success of the program will be evaluated by graduation rates, exit questionnaires of graduates, job placement areas and statistics, questionnaires requested of alumni and yearly summaries of program self-assessments by the advisory board. 5) Integration and implementation of theoretical information will be evaluated using internship (practica) rubrics from the instructors. The faculty of record and their subcommittees will use the annual reporting periods as a formative assessment opportunity and will use a summer review of program data to make necessary program revisions annually. The Program Directors, DGS and Advisory Board will meet in the fall and submit annual reports describing program progress, successes and identify and address areas in need of improvement. Reports will include scaled metrics with the following ratings: A = Outstanding; B = Above Average; C = Average; D = Below Average; E = Poor. The standard will be ratings to fall in the outstanding and above average categories as an indication that the outcome is meeting expectations.

Describe how each program-level student learning outcome will be assessed and how assessment results will be used to improve the program. (300 word limit)

Four broad learning outcomes have been developed for this program that are incorporated throughout the required coursework. More detailed course level objectives have been developed for each course and are described in each syllabus that map up to the four broader program learning outcomes. Course objectives guide the development of course and session content, in a reverse instructional design. Course-level assessments will be developed that align with and ensure course-level objectives are met. Selected course and other program assessments will be used to determine whether students have met the overall program learning outcomes. The two program directors, the Director of Forensic Toxicology/Chemistry and the Director of DNA and Forensic/Analytical Genetics, will work together with the departmental Director of Graduate Studies and the Faculty of Record to appoint committees that will coordinate assessment and include an Admissions Committee and Curriculum and Education Committees. The directors will lead the assessments after the completion of each spring semester of the program to evaluate progress. The Curriculum and Education committee will review assessments and discuss student performance with the Admission's committee and provide assessments and their summaries to the Directors and the DGS. The Directors and DGS will write and submit an assessment report to the Advisory Board before the start of the fall semester. The Directors and DGS will meet with the

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advisory board during the fall semester to evaluate strengths and weaknesses of the program. This will be used to identify and implement strategies for areas in need of improvement. 16. Cost and Funding of the Proposed Program<sup>22</sup> Will this program require additional resources? Yes 🖂 16a No If "Yes," please provide a brief summary of additional resources that will be needed to implement this program over the next five years. (300 word limit) Classroom space will be required to hold new courses developed as part of this program and is being identified by the COM Dean's Office. Start-up funds provided by the COM Dean's office will be used to purchase the equipment to initially furnish the teaching labs. In addition, the program will take advantage of many existing instrumentation resources available within the department, college and University, and Core Facilities. Additional instrumentation may be needed as the program develops and expands and will be supported by tuition revenue. Will this program impact existing programs and/or organizational units within 16b Yes 🖂 No 🗌 your institution? (300 word limit) If "Yes, briefly describe. The program will use existing courses provided by the following departments and programs: Department of Molecular and Cellular Biochemistry: BCH 401G Fundamentals of Biochemistry Integrated Biomedical Sciences program: IBS 602 Molecular Biology and Genetics, IBS 611: Practical **Statistics** Agricultural Biotechnology Program: ABT 461G Population Genetics Provide adequate documentation to demonstrate sufficient return on investment to the state to offset new costs and justify approval for the proposed program. Note whether the program is predicted to: increase 16c retention rates; increase revenue; attract a new pool of students; meet employment needs in the state; feed into fields that have been shown to be beneficial to the economic needs of the state, etc. (300 word limit) The program is expected to attract a new pool of students, increase revenue, and meet employment needs in the state. As indicated in section 18 below for TOTAL NET COST will actually be revenue for each of the projected five years: Y1 (\$156,900), Y2 (\$476,855), Y3 (\$601,955), Y4 (\$738,817) and Y5 (\$888,382) 17.\* Budget Funding Sources, by Year of Program All the fields in number 16 are required for the CPE's pre-proposal form. Estimate the level of new and existing resources that will be required to implement and sustain the program using the spreadsheet below. Please answer in terms of dollar amounts. All narratives have a 100-word limit. **Total Resources Available from** 3<sup>rd</sup> Year 5<sup>th</sup> Year 2<sup>nd</sup> Year 4<sup>th</sup> Year **Federal Sources (Federal sources** 1<sup>st</sup> Year include grants, earmarks, etc.) 0 0 0 0 New 0 0 0 0 0 **Existing** Narrative/Explanation: **Total Resources Available from** Other Non-State Sources (Non-2<sup>nd</sup> Year 3<sup>rd</sup> Year 1<sup>st</sup> Year 4<sup>th</sup> Year 5<sup>th</sup> Year state sources include philanthropies, foundations,

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individual donors, etc.)

<sup>&</sup>lt;sup>22</sup> For questions about cost and funding of the program, please contact your department chair, business officer, or associate dean for academic affairs.

	0	0		0	0		
New	0	0	0	0	0		
Existing	0	0	0	0	0		
Narrative/Explanation:							
State Resources (State sources		and	and				
include general fund revenue,	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year		
grants, pass-thru funds, etc.)	_						
New	0	0	0	0	0		
Existing	0	0	0	0	0		
Narrative/Explanation:							
Internal (The source and process							
of allocation and reallocation							
should be detailed, including an	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year		
analysis of the impact of the							
reduction on existing programs							
and/or organization units.) <sup>23</sup> :	Ø 100 000						
(New) Allocated Resources	\$ 100,000	0.040.006	0.245.525	# <b>25</b> / 0 / <b>2</b> 0 5	0.000		
(Existing) Reallocated Resources	\$ 233,326.	\$ 240,326.		\$ 254,962.05	\$ 262,610.91		
	(New) 100,000 from COM as start up for equipment for laboratory classes.						
Narrative/Evalanation	(Existing) Reallocation of existing salary resources						
Narrative/Explanation:	This program will not cause a reduction in existing programs or reduction in existing units. It will likely involve the available reallocation of current faculty						
	DOE into the ne	•	e the avaitable rec	anocanon of carr	ені јасину		
	DOL into the ne	w program.					
Student Tuition (Describe the							
impact of this program on	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year		
enrollment, tuition, and fees.)					<b>5</b> 1 <b>5 </b>		
New	266899	599,855.10	728,045.21	868090	1020932		
Existing	0	0	0	0	0		
Narrative/Explanation:	ŭ.	y pool of students	recruited to the U	ű	ıckv		
		Transfer and the second					
Total Funding Sources	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year		
Total New	366899	599855	728045	868090	1020932		
Total Existing	233326	240326	247535	254962	262610		
TOTAL FUNDING SOURCES	600,225.75	840,181.29	975,581.18	1,123,052.2	1,283,543.8		
	200,220113	2.0,201.29	2.0,001110	-,120,002.2			
18. Breakdown of Program Expense	es/Requirements	1					
(Please note – all the fields in num	<u> </u>		re-proposal form	.)			
Staff: Executive, Administrative &							
Managerial (Include salaries and							
whether new hires will be part	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year		
time or full time.)							
or rain annoty							

<sup>&</sup>lt;sup>23</sup> The source and process of allocation and reallocation should be detailed, including an analysis of the impact of the reduction on existing programs and/or organizational units.

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New					
Existing	\$ 14,835	\$ 15,280	\$ 15,739.09	\$ 16,211.27	\$ 16,697.60
Narrative/Explanation <sup>24</sup> :	To support existi reallocated to the	<b>U</b> 1	administrative sup	pport associate 25	5% effort to be
Other Professional (Include salaries.)	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	C
Existing	0	0	0	0	(
Narrative/Explanation:					
Faculty (Include salaries and					
whether new hires will be part time or full time.)	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	100,000	103,000	106,090	109,273	112,55
Existing	218,490.72	225,045.52	231,796.88	238,750.78	245,913.3
Narrative/Explanation <sup>25</sup> :	(Existing) Existin	ng faculty resour	com Dean's Offices and involve the om nonsponsored	e available reallo	cation of
Graduate Assistants (Include salaries and/or stipends.) <sup>26</sup>	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	(
Existing	0	0	0	0	
Narrative Explanation/Justification:					
Student Employees (Include salaries and/or stipends.)	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	00	0	0	0	(
Existing	0	0	0	0	(
Narrative Explanation/Justification:					
Equipment and Instructional Materials	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	105,000	15,000	15,000	15,000	15,000
INCW					
Existing	0	0	$\theta$	$\theta$	(

<sup>&</sup>lt;sup>24</sup> Discuss whether new hires will be full-time or part-time.

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 $<sup>^{25}</sup>$  If new hires are involved, explain whether new hires will be full-time or part-time.

<sup>&</sup>lt;sup>26</sup> Identify the number of assistantships/stipends to be provided; Include the level of support for each.

	·	or laboratory supp os in subsequent yo ees.	* *	· · · · · · · · · · · · · · · · · · ·	
Library (Include new journal subscriptions, collections, and electronic access.)	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	0
Existing	0	0	0	0	0
Narrative Explanation/Justification:					
Contractual Services	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	0
Existing	0	0	0	0	0
Narrative Explanation/Justification:					
Academic and/or Student Services	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	0
Existing	0	0	0	0	0
Narrative Explanation/Justification:					
Other Support Services	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	0
Existing	0	0	0	0	0
Narrative Explanation/Justification:					
Faculty Development (Include travel, conference fees, consultants, etc.)	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	0	0	0	0	0
Existing	0	0	0	0	0
Narrative Explanation/Justification:					
Assessment (Include personnel, software tools, data collection tools, survey administration, outside consulting services, etc.)	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
New	5,000	5,000	5,000	5,000	5,000
Existing	0	0	0	0	0

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		<u></u>		<u> </u>		
Exp	Narrative planation/Justification:	(New) Travel and	d Honoraria for A	dvisory Board Me	mbers	
Student Spa	ce and Equipment	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
	New	0	0	0	0	l
	Existing	0	0	0	0	l
Exp	Narrative planation/Justification:					
Other		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
	New	0	0	0	0	0
	Existing	0	0	0	0	0
Ехр	Narrative planation/Justification:					
Total Expens	ses/Requirements	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
	New	210,000	123,000	126,090	129,273	132,551
Existing		233,326.39	240,326.19	247,535.97	254,962.05	262,610.91
	<u>FAL</u> Program Budgeted penses/Requirements:					
GRAND TO	TAL	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
Total Funding Sources		600,226	840,181	<i>975,581</i>	1,123,052	1,283,544
Total Expenses/Requirements		<u>443,326</u>	363,326	<u>373,626</u>	384,235	<u>395,162</u>
	TOTAL NET COST:					
10.0						
	Descriptions ogram Core Courses (in	cludes pre-maior	and pre-professio	nal courses)		
Prefix & Number			e Bulletin or the m		change course for	m)
BCH 401G	Fundamentals of Biochemistry (3) Descriptive chemistry of amino acids and proteins, carbohydrates, lipids, and nucleic acids. Discussion of structure and function; metabolism and bioenergetics; and biological information flow. At the undergraduate level, understanding is demonstrated through hour examinations; at the graduate level, understanding is demonstrated through hour examinations and a brief paper. Lecture, three hours; one optional conference.					
	Practical Statistics (1)	An introductory g	graduate level cour	rse that will introd	duce students to b	asic statistical

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IBS 611

TOX 800

concepts and applications that are used in a majority of biomedical and translational research studies. The

emphasis will be on "how" and "why" certain basic statistical applications are used rather than the theory behind various statistical methods. Prerequisites: Have taken or concurrently taking IBS601 and IBS602. Fundamentals in Forensic Sciences (4) This course will broadly survey the disciplines and technology within the field of Forensic Sciences. These disciplines include crime scene investigation techniques,

medicolegal death investigation, and patterned evidence examination, and traditional crime laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire

	debris, explosives, and forensic molecular biology. A laboratory component provides hands-on exercise with current instrumentation used in Forensic Sciences.
TOX 810	Communicating in the Forensic Science Profession (1) This course will introduce students to the science and art of effective communication with a focus on enhancing communication and presentation skills related to the profession of forensic science. The course will prepare students to communicate (in written and oral format) highly technical and scientific information to lay audiences, which could include government and/or political policymakers, attorneys, juries, judges and the like.
TOX 820	Preparing Professionals in Forensic Science and Analytical Genetics (1) This course will introduce and develop professional skills required for obtaining workplace employment in the areas of Forensic Chemistry/Toxicology and Forensic/Analytical Genetics. It will prepare students to develop networking skills, identify appropriate workplace positions, and enhance interviewing skills so that they can effectively communicate with prospective employers. Students will learn how to clearly articulate their skill sets, their understanding of their training and how to apply their training to specific workplace environments.
TOX 840	Forensic Science Standards and Practices (3) This course will train students in the key components of a quality assurance and quality control system to assure that results produced in the laboratory are reliable. Due to the high stakes of forensic analysis, aspects from the entire process including evidence collection, chain-of-custody, equipment qualification, standard analytical procedures, method validation, documentation of result, and generation of reports will be covered. Advanced topics include choosing the appropriate sample preparation and analytical technique and estimation of the error in a method. Internal and external review guidelines will be presented including criteria for laboratory accreditation and analyst certification. In addition, standard test procedures will be interpreted with respect to the underlying fundamental chemical and physical processes involved.
TOX 880	Ethics and Professional Practice in Forensic Science and Analytical DNA (3) This course will train student in professional practices as they relate to the forensic scientist or the professional working in a modern crime laboratory or DNA testing laboratory (public or private). The course will focus on scientific integrity, ethical behavior, ethics standards and various examples of ethics violations and misconduct in the forensic scientific and DNA analysis fields. A second focus is on education and training in quality assurance programs and practices and the audit and accreditation processes. The third major focus is on the relationships between forensic science or DNA analysis and the legal system and will include courtroom testimony procedures and oral mock court scenarios to train the student as an expert witness in the courtroom setting.
TOX 980	The internship (practica) component of the program provides the student with an opportunity for immersed participation in the professional work environment associated with a laboratory practicing methods in forensic toxicology or analytical genetics. Through hands-on experience in a real work site the student applies the formal classroom knowledge to the real work setting. The work/learning arrangement is supervised by a program faculty member plus the designated representative of the internship site, which will be a private industry, governmental, hospital or other appropriate setting providing real world training in practices and procedures of forensic toxicology or analytical genetics.
	rogram Guided Electives Courses (for the major)
Prefix & Number	Course Description (from the Bulletin or the most recent new/change course form)

Special Problems in Toxicology (1-6) Exposure to and actual research experience in an area of toxicology other than that encountered by students in their thesis and dissertation research(with permission of DGS)

TOX 790	Research in Toxicology (1-5) Research will be conducted in specific areas of toxicology and cancer biology. Students will conduct independent, hypothesis driven research, demonstrate the ability to read, understand and apply the scientific literature that is relevant to the research activities and demonstrate competency in the collection, analysis and interpretation of data that is relevant to the research activities.					
MBA 624	Entrepreneurship And Management Technology Commercialization (3) This course is a broad overview of the technology commercialization process with a hands-on opportunity to learn commercialization skills in a real world environment that combines theory and practice. It is designed to cover the three primary phases of the commercialization process. The Assessment Module focuses on customer validation and market research, commercialization pathways, intellectual property, legal entities, strategic partnerships, and the business model canvas. The Business Planning Module provides an overview of accounting principles and pro forma statements, business plan elements, management teams and advisory boards, goto-market strategies, and licensing and royalties. The Capitalization Module focuses on funding strategies including federal and state programs, angel investors and venture capital, crowd funding, and introduction to term sheets and valuation methods, and investor presentations.					
PA 651	The Policy Process (3) Broad-based course in public policy formulation and social planning. Emphasis is on the parameters of policy formulation as well as the social planning and impact variables. Both policy processes and relevant content areas will be stressed					
19c Pr	ogram Free Electives Courses					
Prefix & Number	Course Description (from the Bulletin or the most recent new/change course form)					
194	<b>Durses for a Track.</b> (If multiple tracks are available, click <u>HERE</u> for a template for additional tracks. Append a DF to the end of this form with each track's courses and descriptions.					
Prefix & Number	Course Type Course Description (from the Bulletin or the most recent new/change course form)					
TOX 663	□ Track Core     □ Track Elective     □ Track: Forensic Toxicology					

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## **NEW MASTER'S DEGREE PROGRAM**

		Drug metabolism and Disposition (2) This course covers the science of the interactions between the human body and drugs or xenobiotics. The focus is on drug absorption, distribution, metabolism, and excretion in the area of pharmacokinetics. Additional topics also include drug-drug and drug-food interactions, pharmacogenetics, and pharmacodynamics of commonly abused drugs. The objective of this course is to provide a strong scientific foundation for the understanding and practice of analytical and forensic toxicology.
TOX 860	Track Core	Track: Forensic Toxicology Forensic and Analytical Toxicology (3) Study of the chemistry, biochemical activity, isolation and identification of drugs of forensic interest in biological materials.  Postmortem, human performance and drug testing scenarios commonly encountered in forensic laboratories are appraised. Advanced concepts in sample preparation and analytical methods for presumptive and confirmatory testing are covered. Many factors affecting interpretation of toxicology results are considered. A molecular level approach is taken on many topics.
TOX 920	□ Track Core     □ Track Elective	Track: Forensic Toxicology General Instrumental Techniques in Forensic Chemistry (4) Theory and practice of modern instrumental methods used in forensic chemistry laboratories, including mass spectrometry. The class offers an in depth description of the processes and techniques involved in creating, controlling and measuring elemental or molecular ionic species by mass spectrometry techniques. Topics covered in the course include: theory of mass spectrometry, methods of ionization, instrument design, combined chromatography and mass spectrometry, quantitative aspects of mass spectrometry, meta-stable ions in mass spectrometry, recent applications of mass spectrometry techniques, analytical chemistry instrumentation and methods used by forensic scientists for analysis of drugs, toxicology, trace evidence, and sample collection and processing.
	Track Core Track Elective	
TOX 830	☐ Track Core☐ Track Elective	Track: Analytical Genetics Advanced Human Genetics (2) This course will cover advanced topics in hereditary and genetics as it applies to humans using essential and contemporary knowledge relating to genetic science and genetic disease. Topics include single gene and complex diseases, Mendelian and non-Mendelian inheritance, genetic association studies, cancer genetics, human origins and genetic diversity within humans, evolutionary divergence, family pedigrees, ownership of genetic information, gene and environment interactions, personalized medicine, behavioral genetics, genetics and reproduction and pharmacogenomics.
ABT461G	☐ Track Core☐ Track Elective	Track: Analytical Genetics Introduction to Population Genetics (3) This survey course examines the population dynamics and equilibria of genes in nuclei, chloroplasts and mitochondria. Emphasis will be on biological relevance (in plants, animals, and micro-organisms), but some theoretical derivations will also be introduced.
IBS 602	Track Core Track Elective	Track: Analytical Genetics

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## **NEW** MASTER'S DEGREE PROGRAM

TOX 910	∑ Track Core     ☐ Track Elective	Molecular Biology and Genetics (3) An introductory graduate-level course on mechanisms associated with DNA structure, replication, recombination and repair, chromatin, transcriptional control, mRNA processing, and protein synthesis. Aspects of contemporary genetics, genomics and bioinformatics will also be included. Techniques in genetic engineering and recombinant DNA that are critical to molecular biology research will be covered.  Track: Analytical Genetics Analytical and Forensic DNA (4) This course will train students to become experts in the collection, identification and evaluation of biological evidence in criminal matters and DNA testing using current DNA technologies. Methods routinely used for the isolation of DNA from cells, DNA quantitation, PCR, electrophoretic separation, and DNA sequence determination will be discussed in detail. Students will understand the theory and practice underlying the use of instrumentation in PCR, Real-Time PCR, capillary electrophoresis, next generation sequencing, the applications of robotics and the use of DNA data bases. The complex range of considerations that need to be considered in data collection, sample storage, data interpretation, analysis and reporting will also be covered in detail. Current uses of single nucleotide polymorphisms, mitochondrial DNA analysis, Y or X chromosome analysis and nonhuman DNA will be described. The legal aspects specific to DNA testing will be incorporated to prepare students for expert witness testimony.
	Track Core Track Elective	
	Track Core Track Elective	

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## **Master of Forensic Toxicology and Analytical Genetics**

Requirements for the degree will include an undergraduate degree in biology, chemistry, forensic science or a closely related discipline. The program is designed to be completed in 4 consecutive fall and spring semesters. The program will have two areas of concentration: one concentration will focus on Forensic Toxicology/Chemistry and the second on Forensic/Analytical Genetics. Through a common core curriculum, students in both concentrations will have foundational information and a skill set in advanced forensic science, writing, communication, professionalism, ethics, legal perspectives and workplace-specific laboratory skills. Through a rigorous targeted finishing curriculum in either concentration, including two rigorous internship (practicum) experiences, the graduates will be competitive for workforce deployment in the areas of private industry drug testing, private DNA analysis, forensic governmental divisions, and hospital clinical labs. This proposed program is focused on professional employment upon graduation. As the flagship university in the Commonwealth, the University of Kentucky will provide the only Master of Forensic Toxicology and Analytical Genetics (or degree of comparable nature) in the state.

## **Core Courses**

**TOX 800: Fundamentals in Forensic Sciences (4)** 

**IBS 611: Practical Statistics (1)** 

BCH 401G: Fundamentals of Biochemistry (3)

TOX 810: Communicating in the Forensic Science Profession (1)

TOX 820: Preparing Professionals in Forensic Science and Analytical Genetics (1)

**TOX 840: Forensic Science Standards and Practices (3)** 

TOX 880: Ethics and Professional Practice in Forensic Science and Analytical DNA (3)

**TOX 980: Internship in Forensic Toxicology or Analytical Genetics (6)** 

## Concentration 1 – Forensic Toxicology/Chemistry

TOX 663: Drug Metabolism and Disposition (2) TOX 860: Forensic and Analytical Toxicology (3)

TOX 920: General Instrumental Techniques in Forensic Chemistry (4)

## Concentration 2 - Forensic/Analytical Genetics

**TOX 830: Advanced Human Genetics (2)** 

**ABT 461G: Population Genetics (3)** 

IBS 602: Molecular Biology and Genetics (3) TOX 910: Analytical and Forensic DNA (4)

## **Core Course Descriptions**

## 1. TOX 800: Fundamentals in Forensic Sciences (4)

This course will broadly survey the disciplines and technology within the field of Forensic Sciences. These disciplines include crime scene investigation techniques, medicolegal death investigation, patterned evidence examination, and traditional crime laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire

debris, explosives, and forensic molecular biology. A laboratory component provides hands-on exercise with current instrumentation used in Forensic Sciences. This course can be enrolled in by persons not admitted to the professional program, with approval of the Instructor of Record.

## 2. IBS 611: Practical Statistics (1)

An introductory graduate level course that will introduce students to basic statistical concepts and applications that are used in a majority of biomedical and translational research studies. The emphasis will be on "how" and "why" certain basic statistical applications are used rather than the theory behind various statistical methods.

## 3. BCH 401G Fundamentals of Biochemistry (3)

Descriptive chemistry of amino acids and proteins, carbohydrates, lipids, and nucleic acids. Discussion of structure and function; metabolism and bioenergetics; and biological information flow. At the undergraduate level, understanding is demonstrated through hour examinations; at the graduate level, understanding is demonstrated through hour examinations and a brief paper. Lecture, three hours; one optional conference.

## 4. TOX 810: Communicating in the Forensic Science Profession (1)

This course will introduce students to the science and art of effective communication with a focus on enhancing communication and presentation skills related to the profession of forensic science. The course will prepare students to communicate (in written and oral format) highly technical and scientific information to lay audiences, which could include government and/or political policymakers, attorneys, juries, judges and the like.

5. TOX 820: Preparing Professionals in Forensic Science and Analytical Genetics (1) This course will introduce and develop professional skills required for obtaining workplace employment in the areas of Forensic Chemistry/Toxicology and Forensic/Analytical Genetics. It will prepare students to develop networking skills, identify appropriate workplace positions, and enhance interviewing skills so that they can effectively communicate with prospective employers. Students will learn how to clearly articulate their skill sets, their understanding of their training and how to apply their training to specific workplace environments.

## 6. TOX 840: Forensic Science Standards and Practices (3)

This course will train students in the key components of a quality assurance and quality control system to assure that results produced in the laboratory are reliable. Due to the high stakes of forensic analysis, aspects from the entire process including evidence collection, chain-of-custody, equipment qualification, standard analytical procedures, method validation, documentation of result, and generation of reports will be covered. Advanced topics include choosing the appropriate sample preparation and analytical technique and estimation of the error in a method. Internal and external review guidelines will be presented including criteria for laboratory accreditation and analyst certification. In addition, standard test procedures will be interpreted with respect to the underlying fundamental chemical and physical processes involved.

7. TOX 880: Ethics and Professional Practice in Forensic Science and Analytical DNA (3) This course will train students in professional practices as they relate to the forensic scientist or the professional working in a modern crime laboratory or DNA testing laboratory (public or private). The course will focus on scientific integrity, ethical behavior, ethics standards and

various examples of ethics violations and misconduct in the forensic scientific and DNA analysis fields. A second focus is on education and training in quality assurance programs and practices and the audit and accreditation processes. The third major focus is on the relationships between forensic science or DNA analysis and the legal system and will include courtroom testimony procedures and oral mock court scenarios to train the student as an expert witness in the courtroom setting.

8. TOX 980: Internship in Forensic Toxicology and Analytical Genetics (6)

The internship (practicum) component of the program provides the student with an opportunity for immersed participation in the professional work environment associated with a laboratory practicing methods in forensic toxicology or analytical genetics. Through hands-on experience in a real work site the student applies the formal classroom knowledge to the real work setting. The work/learning arrangement is supervised by a program faculty member plus the designated representative of the internship site, which will be a private industry, governmental, hospital or other appropriate setting providing real world training in practices and procedures of forensic toxicology or analytical genetics.

## **Concentration 1: Forensic Toxicology/Chemistry**

1. TOX 663: Drug Metabolism and Disposition (2) This course covers the science of the interactions between the human body and drugs or xenobiotics. The focus is on drug absorption, distribution, metabolism, and excretion in the area of pharmacokinetics. Additional topics also include drug-drug and drug-food interactions, pharmacogenetics, and pharmacodynamics of commonly abused drugs. The objective of this course is to provide a strong scientific foundation for the understanding and practice of analytical and forensic toxicology

## 2. TOX 860: Forensic and Analytical Toxicology (3)

Study of the chemistry, biochemical activity, isolation and identification of drugs of forensic interest in biological materials. Postmortem, human performance and drug testing scenarios commonly encountered in forensic laboratories are appraised. Advanced concepts in sample preparation and analytical methods for presumptive and confirmatory testing are covered. Many factors affecting interpretation of toxicology results are considered. A molecular level approach is taken on many topics.

## 3. TOX 920: General Instrumental Techniques in Forensic Chemistry (4)

Theory and practice of modern instrumental methods used in forensic chemistry laboratories, including mass spectrometry. The class offers an in depth description of the processes and techniques involved in creating, controlling and measuring elemental or molecular ionic species by mass spectrometry techniques. Topics covered in the course include: theory of mass spectrometry, methods of ionization, instrument design, combined chromatography and mass spectrometry, quantitative aspects of mass spectrometry, meta-stable ions in mass spectrometry, recent applications of mass spectrometry techniques, analytical chemistry instrumentation and methods used by forensic scientists for analysis of drugs, toxicology, trace evidence, and sample collection and processing.

## **Concentration 2: Forensic/Analytical Genetics**

1. TOX 830: Advanced Human Genetics (2)

This course will cover advanced topics in hereditary and genetics as it applies to humans using essential and contemporary knowledge relating to genetic science and genetic disease. Topics include single gene and complex diseases, Mendelian and non-Mendelian inheritance, genetic association studies, cancer genetics, human origins and genetic diversity within humans, evolutionary divergence, family pedigrees, ownership of genetic information, gene and environment interactions, personalized medicine, behavioral genetics, genetics and reproduction and pharmacogenomics.

#### 2. ABT 461G Introduction to Population Genetics (3)

This survey course examines the population dynamics and equilibria of genes in nuclei, chloroplasts and mitochondria. Emphasis will be on biological relevance (in plants, animals, and micro-organisms), but some theoretical derivations will also be introduced.

## 3. IBS 602 Molecular Biology and Genetics (3)

An introductory graduate-level course on mechanisms associated with DNA structure, replication, recombination and repair, chromatin, transcriptional control, mRNA processing, and protein synthesis. Aspects of contemporary genetics, genomics and bioinformatics will also be included. Techniques in genetic engineering and recombinant DNA that are critical to molecular biology research will be covered.

## 4. TOX 910: Analytical and Forensic DNA (4)

This course will train students to become experts in the collection, identification and evaluation of biological evidence in criminal matters and DNA testing using current DNA technologies. Methods routinely used for the isolation of DNA from cells, DNA quantitation, PCR, electrophoretic separation, and DNA sequence determination will be discussed in detail. Students will understand the theory and practice underlying the use of instrumentation in PCR, Real-Time PCR, capillary electrophoresis, next generation sequencing, the applications of robotics and the use of DNA data bases. The complex range of considerations that need to be considered in data collection, sample storage, data interpretation, analysis and reporting will also be covered in detail. Current uses of single nucleotide polymorphisms, mitochondrial DNA analysis, Y or X chromosome analysis and nonhuman DNA will be described. The legal aspects specific to DNA testing will be incorporated to prepare students for expert witness testimony.

## **Electives Core:**

**1. Professional Electives:** A selection of courses that relate to the nature of the professional employment site in which the student is interning or contemplating a career.

#### **TOX 780 Special Problems in Toxicology**

Exposure to and actual research experience in an area of toxicology other than that encountered by students in their thesis and dissertation research. (With Permission of DGS)

## MBA 624 Entrepreneurship and Management Technology Commercialization (3)

This course is a broad overview of the technology commercialization process with a hands-on opportunity to learn commercialization skills in a real world environment that combines theory and practice. It is designed to cover the three primary phases of the commercialization process. The Assessment Module focuses on customer validation and market research, commercialization pathways, intellectual property, legal entities, strategic partnerships, and the business model canvas. The Business Planning Module provides an overview of accounting principles and pro forma statements, business plan elements, management teams and advisory boards, go-to-market strategies, and licensing and royalties. The Capitalization Module focuses on funding strategies including federal and state programs, angel investors and venture capital, crowd funding, and introduction to term sheets and valuation methods, and investor presentations.

## PA 651The Policy Process (3)

Broad-based course in public policy formulation and social planning. Emphasis is on the parameters of policy formulation as well as the social planning and impact variables. Both policy processes and relevant content areas will be stressed.

2. Forensics Area Electives: Courses relating to research and current issues in the forensic disciplines

## **TOX 790 Research in Toxicology** (1-5)

Research will be conducted in specific areas of toxicology and cancer biology. Students will conduct independent, hypothesis driven research, demonstrate the ability to read, understand and apply the scientific literature that is relevant to the research activities and demonstrate competency in the collection, analysis and interpretation of data that is relevant to the research activities.

## Master of Forensic Toxicology and Analytical Genetics: Curriculum Each Semester

Core	Concentration #1 Forensic Toxicology/Chemistry	Concentration #2 Forensic/Analytical Genetics	Total Credits	
			Conc. 1	Conc. 2
Year 1 Fall TOX 800: Fundamentals in Forensic Sciences (4)  IBS 611 Practical Statistics (1)  TOX 810: Communicating in the Forensic Science Profession (1)	BCH 401G Fundamentals of Biochemistry (3)	IBS 602: Molecular Biology and Genetics (3)	9	9
Year 1 Spring TOX 840: Forensic Science Standards and Practices (3)  TOX 820: Special Problems in Toxicology: Preparing Professionals in Forensic Science and Analytical Genetics (1)	TOX 860: Forensic and Analytical Toxicology (3) TOX 663: Drug Metabolism and Disposition (2)	ABT 461G: Population Genetics (3) TOX 830: SAdvanced Human Genetics (2)	9	9
Year 2 Fall TOX 880 Ethics and Professional Practice in Forensic Science and Analytical DNA (3)	TOX 920 General Instrumental Techniques in Forensic Chemistry (4) Elective (2)	BCH 401G Fundamentals of Biochemistry (3) TOX 910 Forensic and Analytical DNA (4)	9	10
Year 2 Spring TOX 980: Internships in Forensic Toxicology and Analytical Genetics (2 x 3 = 6) (Could take 3 credits during Summer of first year)	Elective (3)	Elective (3)	9	9
Total Credits			36	37

# TOX 663: DRUG METABOLISM AND DISPOSITION FALL 2019 SYLLABUS

(This is an existing course)
Course Director: Dr. Zhigang Wang
323-5784
zwang@uky.edu

#### A. COURSE DESCRIPTION

This is an advanced 600 level Toxicology course which carries 2 credit hours. The course covers basic and advanced concepts in toxicology. It is presented with a focus on how xenobiotics including toxins and drugs are absorbed, distributed throughout the body, metabolized, and excreted (ADME), including highlight case examples and issues from a forensic perspective. Class interaction and discussions between instructors and students are encouraged and promoted. Students are expected to read textbook materials and additional literature articles that may be assigned by instructors prior to attending each class lecture.

#### **B.** COURSE OBJECTIVES

The major objectives of this course are to give students a solid foundation and example forensic applications in: (1) organ toxicology and a conceptual understanding of organ absorption; and (2) xenobiotic absorption, distribution, metabolism, and elimination (ADME).

#### C. STUDENT LEARNING OUTCOMES

By the end of the course, students should be able to: (1) master concepts and principles of toxicology, especially in the areas of drug metabolisms and disposition; and (2) create reasonable hypothesis and data interpretations as to how various toxins and drugs are dealt with by the human body.

#### D. TEXT

The official required text for this course is Casarett & Doull's Toxicology: The Basic Sciences of Poisons, 8<sup>th</sup> Edition, by Curtis D. Klassen, Published by McGraw Hill.

#### E. PREREOUISITES

Graduate-level (research/scholarship and professional) students can participate in this course. Senior undergraduate students can enroll with permission of the Course Director. Training in undergraduate courses in Biology and Chemistry is critical for effective learning in this course.

#### F. GRADING

Course grade consists of mid-term exam and final exam. Exam questions from each lecture account for 10 points. There are 280 points in total, consisting of 150 points from the midterm exam and 130 points from the final exam, respectively. Exam scores will be converted into percentage. The grading standards employed are listed below.

#### **Research Graduate and Professional Master's Students**

A: 90-100% B: 80-89% C: 70-79% E: below

#### **Advanced Undergraduate Students**

A: 90-100% B: 80-89% C: 70-79% D: 60-69% E: below

#### G. OFFICE HOURS

The course director and instructors will be available for consultation. Students are encouraged to consult with participating faculty as needed. It is suggested to email faculty to set up an appointment as specific office hours are not established.

#### H. ATTENDANCE POLICY

Class attendance is required. Frequent absence from the class can result in 5% reduction from the final grade. Excused absence from class is acceptable with prompt written notification to the course director via email.

Officially recognized reasons for nonattendance (excused absence) may be found in the UK Senate Rules (SR 5.2.4.2), a copy of which is listed below.

- a. Illness of the student or serious illness of a member of the student's immediate family. The instructor shall have the right to request appropriate verification.
- b. The death of a member of the student's immediate family. The instructor shall have the right to request appropriate verification.
- c. Trips for members of student organizations sponsored by an academic unit, trips for University classes, and trips for participation in intercollegiate athletic events. When feasible, the student must notify the instructor prior to the occurrence of such absences, but in no case shall such notification occur more than one week after the absence. Instructors may request formal notification from appropriate university personnel to document the student's participation in such trips.
- d. Major Religious Holidays. Students are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class.
- e. Any other circumstances which the instructor finds reasonable cause for nonattendance."

#### I. COURSE SCHEDULE

Class will meet on Tuesdays and Thursdays 11:00 – 11:50 AM in310 HSRB.

TOX 663: Drug Metabolism and Disposition

Fall 2017, Tuesdays and Thursdays 11:00 – 11:50 AM.

Classes are held in Room 310 HSRB unless otherwise noted.

Date	TOPIC	Lecturer
Aug. 24 (Thursday)	Course Introduction	Wang
Aug. 29 (Tuesday)	Introduction to Drug Research, and Development, and Forensic Application	Wang
Aug. 31 (Thursday)	Pharmacodynamics	Wang
Sept. 5 (Tuesday)	Physiology of the GI Tract and Mechanisms of Absorption	Shedlofsky
Sept. 7 (Thursday)	Hepatic Anatomy and Function	Shedlofsky
Sept. 12 (Tuesday)	Bilirubin Metabolism and Liver Toxicity	Shedlofsky
Sept. 14 (Thursday)	Routes of Absorption: Deposition and Absorption in the Respiratory System	I Orren
Sept. 19 (Tuesday)	Routes of Absorption: Deposition and Absorption in the Respiratory System	II Orren
Sept. 21 (Thursday)	Routes of Absorption: Dermal Absorption	Wang

Sept. 26 (Tuesday)	Routes of Absorption: Uptake into the Blood I	Liang
Sept. 28 (Thursday)	Routes of Absorption: Uptake into the Blood II	Liang
Oct. 3 (Tuesday)	Disposition of Toxicants/Xenobiotics: Overview	Wang
Oct. 5 (Thursday)	Phase 0 Drug/Xenobiotic Metabolism: Transport	Wang
Oct. 10 (Tuesday)	Mechanism of Biotransformation by Cytochrome P450s	Wang
Oct. 12 (Thursday)	Phase I Drug Metabolizing Enzymes: Cytochrome P450s, lecture I	Porter
Oct. 17 (Tuesday)	Phase I Drug Metabolizing Enzymes: Cytochrome P450s, lecture II	Porter
Oct. 19 (Thursday)	Mid-term Exam (11-1 PM)	Wang
Oct. 24 (Tuesday)	Biotransformation-Alternate Transformation Types	Wei
Oct. 26 (Thursday)	Pharmacokinetics I	Vore
Oct. 31 (Tuesday)	Pharmacokinetics II	Vore
Nov. 2 (Thursday)	Phase II Drug/Xenobiotic Metabolism: Conjugation	Wang
Nov. 7 (Tuesday)	Phase III Drug/Xenobiotic Metabolism: Excretion	Wang
Nov. 9 (Thursday)	Pharmacogenetics I	Wang
Nov. 14 (Tuesday)	Pharmacogenetics II with Application to Forensic Toxicology	Wang
Nov. 16 (Thursday)	Induction of Drug Metabolizing Enzymes	Wang
Nov. 21 (Tuesday)	Suppression of Drug Metabolizing Enzymes	Wang
Nov. 23 (Thursday)	Thanksgiving Holiday, No Class	
Nov. 28 (Tuesday)	Drug Interaction and Forensic Interpretation	Wang
Nov. 30 (Thursday)	Nuclear Receptors and Drug Metabolism	Zhou
Dec. 5 (Tuesday)	Cell Signaling in Toxicology	Chen
Dec. 7 (Thursday)	Alcohol Toxicity and Related Forensic Issues in Alcohol Detection	Luo
Dec. 14 (Thursday)	Final Exam (3:30-5:30 PM in HSRB 310)	Wang

## TOX 800

## Fundamentals in Forensic Sciences X:00 – X:50 MWHF Fall 2019, Room Z

Instructor of Record: Dr. Davy Jones diones@uky.edu

**Description**: This course will broadly survey the disciplines and technology within the field of Forensic Sciences. These disciplines include crime scene investigation techniques, medicolegal death investigation, and patterned evidence examination, and traditional forensic laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire debris, explosives, and forensic molecular biology. A laboratory component provides hands-on exercise with current instrumentation used in Forensic Sciences. This course can be enrolled in by persons not admitted to the professional program, with approval of the Instructor of Record.

**Prerequisites**: A Bachelor of Science in Chemistry, Biology, Toxicology, Biochemistry, or related disciplines as approved by the Instructor of Record.

## **Student Learning Outcomes**

Knowledge of incident investigation, evidence recovery, and preservation.

Demonstrated application of a range of scientific disciplines to forensic analysis.

Capability in applying instrumentation methods to forensic analysis of evidence.

Knowledge essential facts, concepts, principles and theories relating to forensic science.

#### Grading:

Attendance: 10% of final course numerical calculation/day of lecture or lab

First Exam: 15% Second Exam: 15% Third Exam: 15% Final Exam: 15%

Data Notebook Keeping In Labs: 20%

Student Presentation: 10%

#### **Final Grades**:

90 - 100 = A

80 - 90 = B

70 - 80 = C

below 70 = fail

#### **ABSENCES**

Absence from class lecture or lab day result in a deduction of that day's contribution to the final course numerical grade. The only exceptions will be absences allowed by the University Senate Rules. Senate Rule 5.2.4.2 includes the following specific situations as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, and (d) major religious holidays.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

The Instructor will determine an academic activity to 'make-up' for missed class participation in the case of an excused absence.

Students arriving late to a class lecture or lab meeting (or leaving early) will have a prorated amount of their class attendance grade deducted, calculated by the time that they arrived late (or left early).

#### Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness or death in the family. In all cases of a "University-related trip" absence an official, original, signed, paper copy excuse is also required to be presented to the Instructor before the date of the missed class. A phone number and/or email address of a University-approved official associated with the event must be included with this paper copy so verification can be made.

In the situation of interview for a full-time employment position post-graduation or interview for graduate or professional school, appropriate supporting evidence for the excused absence is a written attestation from the interviewer that the student had little or no control over the date and time of the interview and that the student is not able to reschedule the interview to a non-conflicting time reasonably close to the originally scheduled time.

## **Academic Integrity**

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the

student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <a href="http://www.uky.edu/Ombud">http://www.uky.edu/Ombud</a> A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of Student Rights and Responsibilities (available online http://www.uky.edu/StudentAffairs/Code/part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these policies shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1 of Senate Rules).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

## Accommodations relating to disability

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. If you have a documented disability that requires academic accommodations, you must provide me with a Letter of Accommodation from the Disability Resource Center (Suite 407 Multidisciplinary Science Center. Phone: 257-2754. Email: dtbeach1@uky.edu).

#### **Classroom Behavior Policies**

Students are expected to participate in class discussions without distractions. Hence, cell phones should remain face down and computers shall only be in use when instructors indicate that they may be used. Students are expected to maintain a level of dignity and respect towards faculty, staff, and fellow students. Students are expected to value differences among all members of our academic community. Students have the right to take reasoned exception and to voice opinions contrary to those offered by the instructor and/or other students (S.R. 6.1.2). Equally, a faculty member has the right -- and the responsibility -- to ensure that all academic discourse occurs in a context characterized by respect and civility. Acceptable decorum and civility does not include attacks of a personal nature or statements denigrating another on the basis of race, sex, religion, sexual orientation, age, national/regional origin.

#### Non-Discrimination Statement and Title IX Information

The University of Kentucky faculty are committed to supporting students and upholding the University's non-discrimination policy. Discrimination is prohibited at UK. If you experience an incident of discrimination we encourage you to report it to Institutional Equity & Equal Opportunity (IEEO) Office, 13 Main Building, (859) 257-8927. Acts of Sex- and Gender-Based Discrimination or Interpersonal Violence If you experience an incident of sex- or gender-based discrimination or interpersonal violence, we encourage you to report it. While you may talk to a faculty member or TA/RA/GA, understand that as a "Responsible Employee" of the University these individuals MUST report any acts of violence (including verbal bullying and sexual harassment) to the University's Title IX Coordinator in the IEEO Office. If you would like to speak with someone who may be able to afford you confidentiality, the Violence Intervention and Prevention (VIP) program (Frazee Hall – Lower Level; http://www.uky.edu/StudentAffairs/VIPCenter/), the Counseling Center (106 Frazee Hall, http://www.uky.edu/StudentAffairs/Counseling/), and the University Health Services (http://ukhealthcare.uky.edu/uhs/student-health/) are confidential resources on campus.

#### Fall 2019 First Day of Class Wednesday August 21

(1 3hr lab = 1 lecture period per SR 9.2)

#### Week 1

Class meeting Subject

- 1 Class orientation
- 2 History and Nature of Forensic Science

#### Week 2

3	Evidence: Origins, Types and Admissibility
4	Crime Scene Investigation
5	Crime Scene Investigation
6	Crime Scene Investigation
Week 3	
Monday Lab	or Day Holiday
7	Latent Prints
8	Latent Prints
9	Trace Evidence
Week 4	
10	Trace Evidence
11	Trace Evidence
12	Biological Evidence: Blood, Body Fluids
13	Biological Evidence: Protein and Metabolomic Fingerprinting
Week 5	
14	Lab 1 x 3 hr Pipetting skills and lab equipment operation
15	Lecture: Forensic Analysis Instrumentation – Immunological (hair)
16	Lab 1 x 3hr Forensic Analysis Instrumentation – Immunological (hair)
17	Lab 1 x 3hr Forensic Analysis Instrumentation – Immunological (hair
Week 5	
18	First Exam (sessions 1-17)
19	Chemical Fingerprinting
20	Forensic DNA Analysis
21	Forensic DNA Analysis
Week 6	
22	Prep Lecture for Lab: DNA Isolation and Sample Analysis
23	Lab: DNA Isolation and Sample Analysis
24	Prep Lecture for Lab: PCR Analysis of Genomic DNA

## 25 Lab: PCR Analysis of Genomic DNA

Week 7	
26	Forensic Entomology
27	Microbial Forensics
28	Illicit Drugs
29	Illicit Drugs
Week 8	
30	Forensic Toxicology
31	Forensic Toxicology: Drug and Poison Classes
32	Forensic Toxicology: Analytical Methods
33	Second Exam (sessions 18-32)
Week 9	
34	Prep Lecture for Lab: Forensic Analysis Instrumentation – Mass Spec
35	Lab: Forensic Analysis Instrumentation – Mass Spec
36	Lab: Forensic Analysis Instrumentation – Mass Spec
37	Forensic Toxicology and Genetics: Horse Racing Industry
Week 10	
38	Regulatory Issues in Forensic Toxicology: the Environment
39	Firearms and Toolmarks
40	Death Investigation
41	Death Investigation
Week 11	
42	Death Investigation
43	Forensic Anthropology
44	Forensic Psychology
45	Questioned Documents
Week 12	

46 Questioned Documents (sessions 34-46) 47 Third Exam 48 Fire and Explosive 49 **Digital Forensics Week 13** 50 New Disciplines in Forensic Analysis 51 CSI and the Media: What is Real and What is not Careers in Forensic Analysis 52 Student Case Study Presentations (2 per meeting) 53 Week 14 Student Case Study Presentations (2 per meeting) 54 Thanksgiving University Academic Holidays **Week 15** 55 Student Case Study Presentations (2 per meeting) 56 Student Case Study Presentations (2 per meeting) 57 Student Case Study Presentations (2 per meeting) 58 Internship Orientation **Week 16** 59 **Prep Lecture for Lab: TBD** 60 Lab: TBD 61 Lab: TBD

Exam (sessions 47-61)

62

#### **TOX 810**

## **Communicating in the Forensic Science**

Profession 1 credit hours 50 min class/week Time and Location: TBD

**Course Directors** 

Co-director: Nathan L. Vanderford, PhD, MBA

Office Address: cc140 Roach Building

Email: nathan.vanderford@uky.edu

Office Phone: 859-323-2622
Office hours: By appointment

**Co-director**: Qiou Wei, PhD **Office Address**: 140 HSRB

Email: qiou.wei@uky.edu
Office Phone: 859-257-0086
Office hours: By appointment

#### **Course Description**

This course will introduce students to the science and art of effective communication with a focus on enhancing communication and presentation skills related to the profession of forensic science. The course will prepare students to communicate (in written and oral format) highly technical and scientific information to lay audiences, which could include government and/or political policymakers, attorneys, juries, judges and the like.

#### **Prerequisites**

None

#### **Student Learning Outcomes**

After completing this course, students will:

- 1. Be skilled at preparing documents and oral presentations that convey highly scientific messages to lay audiences.
- 2. Become proficient at developing and presenting visual props that support an argument.
- 3. Be proficient in constructing and defending an argument.
- 4. Be prepared to transition communication styles between scientific and lay audiences.
- 5. Answer questions about highly scientific concepts and methods in a manner appropriate for layperson consumption.

#### **Required Materials**

There will be no required textbook for this course. Course material will be posted in Canvas.

#### **Description of Course Activities and Assignments**

Students will be evaluated based on: 1) course participation; 2) performance on two written assignments; 3) performance on the production of a visual prop; and 4) performance on one oral presentation.

Assignment #1 will consist of a written executive summary of a provided forensic science technical written report. Students are expected to distill the scientific and technical aspects of the written report into a concise summary that could be understood by the lay public. The summary will be no longer than 300 words.

Assignment #2 will consist of a written executive summary of a provided forensic science technical data file. Students are expected to distill the scientific and technical aspects of the data into a concise summary that could be understood by the lay public. The summary will be no longer than 300 words.

Assignment #3 will consist of the production of a visual prop (e.g., a poster) that illustrates a forensic science finding.

Assignment #4 will consist of the production and oral delivery of a 5-minute presentation that encompasses the work completed in assignment #1-3. The presentation will be followed by 5 minutes of questions from the instructors and students.

#### **Course Grading**

The following activities/assignments will constitute the course grade

- 1) Class participation at 20 points
- 2) Two written assignments at 20 points
- 3) Visual prop production at 20 points
- 4) Oral presentation at 20 points

Grading scale for graduate students (no D for Grad Students):

90-100% = A 80 - 89% = B 70 - 79% = C Below 70%= E

#### **Final Exam Information**

No final exam will be given for this course.

#### **Submission of Assignments**

Written assignments will be submitted through Canvas. Oral presentations will be delivered during the scheduled course meeting time. Submissions after the due date will receive zero points unless the cause of the late submission falls under the criteria for excused absences described below (a) serious illness, (b) illness or death of family member, (e) other circumstances found to fit "reasonable cause" by the professor.

#### **Attendance Policy**

Students are expected to attend every class meeting. University policies will be followed regarding excused absences.

#### **Excused Absences**

Students need to notify the professor of absences prior to class when possible. *Senate Rules 5.2.4.2* defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be

obtained through the Ombud (859-257-3737, http://www.uky.edu/Ombud/ForStudents ExcusedAbsences.php.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per Senate Rule 5.2.4.2, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

#### **Verification of Absences**

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

#### **Academic Integrity**

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <a href="http://www.uky.edu/Ombud">http://www.uky.edu/Ombud</a>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

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When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at <a href="mailto:drc@uky.edu">drc@uky.edu</a>. Their web address is <a href="http://www.uky.edu/DisabilityResourceCenter">http://www.uky.edu/DisabilityResourceCenter</a>.

#### Course schedule

Course Meeting	Instructor	Topic
1	Vanderford and Wei	Course introduction and syllabus overview. Lecture and discussion: The perception and role of scientists in society
2	TBD	Lecture and discussion: Communicating science to the public
3	TBD	Lecture and discussion: Credibility, influence and persuasion
4	TBD	Lecture and discussion: Building an argument
5	TBD	Lecture and discussion: Rules and methods for communicating science to the public: Written communication
6	Vanderford and Wei	Assignment #1 due (executive summary of a technical report). Students will present their work to the class.
7	TBD	Lecture and discussion: Rules and methods for communicating science to the public: Oral communication
8	Vanderford and Wei	Assignment #2 due (executive summary of technical data). Students will present their work to the class.
9	TBD	Lecture and discussion: Rules and methods for communicating science to the public: Creating visuals and props
10	TBD	Lecture and discussion: Rules and methods for communicating science to the public: Creating effective presentations
11	Vanderford and Wei	Assignment #3 due (visual prop development). Students will present their work to the class.
12	Vanderford and Wei	Student presentations
13	Vanderford and Wei	Student presentations
14	Vanderford and Wei	Student presentations
15	Vanderford and Wei	Lecture and discussion: Putting all the pieces of science communication together
16	N/A	No final exam

#### **TOX 820**

## Preparing Professionals in Forensic Science and Analytical Genetics 1 Credit Hour

**Course Director** 

**Director**: Nathan L. Vanderford, PhD, MBA

Office Address: cc140 Roach Building

**Email**: nathan.vanderford@uky.edu

Office Phone: 859-323-2622
Office hours: By appointment

#### **Course Description**

This course will introduce and develop professional skills required for obtaining workplace employment in the areas of Forensic Chemistry/Toxicology and Forensic/Analytical Genetics. It will prepare students to understand workplace professionalism including proper use of social media, how to search and apply for jobs, and understand goal setting and the importance of work-life balance. Students will learn how to clearly articulate their skill sets, their understanding of their training and how to apply their training as professionals in the workplace environment.

#### **Prerequisites**

TOX 810: Communicating in the Forensic Science Profession

#### **Student Learning Outcomes**

After completing this course, students will:

- 1. Be skilled at understanding workplace professionalism.
- 2. Be skilled at appropriate workplace communication.
- 3. Understand and implement proper social media use.
- 4. Understand how to search and apply for jobs.
- 5. Understand the importance of goal setting and work-life balance.

#### **Required Materials**

There will be no required textbook for this course. Course material will be posted in Canvas.

#### **Description of Course Activities and Assignments**

Students will be evaluated based on: 1) course participation and 2) performance on three assignments.

Assignment #1 will consist of each student creating a social media presence consisting of at least a LinkedIn profile.

Assignment #2 will consist of students creating a mock job application including a cover letter and resume.

Assignment #3 will consist of each student conducting an informational interview.

#### **Course Grading**

The following activities/assignments will constitute the course grade

- 1) Class participation at 25 points
- 2) Three written assignments at 25 points each (75 points total)

Grading scale for graduate students (no D for Grad Students):

90-100% = A 80 - 89% = B 70 - 79% = C Below 70%= E

#### **Final Exam Information**

No final exam will be given for this course.

#### **Submission of Assignments**

Written assignments will be submitted through Canvas. Oral presentations will be delivered during the scheduled course meeting time. Submissions after the due date will receive zero points unless the cause of the late submission falls under the criteria for excused absences described below (a) serious illness, (b) illness or death of family member, (e) other circumstances found to fit "reasonable cause" by the professor.

## **Attendance Policy**

Students are expected to attend every class meeting. University policies will be followed regarding excused absences.

#### **Excused Absences**

Students need to notify the professor of absences prior to class when possible. *Senate Rules 5.2.4.2* defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737,

http://www.uky.edu/Ombud/ForStudents ExcusedAbsences.php.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per Senate Rule 5.2.4.2, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

#### **Verification of Absences**

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

#### **Academic Integrity**

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When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at <a href="mailto:drc@uky.edu">drc@uky.edu</a>. Their web address is <a href="mailto:http://www.uky.edu/DisabilityResourceCenter">http://www.uky.edu/DisabilityResourceCenter</a>.

## **Course schedule**

Course Meeting	Instructor	Topic
1	Vanderford	Course introduction and syllabus overview. Lecture and discussion: General Overview of Professionalism in the Workplace
2	Vanderford	Lecture and discussion: Professional Communication
3	TBD	Lecture and discussion: Unconscious Basis and Inclusion
4	Vanderford	Lecture and discussion: Social Media Use
5	Vanderford	Lecture and discussion: Professional Resources (societies, alumni associations, etc.)
6	Vanderford	Lecture and discussion: Job Searching including Informational Interviews
7	Vanderford	Assignment #1 due (creating a social media presence). Students will present their work to the class.
8	Vanderford	Lecture and discussion: Job Applications (writing cover letters and resumes)
9	Vanderford	Lecture and discussion: Interviewing
10	Vanderford	Assignment #2 due (cover letter and resume). Students will present their work to the class.
11	Vanderford	Lecture and discussion: Negotiating
12	Vanderford	Lecture and discussion: Goal Setting
13	Vanderford	Lecture and discussion: Work-life Balance
14	Vanderford	Assignment #3 due (Informational Interview). Students will present their work to the class.
15	Vanderford	Lecture and discussion: Putting all the Pieces of Professionalism Together
16	N/A	No final exam

# TOX 830 Advanced Human Genetics 2 Credit Hours Tues/Thurs 50 min/meeting

Faculty Course Directors	Department	Office	Phone	E-mail
Isabel Mellon	Toxicology and Cancer Biology	108 Combs	257-6253	mellon@uky.edu

Office hours: By Appointment

#### **Course Description**

This course will train students in advanced genetics and the rapidly progressing and influential field of human genetics. Through lectures, the primary literature and review articles, students will gain in-depth knowledge of inheritance, genetic variation, genetic diseases and the impacts of epigenetic alterations and the environment. Students will gain advanced knowledge of contemporary methods used to investigate the human genome and their applications to genetic testing. Students will improve their critical reading skills of relevant primary scientific literature and apply their knowledge in the writing and oral presentation of a term paper.

#### **Prerequisites**

IBS 602: Molecular Biology and Genetics, IBS 611: Practical Statistics, TOX 800: Fundamentals in Forensic Science, TOX 810: Communicating in the Forensic Science Profession

#### **Student Learning Outcomes**

After completing this course, the student will be able to:

- 1. Demonstrate advanced overall knowledge of human genetics.
- 2. Demonstrate advanced knowledge of techniques and approaches to map genetic alterations associated with inherited human diseases.
- 3. Demonstrate advanced learning of how mutations or epigenetic changes contribute to phenotypes associated with specific heritable diseases.
- 4. Gain advanced knowledge of the primary literature relevant to human genetics.
- 5. Gain advanced knowledge of contemporary methods used in genetic testing, their implementation and ethical concerns.

#### Required Materials:

1. Textbook: To be determined

 This course will also rely heavily on readings from the scientific literature and links to additional readings and videos will be available on Canvas. Students must be able to access Canvas for lectures, class questions, and comments, reading and writing assignments, grades, and announcements.

## **Description of Course Activities and Assignments**

Students will be evaluated based on: 1) performance on two written examinations, 2) performance on one term paper.

Both the mid-term and final exam are worth 100 points each, which together accounts for 80% of the total grade. Each exam will last approximately two hours and each will account for 40% of the final grade. Exam questions will use multiple formats including short answer and problem solving. Locations for exams will be announced in class and posted on the Canvas website. Exam times during the semester are 4:00 – 6:00 PM. Please refer to the Room listing for the correct classrooms for each lecture and exam.

The term paper is worth 50 points which accounts for 20% of the grade. A term paper of ~10 pages will be based on a subject relevant to the content of the class and include a review of the primary literature. A description of the format will be described in class. The subject of each student's paper will be approved by the course director early in the semester. Each student will give a 10 min oral PowerPoint presentation to the class describing the content of the paper.

## **Course Assignments**

- 2 exams at 100 points each
- 1 term paper at 50 points

#### **Course Grading**

Grading scale for graduate students (no D for Grad Students):

90-100% = A 80 - 89% = B 70 - 79% = C Below 70%= E

#### **Final Exam Information**

The 2<sup>th</sup> exam will be given during the scheduled time and day for the final exam as set by the registrar. Date, time, location, other information

#### **Submission of Assignments**

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Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

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When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

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them via phone at (859) 257-2754 and via email at <a href="mailto:drc@uky.edu">drc@uky.edu</a>. Their web address is <a href="http://www.uky.edu/DisabilityResourceCenter">http://www.uky.edu/DisabilityResourceCenter</a>.

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## **Tentative Course Schedule**

Number	Topic
1	The history of human genetics
2	
3	Mapping human disease genes I
4	Mapping human disease genes II
5	Validating disease causing mutations
6	Loss of function and human disease
7	Gain of function and human disease
8	
9	Modifiers genes in human diseases
10	Environmental effects on genetic diseases
11	Meiosis, aneuploidy and human disease
	Chromosomal rearrangements
13	
	Trinucleotide repeat instability and human disease
15	Discussion of term paper and topics
	Exam 1
16	Epigenetics and human disease
17	
	Imprinting and human disease
	Pharmacogenetics
20	Sex Determination
21	NGS and human genetics
22	Genetic variation in human populations I
23	Genetic variation in human populations II
24	Genome wide association studies
25	Genetic Testing I
26	Genetic Testing II
27	Manipulating the human genome/gene editing
28	Ethics and privacy issues in medicine,
	research, and industry
29	Student Presentations
30	Student Presentations
	Exam 2 (16-30)

# TOX 840 Forensic Science Standards and Practices 3 Credit Hours Tuesday and Thursdays 75 Minute Lecture/Meeting TBD Place TBD

Faculty	Department	Office	Phone	E-mail
Course				
Directors				
D.				
Cunningham				
D. Jones	Toxicology and Cancer			
	Biology			

Office hours: TBD

## **Course Description**

This course will examine the day to day considerations of operating a forensic laboratory with emphasis on quality assurance and quality control. Discussions will include considerations of laboratory accreditation and individual certification, employee continuing education, equipment qualification, method validation, rates of error in analytical procedures, proficiency testing, calibration issues, choosing the appropriate sample preparation and analytical technique, and quality control considerations of the actual analysis. Proper documentation with respect to chain of custody, record keeping, and uniform language in reports will also be discussed.

#### **Prerequisites**

BCH 401G: Fundamentals of Biochemistry, TOX 810: Communicating in the Forensic Science Profession, TOX 800: Fundamentals in Forensic Science, IBS 611: Practical Statistics

#### **Student Learning Outcomes**

Upon completion of the course work, all students will be able to:

- 1. Demonstrate understanding of the details required to validate a method
- 2. Differentiate the appropriate methods of calibration for a variety of drugs and poisons
- 3. Construct calibration graphs and estimate error
- 4. Design a quality control chart with appropriate limits of acceptability
- 5. Explain the preparation and storage of calibrators and controls
- 6. Evaluate common screening and confirmatory analytical methods for analytical error
- 7. Assess the process for precision and accuracy
- 8. Explain the use of internal standards in analytical testing
- 9. Show the capacity to prepare a written procedure
- 10. Interpret the steps in a standard test procedure in terms of fundamental chemical and physical processes

- 11. Defend the importance of staff training
- 12. Demonstrate understanding of the storage of analytical data
- 13. Prepare a litigation packet
- 14. Develop a final laboratory report that is clear and cohesive

#### **Required Materials**

Text to be determined

## **Description of Course Activities and Assignments**

## **Course Assignments = 400 points Total**

- 2 Exams during the semester at 100 points each and a Final Exam at 120 points
   320 points
- 6 graded homeworks at 10 points each = 60 pts
- 1 short (5 minute) presentation at 20 points

## **Class Participation and Attendance = 100 Points total**

Class participation = 50 points and attendance = 50 points. Each missed class will result in a loss of 5 points for lack of class participation and attendance. Students will be called upon in class to voice opinions on assigned readings and lecture material.

## **Summary Description of Course Assignments**

Exams will cover material from the reading assignments, homework and in-class lecture/discussion.

## **Course Grading**

Students can accumulate 500 total points (plus bonus points).

Total = 400 pts course assignments+ 100 participation & attendance = 500 points

Grading scale for graduate students (no D for Grad Students):

90-100% = A

80 - 89% = B

70 - 79% = C

Below 70%= E

#### **Tentative Course Schedule**

A linear listing of topics, assignment due dates, and examination dates.

Day		Topic	Assignment
1	August 24	Introduction	
2	29	Concepts of Reagents and Standards	NIST and Commercial Vendors
3	31	Introduction to method validation	
4	September 5	Method characterization and validation protocols	Examples from labs
5	7	Introduction to instrumental validation	
6	12	Preparation and storage of calibration standards	SOP from forensic lab, expiration dates
7	14	Principles of Laboratory accreditation ASCLD, CAP, SAMHSA	Example of submission
8	19	Qualitative analysis	
9	21	Quantitative analysis	Standard addition/recovery; estimation of error
10	26	Proficiency Testing	CAP
11	28	Rates of error in testing	TBD
12	October 3	Staff training and certification	ABC and ABFT exam topics and questions
13	5	Sample collection protocols	Book chapter
14	10	Regulatory issues – ISO, Federal guidelines	ISO/IEC 17025 requirements
15	12	Audits	
16	17	Peer Review / Certifying Scientist Review	
17	19	Safe work practices – MSDS, Global Harmonization System, OSHA, Bloodborne Pathogens	Bloodborne pathogen training
18	24	Composing the SOP – the guideline map	
19	26	MOP – Manual of Operations	
20	31	Implementing the SOP	
21	November 2	Evaluating the SOP	
22	7	Equipment Installation/Qualification	
23	9	Crime scene evidence I - Packaging	Examples from labs

24	14	Crime scene evidence II – Chain of custody	Example forms from labs
25	16	Quality Control charts	
26	21	Uniform language reports	DOJ recommendations
		THANKSGIVING: NO CLASS	
27	28	Standard test methods for immunoassays	STM from forensic lab
28	30	Standard test methods for drug analysis	STM from forensic lab
29	Dec 5	Standard test methods for DNA analysis	STM from forensic lab
30	7	Corrective and Preventative Action (CAPA)	Out of specification results and root cause investigations

Exam 1 will cover lectures 1-16
Exam 2 will cover lectures 17-30
Exam 3 will be a comprehensive final exam

#### **Final Exam Information**

The 4<sup>th</sup> exam will be cumulative and given during the scheduled time and day for the final exam as set by the registrar.

## **Submission of Assignments**

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### **TOX 880**

# Ethics and Professional Practice in Forensic Science and Analytical DNA 3 Credit Hours Tues/Thurs 75 min/meeting

Faculty Course Directors	Department	Office	Phone	E-mail
Isabel Mellon	Toxicology and Cancer Biology	108 Combs	257-6253	mellon@uky.edu
Lucy Davis	LDH Consultants			
To-be-named Attorney(s)				

Office hours: By Appointment

### **Course Description**

This course will train students in professional practices as they relate to the forensic scientist or the professional working in a modern crime laboratory or DNA testing laboratory (public or private). The course will focus on scientific integrity, ethical behavior, ethics standards and various examples of ethics violations and misconduct in the forensic scientific and DNA analysis fields. A second focus is on education and training in quality assurance programs and practices and the audit and accreditation processes. The third major focus is on the relationships between forensic science or DNA analysis and the legal system and will include courtroom testimony procedures and oral mock court scenarios to train the student as an expert witness in the courtroom setting.

### **Prerequisites**

TOX 800: Fundamentals in Forensic Science, TOX 810: Communicating in the Forensic Science Profession, TOX 840: Forensic Science Standards and Practice, IBS 611: Practical Statistics

### **Student Learning Outcomes**

After completing this course, the student will be able to:

- 1. Demonstrate advanced knowledge and implement ethical standards in the fields of forensic science and DNA testing/analytics.
- 2. Implement quality assurance programs and practices and the audit and accreditation processes used in forensic DNA analysis and DNA testing.
- 3. Demonstrate advanced knowledge of the relationships between the legal system and forensic science/DNA analytics.
- 4. Demonstrate advanced knowledge of the requirements and intricacies in acting as an expert witness in the courtroom.

5. Achieve rapid success and assimilation in employed positions in the fields of forensic science and DNA analysis.

### Required Materials: To be determined

1. Textbooks

Ethics and the Practice of Forensic Science

Robin T. Bowen

https://www.amazon.com/Practice-Forensic-Science-International-Investigation/dp/1420088939#reader\_1420088939

Or

Ethics in Forensic Science

Edited by: J.C. Upshaw Downs and Anjali Ranadive Swienton

https://www-sciencedirect-com.ezproxy.uky.edu/science/book/9780123850195

And

Forensic Testimony: Science, Law and Expert Evidence,

C.M. Bowers

https://www.amazon.com/Forensic-Testimony-Science-Expert-

Evidence/dp/0123970059#reader 0123970059

Or

Succeeding as an Expert Witness

Fender and Houck

https://www.amazon.com/Feders-Succeeding-Expert-Witness-Fourth/dp/1420051628/ref=la\_B001JS8XEW\_1\_1?s=books&ie=UTF8&qid=1520 963384&sr=1-1

2. This course will also rely heavily on readings from the scientific literature and links to additional readings and videos will be available on Canvas. Students must be able to access Canvas for lectures, class questions, and comments, reading and writing assignments, grades, and announcements.

### **Description of Course Activities and Assignments**

Students will be evaluated based on: 1) performance on two written examinations, 2) performance on two case-study homework assignments and 3) performance on two separate mock court exercises.

Both the mid-term and final exam are worth 100 points each, which accounts for 40% of the total grade. Both Mock court exercises are worth 100 points each and account for 40% of the total grade. Participation in both case study discussions are worth 50 points each and account for 20% of the grade. Locations for exams will be announced in class and posted on the Canvas website. The mid-term exam during the semester will be held from 4:00-6:00 PM and the final exam will be given during the scheduled time

and day set by the registrar. Written homework assignments will be posted, submitted and graded through Canvas.

Exam questions are scenario or case study-based and require the student to gather outside information, interpret and evaluate outside materials and incorporate lecture materials. The mock court exercises are designed to train students as expert witnesses. They will be trained in the presentation of forensic evidence, thinking and maintaining professionalism on their feet and responding to the pressures of the courtroom experience. Students will be expected to act, dress, and perform as if they were actually testifying in court as a scientific expert witness and to answer questions related to a mock case they have been given ahead of time.

The two mock court exercises will be an important focus of the course. These two exercises will incorporate the readings and materials describing forensic science and the legal system to train students in the form of mock court testimony. In the mock court exercises, students will present information to a "court" as if they were the expert witness testifying on the case. The first exercise will consist of voir dire (i.e. qualification as an expert) and direct examination materials covered and discussed in lectures. The second exercise, held later in the semester in order for students to utilize feedback from the first exercise, will focus on the cross examination testimony. Each exercise will be recorded and feedback provided to the student. The other students in the class not acting as the expert witness and faculty will act as jury and court spectators. The student will be expected to independently develop his or her own testimony based upon the facts of the case provided by the instructor and from what information they have gathered in class, as well as outside sources such as previous class materials or independent research.

### **Course Assignments**

- 2 exams at 100 points each
- 2 graded homework case study assignments at 50 points each
- 2 graded mock court exercises at 100 points each

### **Course Grading**

Grading scale for graduate students (no D for Grad Students):

90-100% = A 80 - 89% = B 70 - 79% = CBelow 70% = E

#### Final Exam Information

The 2<sup>th</sup> exam will be given during the scheduled time and day for the final exam as set by the registrar. Date, time, location, other information

### **Submission of Assignments**

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### **Tentative Course Schedule**

Number	Topic	Assignment
1	Course Introduction and Overview of Professional Ethics.	Links, Chapter 1 Bowen
2	The Ethics of the Criminal Justice Culture	Chapter 2
_	The Editor of the Official decises of the	Bowen
3	Ethics in the Courtroom: The Scientist's Perspective	Chapter 3
	Zunos in the Court Com. The Coloniactor Groposito	Bowen
4	Ethics in Forensic Science	Chapter 4
	Ethios in i ordinale deletioe	Bowen
		Assignment 1: Case Studies
5	Codes of Ethics	Chapter 8
	Codes of Ethios	Bowen
6	An Ethical Approach to Forensic Professionalism	Chapter 9
	Ethics and Evidence Handling	Bowen
7	Unethical Behavior: The Fork in the Road	Links,
,	Good Examples of Bad Behavior	Chapters 6 & 7
	Cood Examples of Bad Bollaviol	Bowen
		Assignment 2:
		Case Studies
8	Forensic Science and the Legal System	Chapter 1 Bowers
9	The Admissibility of Forensic Expert Evidence	Chapter 3
	,,,,,,	Bowers
10	Professional Forensic Expert Practice	Chapter 4
11	Character Traits of the Expert Witness	Chapter 6
	'	Bowers
12	Voir Dire and Direct Examination	Chapter 7
		Bowers
13	Cross Examination	Chapter 8
		Bowers
14	Managing Your Forensic Case from Beginning to End	Chapter 5
		Bowers
15	Forensic Expert Ethics: Cases and Concepts about Ethical	Chapter 11
	Forensic Practice and Testimony in Court	Bowers
	Exam 1 (1-15)	
	Mock Court Preparation 1	
17		
	Mock Court Exercise 1	
19		
20	Mock Court Feedback 1	
21	Quality Assurance/Quality Control in Forensic Science-	
	What and Why?	
	•	
22	Standards, Accreditation and Certification – what they are	
	and processes	
23	ISO/IEC 17025 Overview	https://www.ascld.org/resource-
		library/ascld-policy-library/
		https://www.anab.org/forensic-
		accreditation/iso-iec-17025-
		forensic-labs

24	Other forensic standards including the FBI Quality Assurance Standards	https://www.fbi.gov/file- repository/quality-assurance- standards-for-forensic-dna-testing- laboratories.pdf/view
25	Handling QA in "Real Life": Reality Check and how QA can effect testimony	
26	Mock Court Preparation 2	
27	Mock Court Exercise 2	
28	Mock Court Exercise 2	
29	Mock Court Exercise 2	
30	Mock Court Feedback and Wrap up	
	Exam 2 (16-30)	

# TOX 860 Forensic and Analytical Toxicology 3 Credit Hours Tuesday and Thursdays 75 Minute Lecture/Meeting TBD Place TBD

Faculty	Department	Office	Phone	E-mail
Course	-			
Directors				
D.				
Cunningham				
D. Jones	Toxicology and Can	cer Biology		

Office hours: TBD

### **Course Description**

Study of the chemistry, biochemical activity, isolation and identification of drugs of forensic interest in biological materials. Postmortem, human performance and drug testing scenarios commonly encountered in forensic laboratories are appraised. Advanced concepts in sample preparation and analytical methods for presumptive and confirmatory testing are covered. Many factors affecting interpretation of toxicology results are considered. A molecular level approach is taken on many topics.

### **Prerequisites**

BCH 401G: Fundamentals of Biochemistry, TOX 810: Communicating in the Forensic Science Profession, TOX 800: Fundamentals in Forensic Science, IBS 611: Practical Statistics, TOX 840: Forensic Science Standards and Practices

### **Student Learning Outcomes**

Upon completion of the course work all students will be able to:

- 1. Differentiate the appropriate methods of analyses for a variety of drugs and poisons
- 2. Use multiple resources available to practitioners in the field
- 3. Design extraction procedures for common types of forensic biological samples
- 4. Evaluate common screening and confirmatory analytical methods for drugs and toxins in forensic biological samples
- 5. Understand the reagents, steps and underlying principles for rapid and automated immunoassays
- Use medical physiology principles to guide forensic testing and interpretation of results
- 7. Use the pharmacokinetic principles of adsorption, distribution, metabolism and excretion to guide forensic testing and interpretation of results
- 8. Consider diverse factors including route of administration, bioavailability, dosing, tolerance and sensitization, drug synergies and antagonism, epigenetics, and postmortem redistribution when Interpreting toxicological results

9. Explain drug and poison actions and the steps in an analytical method on a molecular level

### **Required Materials**

Principles of Forensic Toxicology, Barry Levine (ed.) AACC Press 4<sup>th</sup> edition.

# **Description of Course Activities and Assignments Course Assignments = 400 points Total**

- 2 Exams during the semester at 100 points each and a Final Exam at 120 points = 320 points
- 6 graded homeworks at 10 points each = 60 pts
- 1 short (5 minute) presentation at 20 points

### **Class Participation and Attendance = 100 Points total**

Class participation = 50 points and attendance = 50 points. Each missed class will result in a loss of 10 points for lack of class participation and attendance. Students will be called upon in class to voice opinions on assigned readings and lecture material.

### **Summary Description of Course Assignments**

Exams will cover material from the reading assignments, homework and in-class lecture/discussion.

### **Course Grading**

Students can accumulate 500 total points (plus bonus points).

Total = 400 pts course assignments+ 100 participation & attendance = 500 points

Grading scale for graduate students (no D for Grad Students):

90-100% = A 80 - 89% = B 70 - 79% = CBelow 70% = E

### **Tentative Course Schedule**

A linear listing of topics, assignment due dates, and examination dates.

Day		Topic	Assignment
1	August 24	Introduction	
'	August 24	miloddellon	
2	29	Post Mortem Forensic Toxicology	Chapter 1
_	23	1 Ost Mortelli i Orensic Toxicology	Chapter
3	31	Post Mortem Drug Analysis – typical samples and	
3	31	analysis protocols	
4	September		HW 1 Literature paper
4	5 September	Literature Paper (Comparison of Drug	rivv i Literature paper
	5	Concentrations in Vitreous Humor and Blood	
		Analysis)	
5	7	Human Performance Toxicology	Chapter 2
6	12	FDA, DEA, NHTSA, Other Government Agencies	
		and Controlled Substances (National Drug Threat	National Drug Threat
		Assessment)	Assessment
7	14	Drug Evaluation and Classification (DEC) and Drug	
		Recognition Experts (DRE)	
8	19	Forensic Drug Testing (SAMHSA)	Chapter 3
		,	·
9	21	Comparison of Drug Concentrations in Urine and	HW 2 Literature paper
		Oral Fluid	
10	26	Biochemistry Fundamentals Applied to Forensic	
		Toxicology: AA's, proteins, hemoglobin, albumin,	
		alpha 1 acid glycoprotein, epigenetics	
11	28	Antibodies and Enzymes - Immunoassay 1 (rapid)	Chapter 8
12	October 3	Immunoassay Formats –microtiter plate and	
		automated	
13	5	Anatomy/Physiology Fundamentals Applied to	
		Forensic Toxicology: Cell types, Major Organs,	
		Receptors and Neurotransmission	
14	10	Drug Delivery	
	.0		
15	12	Pharmacokinetics Fundamentals Applied to	Chapter 4
	12	Forensic Toxicology: Exposure	Chaptor 1
16	17	Pharmacokinetics Fundamentals Applied to	HW 3 TBD
	17	Forensic Toxicology: Routes of Administration and	1.00 0 100
		Bioavailability	
17	19	Pharmacokinetics Fundamentals Applied to	
''	19	Forensic Toxicology: Volume of Distribution	
18	24	Pharmacokinetics Fundamentals Applied to	
10	<b>4</b> 4	Forensic Toxicology: Phase 1 Metabolism	
10	26	Pharmacokinetics Fundamentals Applied to	
19	26	Forensic Toxicology: Phase II Metabolism	
		i orenale ruxicology. Fridae ii ivielabuliaiti	

20	31 Topic 10	Analytical Methods – Alcohol	Chapter 10 HW 4: Standard method in Forensic Lab
21	November 2	Analytical Methods – Liquid-Liquid Extraction	Chapter 5 HW 5: Structure and octanol water partition coefficients
22	7	Analytical Methods – Solid Phase Extraction	Chapter 5
23	9	Analytical Methods – Sample Treatment for GC and Derivatizations	
24	14	Emerging Designer Drugs and their Analysis	HW 6: Erowid website
25	16	Marijuana and its Analysis	Chapter 14
26	21	Opiates and their Analysis	Chapter 12
		THANKSGIVING: NO CLASS	
27	28	Stimulants and their Analysis	Chapters 13 and 15
28	30	Student Presentations, (Groups of 2-3)	Homework: presentations* See topics below
29	Dec 5	Student Presentations (Groups of 2-3)	Homework: presentations* See topics below
30	7	Student Presentations (Groups of 2-3)	Homework: presentations*

Exam 1 will cover lectures 1-10
Exam 2 will cover lectures 11-19
Exam 3 will be a comprehensive final exam

### **Final Exam Information**

The 3<sup>rd</sup> exam will be cumulative and given during the scheduled time and day for the final exam as set by the registrar.

### **Submission of Assignments**

Assignments will be submitted through Canvas. Submissions after the due date will receive zero points unless the cause of the late submission falls under the criteria for excused absences described below (a) serious illness, (b) illness or death of family member, (e) other circumstances found to fit "reasonable cause" by the professor.

### **University and Departmental Policies**

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### **TOX 910**

## **Forensic and Analytical DNA**

### **4 Credit Hours**

# Tues/Thurs 75 min Lecture/Meeting Fri 150 min Laboratory

Faculty Course Directors	Department	Office	Phone	E-mail
I. Mellon	Toxicology and Cancer Biology	108 Combs	257-6253	mellon@uky.edu
L. Davis				
S Wei	Pathology and Laboratory Medicine			

Office hours: By Appointment

### **Course Description**

This course will train students to become experts in the collection, identification and evaluation of biological evidence in criminal matters and DNA testing using current DNA technologies. Methods routinely used for the isolation of DNA from cells, DNA quantitation, PCR, electrophoretic separation, and DNA sequence determination will be discussed and studied in detail. Students will implement the information obtained from lectures in complementary laboratory sessions. Students will demonstrate an understanding of the theory and practice underlying the use of instrumentation in PCR, Real-Time PCR, capillary electrophoresis, next generation sequencing, the applications of robotics and the use of DNA data bases. The complex range of considerations that need to be considered in data collection, sample storage, data interpretation, analysis and reporting will also be covered in detail. Current uses of single nucleotide polymorphisms, mitochondrial DNA analysis, Y or X chromosome analysis and nonhuman DNA will be described. The legal aspects specific to DNA testing will be incorporated to prepare students for expert witness testimony.

### **Prerequisites**

BCH 401G: Fundamentals of Biochemistry, TOX 780: Advanced Human Genetics, ABT 461: Population Genetics, TOX 810: Communicating in the Forensic Science Profession, TOX 800: Fundamentals in Forensic Science, IBS 611: Practical Statistics, TOX 840 Forensic Science Standards and Practices

### **Student Learning Outcomes**

After completing this course, the student will be able to:

1. Demonstrate advanced knowledge of the theoretical and practical applications of routine methods used in forensic DNA analysis and DNA testing.

- 2. Demonstrate advanced knowledge of the theoretical and practical applications of routine instrumentation used in forensic DNA analysis and DNA testing.
- 3. Demonstrate advanced knowledge and apply the complex range of considerations required for data collection, analysis and interpretation.
- 4. Achieve rapid success and assimilation in employed positions in the fields of forensic science and DNA analysis.
- 5. Provide expert testimony in legal situations related to DNA analysis.

### **Required Materials**

1. Textbook

Advanced Topics in Forensic DNA Typing: Methodology, John M Butler, Copyright © 2012 Elsevier Inc.

http://www.sciencedirect.com.ezproxy.uky.edu/science/book/9780123745132

2. This course will also rely heavily on readings from the scientific literature, laboratory methods provided by commercial sources (ie: Promega) and links to additional readings and videos. Students must be able to access Canvas for lectures, class questions, and comments, reading and writing assignments, grades, and announcements.

### **Description of Course Activities and Assignments**

Students will be evaluated based on: 1) performance on four written examinations 2) performance on two homework assignments and 3) performance on 6 laboratory assignments.

Each exam will last approximately two hours and each will account for 18.75% of the final grade, with the total from all 4 exams accounting for 75% of the final grade. Exam questions will use multiple formats including short answer and problem solving. Locations for exams will be announced in class and posted on the Canvas website. Exam times during the semester are 4:00 – 6:00 PM. Please refer to the Room listing for the correct classrooms for each lecture and exam.

Another component of the final grade will be performance on two homework assignments and six laboratory assignments (25% of Final Grade). Each homework assignment will require a written submission describing the critical evaluation and understanding of papers chosen by the instructors from the scientific literature. Laboratory assignments will require submission of portions of the student's laboratory notebook that documents progression and understanding of the laboratory sessions. Assignments will be posted, submitted and graded through Canvas.

### **Course Assignments**

- 4 Exams at 150 points each, each covering didactic lectures and laboratory sessions = 600 points
- 2 graded homework assignments at 25 points each = 50 points
- 6 graded laboratory assignments at 25 points each = 150 points

### **Course Grading**

Grading scale for graduate students (no D for Grad Students):

90-100% = A80 - 89% = B

70 - 79% = C

Below 70%= E

### **Final Exam Information**

The 4<sup>th</sup> exam will be non-cumulative and given during the scheduled time and day for the final exam as set by the registrar.

### **Submission of Assignments**

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Acts of Sex- and Gender-Based Discrimination or Interpersonal Violence

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### **Tentative Course Schedule**

Number	Topic Topic	Assignment
Date		
1	Course Introduction, Forensic DNA Introduction and	Links,
Aug 22	History	Scientific
2	Lab 1: Introduction to the DNA Laboratory, Set Up,	Literature Links
Aug 23	Instrumentation, Safety, Reagents	LIIKS
3	Sample Collection, Storage, and Characterization	Chapter 1
Aug 29		
4	DNA Extraction Methods	Chapter 2
Sept 3	L L O DNA E ( C M (L L	Links
Sept 5	Lab 2: DNA Extraction Methods	Links
Sept 5	DNA Extraction Methods, Sample Extraction from Bone, Sample Handling, Contamination	Chapter 2 Written
·		Links
7 Sept 7	DNA Quantitation, Quality Assessment, Melting Curves	Chapter 3 Links
8 Sept 8	Lab 3: DNA Quantitation Methods, OD, Florescence, RT-PCR	Links Lab Report 1
9	DNA Amplification and Primers	Chapter 4
Sept 10	DNA Amplification and Filmers	Onapici 4
10	DNA Amplification, Capabilities and Cautions	Links,
Sept 12		Scientific
11	Lab 4 DOD DT DOD and Drive a Davis	Literature
11 Sept 13	Lab 4: PCR, RT-PCR and Primer Design	Links
3341.3	Exam 1 (1-7)	
12	DNA Amplification, Capabilities and Cautions	Links,
Sept 17	•	Scientific
10		Literature
13 Sept 19	Data Collection and Interpretation	Links
14	Lab 5: Gel Electrophoresis	Links
Sept 20	Lab of Col Library Front Colo	Lab Report 2
15	Short Tandem Repeat (STR) Loci and Kits	Chapter 5
Sept 24		Written
16 Sept 26	Capillary Electrophoresis: Principles and Instrumentation	Chapter 6 Assignment 1
17 Sept 27	Lab 6: PCR for STR Analysis	Links
18	Capillary Electrophoresis: Principles and Instrumentation	Links,
Oct 1		Scientific
19	Quality Assurance and Validation in Standard DNA	Literature Chapter 7
Oct 3	Testing	Chapter 7
20 Oct 4	Lab 7: Running Capillary Electrophoresis	Links Lab Report 3
21	Quality Assurance and Validation in Standard DNA	Links, OSAC,
Oct 8	Testing	Scientific
		Literature
22 Oct 10	DNA databases	Chapter 8
Oct 10		

23	Lab 8: STR Data Analysis and Statistics	Links
Oct 11	5 0 (0.45)	
24	Exam 2 (8-15)	Links
24 Oct 15	Degraded DNA	Links, Scientific
000.10		Literature
25	Low-Level DNA Testing: Issues, Concerns and Solutions	Chapter 11
Oct 17		Links,
		Scientific Literature
26	Lab 9: STR Data Analysis – strengths and limitations	Links
Oct 18	, c	
27	Single Nucleotide Polymorphisms and Applications	Chapter 12
Oct 22 28	X and Y-Chromosome Analysis	Chapter 13
Oct 24	A drid 1 - Official Canalysis	Onapici 10
29	Lab 10: Additional loci SNPs	Links
Oct 25	Miles de ser del al DNIA A l	Ob and 4.4
30 Oct 29	Mitochondrial DNA Analysis	Chapter 14
31	Missing Persons and Disaster Victim Identification Efforts	Chapter 9
Oct 31		
32 Nov. 1	Lab 11: TBD	Links
Nov 1	Molecular Autopsy	Links,
Nov 5	Noteculal Autopsy	Scientific
		Literature
	Exam 3 (16-22)	
34 Nov 7	Non-human DNA and Microbial Forensics	Chapter 15 Links,
INOV 7		Scientific
		Literature
35	Lab 12: Nonhuman DNA	Links
Nov 8	Data Interpretation – Mixtures.	Chapter 9
Nov 12	Data interpretation – Mixtures.	Chapter 9
37	Ancestry and Ethnicity	Links,
Nov 14		Scientific
38	Lab 13: Ancestry and Ethnicity Analysis	Literature Links
Nov 15	Lab 13. Afficestly and Ethinicity Affaiysis	Lab Report 5
39	Ancestry and Ethnicity	Chapter 16
Nov 19		
40 Nov 21	DNA Sequencing and Emerging Technologies	Links,
INUV Z I		Scientific Literature
		Assignment 2
41	Lab 14: Sequencing	Links
42 Nov 25	DNA Sequencing, Massive Parallel Sequencing and	Links,
Nov 25	Emerging Technologies	Scientific Literature
		Litoraturo
	Thanksgiving Nov 28 No Class and no lab	

43	Legal Aspects of DNA Testing and the Scientific Expert in	Chapter 18
Dec 3	Court	Links,
		Scientific
		Literature
44	Legal Aspects of DNA Testing and the Scientific Expert in Court: OSAC and Forensic DNA Standards	Links,
Dec 5	Court: OSAC and Forensic DNA Standards	Scientific
		Literature
45	Lab 15: Analyzing Sequencing Data and Databases	Links
Dec 6		Lab Report #6
Dec 9-13	Final Exam Week: Exam 4 (23-30)	

### **TOX 920**

# Instrumental Techniques in Forensic Chemistry 4 Credit Hours Tues/Thurs 75 min Lecture/Meeting Fri 150 min Laboratory

Faculty Course Directors	Department	Office	Phone	E-mail
R. Higashi	Toxicology and Cancer Biology	Todd 529	218-1027	rick.higashi@uky.edu
D. Cunningham				
M. Combs T. Tobin	Civil Engineering Veterinary Sciences			

Office hours: By Appointment

### **Course Description**

Theory and practice of modern instrumental methods used in forensic chemistry laboratories, including mass spectrometry. The class offers an in-depth description of the processes and techniques involved in detection, identification, and quantification of elemental or molecular ionic species by mass spectrometry techniques, and other sensitive analytical techniques. Topics covered in the course include: theory of mass spectrometry, methods of ionization, instrument design, combined chromatography and mass spectrometry, quantitative aspects of mass spectrometry, meta-stable ions in mass spectrometry, recent applications of mass spectrometry techniques, analytical chemistry instrumentation and methods used by forensic scientists for analysis of drugs, toxicology, trace evidence, and sample collection and processing.

### **Prerequisites**

Introductory chemistry, organic chemistry, introductory biology, BCH 401G: Fundamentals of Biochemistry, TOX 810: Communicating in the Forensic Science Profession, TOX 780: Special Problems in Toxicology: Preparing Professionals in Forensic Science and Analytical Genetics, TOX 800: Fundamentals in Forensic Science, TOX 840 Forensic Science Standards and Practices, IBS 611: Practical Statistics

### **Student Learning Outcomes**

After completing this course, the student will be able to:

- 1. Demonstrate advanced understanding of instrumentation techniques used in forensic chemistry.
- 2. Demonstrate advanced understanding of the theoretical and practical applications of routine methods used in forensic chemistry.

- 3. Apply the complex range of considerations required for data collection, analysis and interpretation used in forensic chemistry.
- 4. Gain sufficient theoretical understanding to critically evaluate and learn new techniques as technology advances in forensic chemistry.

### **Required Materials**

Special supplements from the Instructors. Chemical analysis textbook(s) will be suggested, but not required. Course communication will be via email and/or Canvas as appropriate to the specific case. All students are required to check both email and Canvas for any announcements. Proper attire for laboratory sessions is required, including goggles and covered shoes. The instructors may deny your lab session if proper safety-aware attire is not worn. We may also require you to watch a freshman safety video and take a safety exam.

This course will also rely heavily on selected readings from the scientific literature, laboratory methods provided by commercial and governmental sources, and links to additional readings and videos. Students must be able to access Canvas for lectures, class questions, and comments, reading and writing assignments, grades, and announcements.

### **Description of Course Activities and Assignments**

Students will be evaluated based on: 1) performance on four written examinations and 2) performance on 15 laboratory assignments.

Each exam will last approximately two hours and each will account for 18.75% of the final grade, with the total from all 4 exams accounting for 75% of the final grade. Exam questions will use multiple formats including short answer and problem solving. Locations for exams will be announced in class and posted on the Canvas website. Exam times during the semester are 4:00-6:00 PM. Please refer to the Room listing for the correct classrooms for each lecture and exam.

Another component of the final grade will be performance on 15 laboratory assignments (25% of Final Grade). Laboratory assignments will require submission of portions of the student's laboratory notebook that documents progression and understanding of the laboratory sessions. Assignments will be posted, submitted and graded through Canvas.

### **Course Assignments**

- 4 Exams at 150 points each, each covering lectures and laboratory sessions = 600 points
- 15 graded laboratory assignments at ~13 points each = 200 points

### **Course Grading**

Grading scale for graduate students (no D for Grad Students):

90-100% = A 80 - 89% = B

70 - 79% = C

Below 70%= E

### **Final Exam Information**

The 4<sup>th</sup> exam substitutes for the conventional final exam; it will be non-cumulative and given during the scheduled time and day for the final exam as set by the registrar.

### **Submission of Assignments**

Assignments will be submitted through Canvas. Submissions after the due date will receive zero points unless the cause of the late submission falls under the criteria for excused absences described below (a) serious illness, (b) illness or death of family member, (e) other circumstances found to fit "reasonable cause" by the professor.

### Lab Repeat or Make-up Policy:

There will be no lab experiment **repeats**. For "make-up", if a student is absent for <u>one</u> of the labs, he/she is required to present a legitimate, documented excuse (e.g. letter from medical professional) for the missed lab, whereupon the instructors will decide on the nature and time of the **make-up** experiment and report. In any case, total of only one lab can be a **make-up** to retain full credit for lab portion of the grade. For additional information regarding absence due to University events, edicts (e.g. bad weather), and other legitimate absences, see below.

### **Writing Reports:**

All reports must state the *Purpose(s)* of the experiment, *Experimental Procedures* including date(s) and time(s) conducted, all materials, chemical procedures, instrument (model, pertinent hardware, software used, run parameters), *Results*, *Discussion*, and *References*. Points will be deducted for inadequate descriptions. For the report, <u>you</u> must: (a) proactively obtain the information you need for your Reports; (b) demonstrate your understanding of what information goes where (e.g. distinguish "Results" vs. "Discussion"). Communication clarity is a big factor: Reports are always written for the understanding by <u>others unfamiliar</u> with the details of the work, so organize your data and figures before you start writing.

### **University and Departmental Policies**

### **Attendance Policy**

Attendance for each class session is mandatory. Students will receive a 10 point deduction for each unexcused absence from a lecture and a 30 point deduction for each unexcused absence from a laboratory session.

**Excused Absences** Students need to notify the professor of absences prior to class when possible. Senate Rules 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays

no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, <a href="http://www.uky.edu/Ombud/ForStudents\_ExcusedAbsences.php">http://www.uky.edu/Ombud/ForStudents\_ExcusedAbsences.php</a>.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per Senate Rule 5.2.4.2, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

### **Verification of Absences**

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appropriate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

### **Academic Integrity**

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <a href="http://www.uky.edu/Ombud">http://www.uky.edu/Ombud</a>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Senate Rules 6.3.1 (see <a href="http://www.uky.edu/Faculty/Senate/">http://www.uky.edu/Faculty/Senate/</a> for the current set of Senate Rules) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

### Accommodations due to disability

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## Forensic Analysis Instrumentation Course Lecture/Labs

Number	Topic	Assignment
Date		111 0 1 17
1	Course Introduction: Concepts of Detection vs Identification vs	Links, Scientific
Aug 22	Quantification; Sample Prep Intro  Lab 1: Basic quantitative chemistry	Literature,
Aug 23	Lab 1. Dasic quantilative chemistry	
7 dg 23	Introduction to organic MS	
Aug 29	Thirdustion to organic We	
4	Intro to MS (cont)	
Sept 3		
Sept 5	Lab 2: Polar & nonpolar extractions, solid phase extr. Detect by	Lab 1 Report
	simple colorimetric?	
6	Why Chromatography? GC-FID; GC-EI/CI-MS	
Sept 5	(cont) CC FI/CLMS: Porjuitization	
Sept 7	(cont) GC-EI/CI-MS; Derivitization	
8	Lab 3: Analysis of volatile compounds by GC-MS	Lab 2 Report
Sept 8	Lab 6. Thirdiyolo of Volatile compounds by Co-1910	Lab Z Nopoli
9	Why Chromatography? LC; LC-MS	
Sept 10		
10	(cont) LC-MS (other types e.g. CE, IC)	
Sept 12		
11	Lab 4: Derivatization of standards and extracts, GC-MS analysis	Lab3 Report
Sept 13	of tBDMS derivatized	
12	Exam 1 (1-7) Why Not Chromatography? Direct introduction (NS, MALDI,	
	LDTD, etc) MS1 (RMH)	
13	Why Not Chromatography? Direct introduction MS <sup>n</sup> , MS imaging	
Sept 19	(RMH)	
14	Lab 5: LC-MS exercise	Lab4 Report
Sept 20		·
15	Why Not Chromatography? Ultra-high resolution MS <sup>n</sup>	
Sept 24		
16	Data Analysis	
Sept 26 17	Lab 6: NS-MS exercise (RMH) [LDTD if available]	Lah5 Papart
Sept 27	Lab U. 140-1410 exercise (MIVIII) [LD I D II avallable]	Lab5 Report
18	Quality Assurance and Validation, instrumental QA/QC	
Oct 1	assumption and variation, mondimental will ac	
19	Elemental MS: ICPMS (incl sample prep), LA-ICPMS, Isotope	
Oct 3	ratio MS	
20	Lab 7: UHR-FTMS exercise	Lab6 Report
Oct 4	Drief Commence NIMD Techniques Commenced LibertStant	
21 Oct 8	Brief Survey of NMR Techniques: Compound Identification	
22	Chemical classes of drugs & toxicants: integration of chemical	
Oct 10	structure with sample prep and spectroscopic evidence for	
	targeted analysis	
23	Lab 8: ICPMS exercise	Lab7 Report
Oct 11		'
	Exam 2 (8-15)	

0.4	Determination of Halmana / Hatamatad / Actual actual structure	
24 Oct 15	Determination of Unknowns / Untargeted / Actual novel structure	
Oct 15	challenges	
25	MTP techniques	
Oct 17		
26	Lab 9: Data Analysis and Statistics	Lab8 Report
Oct 18		
27	Spectrophotometry Theory and Applications	
Oct 22	- provide the second se	
28	FTIR Theory and Applications	
Oct 24	2. <b>7</b> 2. 2. <b>1 1 1</b> 2. 2. 2. 2.	
29	Lab 10: Biohazard training: Handling and clean-up of blood;	Lab9 Report
Oct 25	Liquid-Liquid Extraction of Blood	zase nepen
30	Additional chromatography (i.e. Comparison of HPLC with	
Oct 29	ultraHPLC)	
31	TBD	
	עסו	
Oct 31	1 1 44 00 11 1 4 51104 /11 1 1 1 1 1 1	1 1 40 5
32	Lab 11: 96-well plate ELISA (blood, urine and saliva)	Lab 10 Report
Nov 1		
33	Additional chromatograph (i.e., Structure-retention time	
Nov 5	relationships in GC and GC-FTIR)	
	Exam 3 (16-22)	
34	Uncertainty estimation in blood alcohol testing	
Nov 7	Officertainty estimation in blood alcohol testing	
1407 /		
35	Lab 12: Homogeneous immunoassay (EMIT)	Lab 11 Report
Nov 8	Lab 12. Homogeneous immunoassay (Livii)	Lab 11 Keport
	Electronic and Orlea Basedian	
36	Fluorescence and Color Reactions	
Nov 12		
07		
37	Capillary electrophoresis	
Nov 14		
		L L 40 D
38	Lab 13: Blood alcohol by headspace GC-FID; also breathe alcohol	Lab 12 Report
Nov 15	(portable electrochemical meter)	
	,	
39	Atmospheric pressure ionization MS (DART and DESI)	
Nov 19		
40	Microtiter plate readers and microfluidics	
Nov 21	<b>'</b>	
41	Lab 14: Carbon monoxide in blood by visible spectroscopy	Lab 13 Report
42	TBD	
Nov 25		
1407 23	Thanksgiving Nov 28 No Class and no lah	
40	Thanksgiving Nov 28 No Class and no lab	
43	Legal Aspects of Chemical Analysis and the Scientific Expert in	
Dec 3	Court	
_ 44	Legal Aspects of Chemical Analysis and the Scientific Expert in	
Dec 5	Court: TBD	
45	Lab 15: Hydrolysis of glucuronides	Lab 14 and 15
Dec 6	· · ·	Report

# TOX 980 Internship in Forensic Toxicology and Analytical Genetics Section 00X Semester Y

**Instructor of Record: Davy Jones** 

**Description**: The internship (practicum) component of the program provides the student with an opportunity for immersed participation in the professional work environment associated with a laboratory practicing methods in forensic toxicology or analytical genetics. Through hands-on experience in a real work site the student applies the formal classroom knowledge to the real work setting. The work/learning arrangement is supervised by a program faculty member plus the designated representative of the internship site, which will be a private industry, governmental, hospital or other appropriate setting providing real world training in practices and procedures of forensic toxicology or analytical genetics.

**Prerequisites**: Enrollment in the Master of Forensic Toxicology and Analytical Genetics Program; Approval of Director of Graduate Studies.

**Academic Credit:** 3 hrs per enrollment except as otherwise approved by the Director of Graduate Studies; maximum 6 hrs credit towards degree

Meeting Time/Place: TBD

# The Internship Activity

Normally the internship is an immersed activity in the professional work environment associated with a laboratory practicing methods in forensic toxicology or analytical genetics. The first internship may be done during the summer between the second and third semesters, and the second internship during the fourth semester, or both may be done during the fourth semester.

- 1. The precise dates to begin/end the internship and the distribution of attendance hours during the internship period are negotiated into a written "Internship Agreement" among and signed by the mentoring supervisor at the host work site, the student's degree program Major Advisor, and the student. Our program asks the work site to allow the intern to observe off site events such as courtroom testimony, crime scene, etc. as these occur as part of the host site professional activities.
- Students may be required to accept a background check and/or drug test by the host laboratory. The decision by the host site to accept the student as an intern is not appealable.

- 3. Before the internship starts, the student "Internship Agreement" must be signed by all three parties and the student have attended an internship orientation conducted by the degree program.
- The student is required to maintain regular attendance during the internship except for illness, emergency or permission of the responsible host site mentoring supervisor.
- 5. Through the internship period, the intern must maintain a proper and complete notebook of the internship activities. This notebook must be submitted to the program Major Advisor at the completion of the internship, and may be examined by the either host site responsible supervising mentor or by the student's degree program Major Advisor at intervals during the internship.
- 6. At the conclusion of the internship course, the student must submit a professionally written report of the purposes and activities of the internship, a scholarly review of information pertinent to those purposes and activities, its important outcomes of the activities, and a synthesizing interpretation of those important outcomes.
- 7. The internship report will be the basis of the student's required presentation of a poster at a culminating program event.

# Grading:

Evaluation by host laboratory mentor, in consultation
with the student's program Major Advisor 25%
Student log book of internship experience 25%
Student final report 25%
Student attendance and presentation at culminating event 25%

# Example Schedule for 3 credit hours (7 internship weeks; 200 hr)

Week 1 – Orientation to work site laboratory, case management system
Weeks 2, 3 – Rotation through laboratory sections of the work site, if feasible
Remaining Weeks – Work site project and opportunities to attend court
testimony, crime/collection scene, etc.

# **Outcomes of the Internship Learning Experience Include the Student Will Have:**

Integrated of theoretical foundation of Forensic Toxicology or Analytical Genetics with the practical aspects of an organized professional work setting.

Analyzed and interpreted the collected forensic data in a logical way to assess possible solutions to problems in Forensic Toxicology or Analytical Genetics.

Developed skills in building collaborative relationships with diverse colleagues and solving problems in an ethical manner and within a team structure.

Elaborated thoughts, arguments and conclusions clearly and effectively in written professional format;

# **Final Grades:**

90 - 100% = A

80 - 90% = B

70 - 80% = C

below 70% = fail

# **ABSENCES**

Absence from a class or internship site daily activity will result in a proportional deduction of that day's contribution to the activity evaluation that comprises 50% of the course grade (see above). The only exceptions will be absences allowed by the University Senate Rules. Senate Rule 5.2.4.2 includes the following specific situations as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, and (d) major religious holidays.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

The Instructor will determine an academic activity to 'make-up' for missed class participation in the case of an excused absence.

Students arriving late to a class lecture or lab meeting (or leaving early) will have a prorated amount of their class attendance grade deducted, calculated by the time that they arrived late (or left early).

#### **Verification of Absences**

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness or death in the family. In all cases of a "University-related trip" absence an official, original, signed, papercopy excuse is also required to be presented to the Instructor before the date of the missed class. A phone number and/or email address of a University-approved official associated with the event must be included with this papercopy so verification can be made.

In the situation of interview for a full-time employment position post-graduation or interview for graduate or professional school, appropriate supporting evidence for the

excused absence is a written attestation from the interviewer that the student had little or no control over the date and time of the interview and that the student is not able to reschedule the interview to a non-conflicting time reasonably close to the originally scheduled time.

# **Academic Integrity**

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <a href="http://www.uky.edu/Ombud">http://www.uky.edu/Ombud</a> A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of Student Rights and Responsibilities (available online http://www.uky.edu/StudentAffairs/Code/part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these policies shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1 of Senate Rules).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

# Accommodations relating to disability

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. If you have a documented disability that requires academic accommodations, you must provide me with a Letter of Accommodation from the Disability Resource Center (Suite 407 Multidisciplinary Science Center. Phone: 257-2754. Email: dtbeach1@uky.edu).

#### **Classroom Behavior Policies**

Students are expected to participate in class discussions without distractions. Hence, cell phones should remain face down and computers shall only be in use when instructors indicate that they may be used. Students are expected to maintain a level of dignity and respect towards faculty, staff, and fellow students. Students are expected to value differences among all members of our academic community. Students have the right to take reasoned exception and to voice opinions contrary to those offered by the instructor and/or other students (S.R. 6.1.2). Equally, a faculty member has the right -- and the responsibility -- to ensure that all academic discourse occurs in a context characterized by respect and civility. Acceptable decorum and civility does not include attacks of a personal nature or statements denigrating another on the basis of race, sex, religion, sexual orientation, age, national/regional origin.

#### Non-Discrimination Statement and Title IX Information

The University of Kentucky faculty are committed to supporting students and upholding the University's non-discrimination policy. Discrimination is prohibited at UK. If you experience an incident of discrimination we encourage you to report it to Institutional Equity & Equal Opportunity (IEEO) Office, 13 Main Building, (859) 257-8927. Acts of Sex- and Gender-Based Discrimination or Interpersonal Violence If you experience an incident of sex- or gender-based discrimination or interpersonal violence, we encourage you to report it. While you may talk to a faculty member or TA/RA/GA, understand that as a "Responsible Employee" of the University these individuals MUST report any acts of violence (including verbal bullying and sexual harassment) to the University's Title IX Coordinator in the IEEO Office. If you would like to speak with someone who may be able to afford you confidentiality, the Violence Intervention and Prevention (VIP) program (Frazee Hall – Lower Level; http://www.uky.edu/StudentAffairs/VIPCenter/), the Counseling Center (106 Frazee Hall, http://www.uky.edu/StudentAffairs/Counseling/), and the University Health Services (http://ukhealthcare.uky.edu/uhs/student-health/) are confidential resources on campus.

# Master of Forensic Toxicology and Analytical Genetics: Curriculum Each Semester

Core	Concentration #1 Forensic Toxicology/Chemistry	Concentration #2 Total Cred Forensic/Analytical Genetics		its	
			Conc. 1	Conc. 2	
Year 1 Fall TOX 800: Fundamentals in Forensic Sciences (4)  IBS 611 Practical Statistics (1)  BCH 401G Fundamentals of Biochemistry (3)  TOX 810: Communicating in the Forensic Science Profession (1)			9	9	
Year 1 Spring TOX 840: Forensic Science Standards and Practices (3)  TOX 780: Special Problems in Toxicology: Preparing Professionals in Forensic Science and Analytical Genetics (1)	TOX 860: Forensic and Analytical Toxicology (3) TOX 780: Special Problems in Toxicology: Drug Metabolism and Disposition (2)	ABT 461G: Population Genetics (3) TOX 780: Special Problems in Toxicology: Advanced Human Genetics (2)	9	9	
Year 2 Fall TOX 880 Ethics and Professional Practice in Forensic Science and Analytical DNA (3)	TOX 920 General Instrumental Techniques in Forensic Chemistry (4) Elective (2)	IBS 602: Molecular Biology and Genetics (3) TOX 910 Forensic and Analytical DNA (4)	9	10	
Year 2 Spring TOX 980: Internships in Forensic Toxicology and Analytical Genetics (2 x 3 = 6) (Could take 3 credits during Summer of first year)	Elective (3)	Elective (3)	9	9	
Total Credits			36	37	

From: Huddleston, Alyssa <alyssa.huddleston@uky.edu> On Behalf Of DiPaola, Robert

Sent: Thursday, November 15, 2018 4:05 PM

To: Holloway, Lawrence < larry.holloway@uky.edu>; Blackwell, David

<David.Blackwell@uky.edu>

Cc: Chalfant, Anna <anna.chalfant@uky.edu>; Sanger, Matthew <matthew.sanger@uky.edu>;

DiPaola, Robert <RSDiPaola@uky.edu>; Geddes, James <jgeddes@uky.edu>

Subject: FW: Request to include Professional Master's Degree on December agenda

Dear Provost Blackwell,

We are writing to request that the College of Medicine proposal for a Professional Master's Degree be on the agenda for the Board of Trustees meeting on December 11. We apologize for missing the November 5 deadline for this agenda request. This proposal was submitted out of the College of Medicine on August 3 and has been unanimously approved by the Graduate Council. This is the first professional degree of its kind for our University and the Commonwealth and we are excited with the anticipation of a Fall Semester 2019 starting class.

As indicated by Dr. Bird-Pollan below, "the next step is that the Senate Academic Programs Committee (SAPC) reviews the proposal. Their next meeting is November 29 ... they may agree to add this item to their 11/29 agenda. If the SAPC approves the proposal on the 29th, it could go to the Senate Council on December 3. If Senate Council approves the proposal, it could be on the Senate agenda on December 10. The Board of Trustees meeting is on December 11."

A December Senate/Board approval is needed so that CPE approval can be obtained in Feb. 2019. This would enable us to recruit students for the start date of August 2019. Any delay in approval would jeopardize this start date and could result in a one year delay in program implementation.

If there is anything our college can do to further to expedite the December BOT approval of this proposal, enabling effective recruitment for a Fall 2019 start, please let us know.

With sincere thanks,

Robert DiPaola, MD Dean

James Geddes, PhD Vice Dean of Research

Rebecca Dutch, PhD Associate Dean of Biomedical Education

------

From: Holloway, Lawrence

Sent: Friday, November 16, 6:11 PM

Subject: RE: Request to include Professional Master's Degree on December agenda

To: DiPaola, Robert, Blackwell, David

Cc: Chalfant, Anna, Sanger, Matthew, Geddes, James

Bob and Jim,

I spoke to the Provost briefly regarding this. He said the proposal should continue to go through the approval process, and as we approach the BOT meeting date, he can evaluate whether it is appropriate to walk it onto the BOT agenda or not. However, at this time, it looks like there are several approval steps that need to be completed before that can be considered.

Please keep us updated on the progress of the proposal.

-Larry

-----

Larry Holloway
Vice Provost
State Director, Kentucky DOE EPSCoR
TVA Professor of Electrical and Computer Engineering
202 Main Building
University of Kentucky, Lexington, KY 40506. USA

email: holloway@uky.edu Phone: 859-323-5357

From: Geddes, James

To: Mellon, Isabel; Jones, Davy

Cc: <u>DiPaola, Robert; Dutch, Rebecca; Feddock, Christopher; Griffith, Charles; Anderson, Christy L; Allison, Roxie;</u>

Kidd, Brad; Dobbs, Michael; St Clair, Daret; Chalfant, Anna; Huddleston, Alyssa A

Subject: RE: Meeting on Professional Masters Program

Date: Tuesday, June 05, 2018 9:02:06 AM

#### Isabel and Davy,

Thank you for proposing the Professional Forensics Master's program, and preparing the extensive documentation required. COM is highly supportive of this program and will be pleased to cover the startup costs of \$100,000 in equipment/supplies and also 1 month of planning effort for the EKU faculty member. Once the program begins admitting students, it is anticipated that tuition revenues will be more than sufficient to cover ongoing costs.

If any additional information would be helpful, just let me know.

#### **Thanks**

Jim

James Geddes, PhD | Vice Dean of Research | Faculty, Spinal Cord and Brain Injury Research Center (SCoBIRC) | Professor, Dept. Neuroscience | College of Medicine 800 Rose Street, Suite MN144, Lexington, KY 40536-0298 Office: 859.323.5135 | Email:jgeddes@uky.edu



From: Mellon, Isabel

**Sent:** Monday, May 21, 2018 5:03 PM

To: Geddes, James <jgeddes@uky.edu>; Dutch, Rebecca <rebecca.dutch@uky.edu>; Dobbs, Michael

<mrdobb0@uky.edu>

Cc: Jones, Davy <djones@uky.edu>

Subject: Meeting on Professional Masters Program

#### Hi All,

I have attached two documents in preparation for our meeting to discuss resources for the Professional Forensics Master's program that we will have on Wednesday. One document is the draft of the senate document that was voted on by the department and is now under review by the COM review committee. The second is an initial list of questions sent to us from the COM review committee last Thursday and our responses to the questions. As you can see, many of their questions relate to resources. We have indicated that we are meeting with you on Wed. with the hope that our discussion can help with more detailed responses.

The COM review committee also indicated: After initial review of your proposal for the Professional

Master's Degree, the Committee is very supportive of your proposal and feels this is a great program, however, they have the following comments and would like clarification on the following questions. See below. Please reply to me with your response at your earliest convenience so that the Committee may continue its review.

Please let me know if you would like me to provide additional information before our meeting. Thank you, Isabel

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

 From:
 Pearson, RaeAnne

 To:
 Mellon, Isabel; OSPIE

 Co:
 Jones, Dany

Cc: <u>Jones, Davy</u>

Subject: RE: New Professional Masters Degree Program

Date: Thursday, March 22, 2018 1:06:52 PM

Attachments: <u>image004.png</u>

National Trends in Degrees Conferred (2).pdf

image003.png

#### Interesting!

So we use national data on degrees conferred to benchmark and I can't actually find any Master's level programs in 40.0510, only options at the bachelor's level. I had much better success with 43.0106. I am attaching a copy of the dashboard we use and you may want to review the curriculum at the top ranking programs to see how similar they are to what you are proposing.

Ultimately the CIP Code decision is the faculty's decision, but please let me know if you have further questions.

### RaeAnne Pearson, PhD

Office of Strategic Planning & Institutional Effectiveness

University of Kentucky Phone: 859-218-4009 Fax: 859-323-8688

Visit the Institutional Effectiveness Website: http://www.uky.edu/ie

# see blue.

From: Mellon, Isabel

Sent: Thursday, March 22, 2018 12:45 PM

To: Pearson, RaeAnne; OSPIE

Cc: Jones, Davy

**Subject:** RE: New Professional Masters Degree Program

Hi RaeAnne, Yes I just signed up for the workshop a few minutes ago.

Here is a draft of the description of the program. Davy Jones had researched CIP codes and I pasted some of what he came up with below the description. Thank you. Isabel

The Master of Forensic Toxicology and Analytical Genetics is designed to prepare professionals with an advanced training in focused areas of forensic science while developing workplace skills highly valued by employers in related fields. Requirements for admission to the program will include an undergraduate degree in biology, chemistry, forensic science or a closely related discipline and submission of GRE scores that meet the minimum requirements of the Graduate School. The program is designed to be completed in 4 consecutive fall and spring semesters with a requirement of the completion of 32 credits. The program will have two areas of concentration: one concentration will focus on Forensic Toxicology/Chemistry and the second on Forensic/Analytical Genetics. Through a common core curriculum, students in both concentrations will have foundational information and a skill set in advanced forensic science, writing, communication,

professionalism, ethics, legal perspectives and workplace-specific laboratory skills. Through a rigorous targeted finishing curriculum in either concentration, including two rigorous internship experiences, the graduates will be competitive for workforce deployment in the areas of private industry drug testing, private DNA analysis, forensic governmental divisions, and hospital clinical labs. The faculty of record for the program is the Graduate Faculty in Toxicology and Cancer Biology. The department has extensive experience in the education and training of graduate students and longstanding training programs leading to a Master of Science degree in Toxicology and a Doctor of Philosophy degree in Toxicology and Cancer Biology. This proposed program is unique and differs from existing programs in the department in that it is focused on professional employment upon graduation and is not a preparatory degree for further academic research.

Detail for CIP Code 40.0510

Title: Forensic Chemistry.

Definition: A program that focuses on the application of chemical techniques and instrumentation to the analysis and evaluation of physical evidence to aid in criminal investigations. Includes instruction in analytical, inorganic, organic, and physical chemistry; biochemistry; forensic toxicology; instrumental analysis; crime scene processing; criminal investigation; forensic laboratory technology; and applicable law.

Detail for CIP Code 43.0106

Title: Forensic Science and Technology.

Definition: A program that focuses on the application of the physical, biomedical, and social sciences to the analysis and evaluation of physical evidence, human testimony and criminal suspects. Includes instruction in forensic medicine, forensic dentistry, anthropology, psychology, entomology, pathology, forensic laboratory technology and autopsy procedures, DNA and blood pattern analysis, crime scene analysis, crime scene photography, fingerprint technology, document analysis, witness and suspect examination procedures, applicable law and regulations, and professional standards and ethics.

From: Pearson, RaeAnne

Sent: Thursday, March 22, 2018 12:36 PM

To: Mellon, Isabel <mellon@uky.edu>; OSPIE <ospie@l.uky.edu>

Cc: Jones, Davy <djones@uky.edu>

**Subject:** RE: New Professional Masters Degree Program

Hi Isabel,

We are in the process of revising the first step of the process. Have you received an invite to our workshop next week? We will discuss in detail the next steps and have an updated form for your to complete. However, I can assist you right now with a CIP Code if you have a brief description of the program you are proposing. Thanks

# RaeAnne Pearson, PhD

Office of Strategic Planning & Institutional Effectiveness

University of Kentucky Phone: 859-218-4009 Fax: 859-323-8688

Visit the Institutional Effectiveness Website: http://www.uky.edu/ie

see blue.

From: Mellon, Isabel

Sent: Thursday, March 22, 2018 12:32 PM

**To:** OSPIE **Cc:** Jones, Davy

**Subject:** New Professional Masters Degree Program

Hi —Our department is planning the development of a new professional masters degree and it indicates to contact you in the program submission form. What information should I provide regarding this process and possible CIP codes?

Thank you.

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

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From: Moe, Luke
To: Mellon, Isabel

Cc: Fox, Charles; Jones, Davy

**Subject:** Re: Permission for program use of ABT 461 **Date:** Wednesday, April 18, 2018 1:56:42 PM

Hi Isabel.

Our steering committee was supportive of this idea. Chuck (cc'ed) was open to the idea of exploring options for making a "G" version of this, or even a 461/561 scenario. This might take a bit of legwork, but could prove useful in the long run for our program as well.

Let me know if there is anything you will need from us in the near term.

Thanks again for reaching out, this sounds like an exciting program.

Best, Luke

Luke A. Moe
Associate Professor
Dept. of Plant & Soil Sciences
311 Plant Science Building
University of Kentucky
Lexington, KY 40546-0312

office: 859-218-0761 fax: 859-257-7125

http://moelab.weebly.com/

**From:** "Mellon, Isabel" <mellon@uky.edu> **Date:** Monday, April 9, 2018 at 2:29 PM **To:** "Moe, Luke" <luke.moe@uky.edu>

Cc: "Fox, Charles" <cfox@uky.edu>, "Jones, Davy" <djones@uky.edu>

Subject: RE: Permission for program use of ABT 461

Yes – spring is when we have it in our curriculum and thank you for pointing that out. The timeline is perfect. Thank you so much! Isabel

From: Moe, Luke

**Sent:** Monday, April 09, 2018 2:19 PM **To:** Mellon, Isabel <mellon@uky.edu>

Cc: Fox, Charles <cfox@uky.edu>; Jones, Davy <djones@uky.edu>

Subject: Re: Permission for program use of ABT 461

Hi Isabel,

Thanks for reaching out. We will be having a steering committee meeting next week (April 18), and I will put this on the agenda. I'm sure that Chuck mentioned that this is a "Spring only" course, which is something that you may need to consider. Of course, if enrollment would continue to increase we would be open to offering this both semesters.

I hope this timeline is satisfactory.

Best, Luke

Luke A. Moe
Associate Professor
Dept. of Plant & Soil Sciences
311 Plant Science Building
University of Kentucky
Lexington, KY 40546-0312
office: 859-218-0761

fax: 859-257-7125

http://moelab.weebly.com/

From: "Mellon, Isabel" < mellon@uky.edu > Date: Monday, April 9, 2018 at 2:13 PM
To: "Moe, Luke" < luke.moe@uky.edu >

Cc: "Fox, Charles" <<u>cfox@uky.edu</u>>, "Jones, Davy" <<u>djones@uky.edu</u>>

**Subject:** Permission for program use of ABT 461

Dear Luke,

The Dept. of Toxicology and Cancer Biology is developing a new professional science master's degree program in Toxicology. This nonresearch Master's degree will provide advanced training to students toward rapid workforce deployment upon graduation, in the two concentration areas of Forensic Toxicology and Forensic DNA/Genetics. We would like to have as a part of the required curriculum for the DNA/Genetics concentration that the students take ABT 461: Population Genetics. We have spoken with Chuck Fox and he has indicated his willingness to discuss adding a component, such as a writing assignment, to meet the needs of a graduate level course for our students if you and your program are willing to consider this. For example, it could have a G designation or two designations such as ABT/461/561 (or 661). The graduate level designation usually involves adding a research paper or proposal for the graduate students. We anticipate an initial cohort of 4-5 students for the DNA concentration with it growing as we become more established.

Can you please assess whether your department/program will support that our curriculum would use this course? The current University Senate Rules/guidelines specify for the course-homing

department faculty to be consulted before our new program can utilize the course of another department, and that the Chair of the course-homing department would provide the letter of support either attesting that the department faculty agree to our use of the course or attach minutes of the department faculty meeting showing that support. Since yours is a program, perhaps something indicating that the program has discussed and approved this if they agree.

Please let me know if you have any questions and we thank you for all help in our development of this new program.

Isabel

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

From: <u>Hunter Moseley</u>
To: <u>Murphy, Michael</u>

 Cc:
 Mellon, Isabel; Spear, Brett; Dutch, Rebecca; Jones, Davy

 Subject:
 Re: Request Permission for IBS 611 and IBS 602

**Date:** Monday, April 09, 2018 12:56:23 PM

I have no concerns.

#### Hunter

On Mon, Apr 9, 2018, 12:49 PM Murphy, Michael <<u>michael.murphy@uky.edu</u>> wrote: That should be fine - we only start to run into problems if we get over 30, but we can accommodate it. Hunter? Any concerns?

From: Mellon, Isabel

Sent: Monday, April 9, 2018 12:49 PM

To: Murphy, Michael <<u>michael.murphy@uky.edu</u>>; Spear, Brett <<u>bspear@uky.edu</u>>;

Dutch, Rebecca < rebecca.dutch@uky.edu>

Cc: Jones, Davy <djones@uky.edu>; Moseley, Hunter <hunter.moseley@uky.edu>

Subject: RE: Request Permission for IBS 611 and IBS 602

Good question. Our ultimate target is 15 each year but it I suspect it will take a few years to reach that number. So maybe the first year would have 8 students? We could definitely have flexibility with scheduling since we are starting several new courses.

From: Murphy, Michael

Sent: Monday, April 09, 2018 12:44 PM

To: Mellon, Isabel <mellon@uky.edu<mailto:mellon@uky.edu>>; Spear, Brett

<<u>bspear@uky.edu</u><mailto:<u>bspear@uky.edu</u>>>; Dutch, Rebecca <<u>rebecca.dutch@uky.edu</u><mailto:<u>rebecca.dutch@uky.edu</u>>>

Cc: Jones, Davy <djones@uky.edu<mailto:djones@uky.edu>>; Moseley, Hunter

Subject: RE: Request Permission for IBS 611 and IBS 602

I have no problem with the addition. However - and a similar issue came up two years ago - if the enrollment for the course gets up near 40 again, we will need to have two sections. Fortunately, Hunter and I did add a second section last year which should still be on the books. Scheduling it was a bit challenging, though. Isabel - do you have a general idea of how many students this might be?

P

From: Mellon, Isabel

Sent: Monday, April 9, 2018 12:35 PM

To: Spear, Brett < bspear@uky.edu < mailto: bspear@uky.edu >>; Dutch, Rebecca

<rebecca.dutch@uky.edu<mailto:rebecca.dutch@uky.edu>>

Cc: Jones, Davy <<u>djones@uky.edu</u><mailto:<u>djones@uky.edu</u>>>; Murphy, Michael <<u>michael.murphy@uky.edu</u>>>; Moseley, Hunter

<hunter.moseley@uky.edu<mailto:hunter.moseley@uky.edu>>

Subject: Request Permission for IBS 611 and IBS 602

From: Murphy, Michael

To: Mellon, Isabel; Moseley, Hunter

Subject: RE: Request Permission for IBS 611 and IBS 602

Date: Monday, October 15, 2018 8:03:06 AM

Absolutely – that's totally fine with me, Isabel.

We just like to have some basic biochem background, since a lot of the examples come from there. But 401G is more than sufficient, IMO.

Cheers,

Р

From: Mellon, Isabel

Sent: Saturday, October 13, 2018 2:58 PM

To: Murphy, Michael <michael.murphy@uky.edu>; Moseley, Hunter <hunter.moseley@uky.edu>

**Subject:** RE: Request Permission for IBS 611 and IBS 602

Hi – Our forensic masters program is at graduate council for review. The reviewer noticed that IBS 611 lists the taking of IBS 602 and 601 as prerequisites or taking them concurrently. Will you allow BCH 401G as a substitute for IBS 601 since that is what we are requiring in our curriculum. Just let me know if that is OK. Thank you. Isabel

From: Murphy, Michael

**Sent:** Monday, April 09, 2018 12:50 PM

**To:** Mellon, Isabel <<u>mellon@uky.edu</u>>; Spear, Brett <<u>bspear@uky.edu</u>>; Dutch, Rebecca

<rebecca.dutch@uky.edu>

**Cc:** Jones, Davy <<u>djones@uky.edu</u>>; Moseley, Hunter <<u>hunter.moseley@uky.edu</u>>

**Subject:** RE: Request Permission for IBS 611 and IBS 602

That should be fine – we only start to run into problems if we get over 30, but we can accommodate it. Hunter? Any concerns?

Р

From: Mellon, Isabel

**Sent:** Monday, April 9, 2018 12:49 PM

**To:** Murphy, Michael <<u>michael.murphy@uky.edu</u>>; Spear, Brett <<u>bspear@uky.edu</u>>; Dutch, Rebecca <<u>rebecca.dutch@uky.edu</u>>

Cc: Jones, Davy <diones@ukv.edu>; Moseley, Hunter <hunter.moseley@ukv.edu>

**Subject:** RE: Request Permission for IBS 611 and IBS 602

Good question. Our ultimate target is 15 each year but it I suspect it will take a few years to reach that number. So maybe the first year would have 8 students? We could definitely have flexibility with scheduling since we are starting several new courses.

From: Murphy, Michael

**Sent:** Monday, April 09, 2018 12:44 PM

**To:** Mellon, Isabel <<u>mellon@uky.edu</u>>; Spear, Brett <<u>bspear@uky.edu</u>>; Dutch, Rebecca <<u>rebecca.dutch@uky.edu</u>>

**Cc:** Jones, Davy <<u>djones@uky.edu</u>>; Moseley, Hunter <<u>hunter.moseley@uky.edu</u>>

**Subject:** RE: Request Permission for IBS 611 and IBS 602

I have no problem with the addition. However – and a similar issue came up two years ago – if the enrollment for the course gets up near 40 again, we will need to have two sections. Fortunately, Hunter and I did add a second section last year which should still be on the books. Scheduling it was a bit challenging, though. Isabel – do you have a general idea of how many students this might be?

P

From: Mellon, Isabel

**Sent:** Monday, April 9, 2018 12:35 PM

**To:** Spear, Brett < bspear@uky.edu >; Dutch, Rebecca < rebecca.dutch@uky.edu >

**Cc:** Jones, Davy <<u>djones@uky.edu</u>>; Murphy, Michael <<u>michael.murphy@uky.edu</u>>; Moseley, Hunter

<<u>hunter.moseley@uky.edu</u>>

**Subject:** Request Permission for IBS 611 and IBS 602

Dear Brett and Becky,

The Dept. of Toxicology and Cancer Biology is developing a new professional science master's degree program: Master of Forensic Toxicology and Analytical Genetics. This nonresearch Master's degree will provide advanced training to students toward rapid workforce deployment upon graduation, in the two concentration areas of Forensic Toxicology and Forensic DNA/Genetics. We would like to have as a part of the required curriculum that the students take IBS 611: Practical Statistics and for the DNA/Genetics concentration that they take IBS 602. Can you please assess whether the IBS program will support that our curriculum would use these two courses? Please let me know if you have any questions.

Thank you.

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

# Dear Brett and Becky,

The Dept. of Toxicology and Cancer Biology is developing a new professional science master's degree program: Master of Forensic Toxicology and Analytical Genetics. This nonresearch Master's degree will provide advanced training to students toward rapid workforce deployment upon graduation, in the two concentration areas of Forensic Toxicology and Forensic DNA/Genetics. We would like to have as a part of the required curriculum that the students take IBS 611: Practical Statistics and for the DNA/Genetics concentration that they take IBS 602. Can you please assess whether the IBS program will support that our curriculum would use these two courses? Please let me know if you have any questions.

Thank you.

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

From: <u>Dutch, Rebecca</u>
To: <u>Mellon, Isabel</u>

Subject: RE: Request Permission BCH 401G

Date: Monday, May 14, 2018 1:54:14 PM

Sorry! It was fine – I just forgot to email back.

#### Becky

From: Mellon, Isabel

Sent: Monday, May 07, 2018 2:01 PM

To: Dutch, Rebecca

Subject: RE: Request Permission BCH 401G

Hi Becky, Just checking back on this. Thank you. Isabel

From: Dutch, Rebecca

**Sent:** Monday, April 09, 2018 1:21 PM **To:** Mellon, Isabel < mellon@uky.edu > **Cc:** Jones, Davy < djones@uky.edu >

Subject: RE: Request Permission BCH 401G

Isabel,

I will verify it at our faculty meeting next Monday, and send you an email after that.

#### Becky

From: Mellon, Isabel

Sent: Monday, April 09, 2018 12:42 PM

**To:** Dutch, Rebecca **Cc:** Jones, Davy

Subject: Request Permission BCH 401G

#### Dear Becky,

The Dept. of Toxicology and Cancer Biology is developing a new professional science master's degree program: Master of Forensic Toxicology and Analytical Genetics. This nonresearch Master's degree will provide advanced training to students toward rapid workforce deployment upon graduation, in the two concentration areas of Forensic Toxicology and Forensic DNA/Genetics. We would like to have as a part of the required curriculum that the students take BCH 401G: Fundamentals of Biochemistry.

The current university senate rules/guidelines:

Dept/school faculty must be consulted. Chair/director must send letter of support AND include documentation of faculty approval. This typically takes the form of meeting minutes, although it is acceptable for the chair/director to reference a meeting date and vote count in the letter of support.

Can you please assess whether the Dept. of Molecular and Cellular Biochemistry will support that our curriculum use this course? Please let me know if you have any questions.

Thank you.

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253



May 14, 2018

Dear Dr. Jones:

This letter provides enthusiastic support from the Martin School faculty to allow students from the Department of Toxicology and Cancer Biology to enroll in PA 651 as elective as part of a new professional science master's degree program in Toxicology. Our faculty voted unanimously on May 7<sup>th</sup> 2018 to include the class as an elective for the new program as we welcome the insights these students bring to the class and we hope it will be a beneficial class for your students.

Sincerely,

Ron Zimmer

Director

Martin School of Public Policy and Administration

From: <u>Jones, Davy</u>
To: <u>Mellon, Isabel</u>

Subject: Fw: Using MBA 624 as Elective in Master of Forensic Toxicology and Analytical Genetics

**Date:** Monday, October 15, 2018 3:55:03 PM

#### Five min after your email this came in .... he felt your activity in the Academic Force

From: Wilkinson, Harvie

**Sent:** Monday, October 15, 2018 3:34:24 PM

To: Jones, Davy

Subject: RE: Using MBA 624 as Elective in Master of Forensic Toxicology and Analytical Genetics

Hi Davy,

We are fine with you including MBA 624 as an elective in your new professional graduate program. That said, per the agreement with the Provost's Office, Gatton charges \$250 per credit hour to those students who are not enrolled in a Gatton program. This means the cost of the course would be \$750 since it is three credit hours. Also, the admission into this course would be dependent upon available space which shouldn't be an issue.

Regards,

Harvie

Harvie Wilkinson
MBA Program Director
University of Kentucky
359B Gatton College of Business
and Economics
Lexington, KY 40506-0034
Ph. 859-257-1924
Cell 859-221-2527

From: Jones, Davy

Sent: Sunday, October 14, 2018 9:28 AM

To: Wilkinson, Harvie <harviewilkinson@uky.edu>

Cc: Mellon, Isabel <mellon@uky.edu>

Subject: Re: Using MBA 624 as Elective in Master of Forensic Toxicology and Analytical Genetics

Harvey,

Our proposal for a new professional master's degree is proceeding through the Senate process

and will are still aiming for a fall 2019 start. It turns out that for courses that our new program would list as electives, we need for the proposal package an email from as the Director of the MBA, that it is ok if we include MBA 624 as an elective. Can you send me your okay that we list MB 624 as an elective?

Tx much.

#### Davy

From: Wilkinson, Harvie

**Sent:** Friday, April 6, 2018 9:12 AM **To:** Skinner, Steven; Jones, Davy

**Subject:** RE: Electives in Master of Forensic Toxicology and Analytical Genetics

Davy,

Happy to talk by phone anytime that suits you this morning. My number is 257-1924.

Harvie

Harvie Wilkinson
MBA Program Director
University of Kentucky
359B Gatton College of Business
and Economics
Lexington, KY 40506-0034
Ph. 859-257-1924
Cell 859-221-2527

**From:** Skinner, Steven

**Sent:** Friday, April 6, 2018 9:10 AM **To:** Jones, Davy <<u>djones@uky.edu</u>>

**Cc:** Wilkinson, Harvie < harviewilkinson@uky.edu>

**Subject:** RE: Electives in Master of Forensic Toxicology and Analytical Genetics

Davy,

I am putting you in touch with Harvie Wilkinson, The Director of our MBA. Harvie and I have talked, and he would like to speak to you directly, so he can do the best job of helping you with the proposed program. He is extremely knowledgeable of our graduate programs, and will have a lot insight to share.

Yell if you need anything else.

#### Steve

From: Jones, Davy

**Sent:** Thursday, April 05, 2018 8:21 PM

**To:** Skinner, Steven <<u>steve.skinner@uky.edu</u>>; Toma, E <<u>eugenia.toma@uky.edu</u>>;

Underwood, Richard H < runderwo@email.uky.edu >

Cc: Mellon, Isabel < mellon@uky.edu >

**Subject:** Electives in Master of Forensic Toxicology and Analytical Genetics

Steve, Genia and Richard,

Here is our current draft thinking on the professional master's degree. You can see in the fourth semester is a 3 hr elective, that is concurrent with a pair of half semester internships in actual work sites relating to the respective concentration. We are trying to envision the range of elective options that may be of interest to the students. E.g., a student interning in the lab a private industry drug testing company or a private DNA analysis company may be interested in a business course ('how might I start thinking about starting my own business'), or a student interning at the FBI crime lab may be interested in a Law course, or if the student is interning in a lab connected with a more 'public policy' setting might take a public policy type course, etc. Can you suggest to us what course number might be an example 'sit in the seat on UK campus' business course, and what if any would be a comparable 'on line' course that the student might opt for if the internship is too far away for easy commute?

Thanks much.

Davy

From: <u>Jones, Davy</u>

To: <u>Combs, Megan L</u>; <u>Mellon, Isabel</u>

Cc: May, John; Tobin, Thomas; Brion, Gail; Higashi, Richard; Cunningham, David; St Clair, Daret

**Subject:** Teaching Mass Spec facility at UK **Date:** Friday, May 11, 2018 3:53:09 PM

Importance: High

All,

I had an excellent discussion with Megan. Her ETRL (<a href="http://ertl.uky.edu/">http://ertl.uky.edu/</a>) provides <a href="exactly">exactly</a> the kind of resource for 'students hands-on the instruments' that the Forensic Center provides to the Thomas Jefferson University in that example I sent earlier. ETRL has an LC-MS-MS (on other associated equipment) dedicated to 'students put your hands on this' and she welcomes that we can make some arrangement with ETRL as a resource for the wet lab component of Rick/David's instrumentation course. Megan is also very enthusiastic about the need for the kind of professionally accomplished student we want to graduate.

In terms of budget for ETRL to provide our students with access to the teaching instrumentation at ETRL, Rick can you please exchange some correspondence with Megan here (cc rest of us) in terms of Mass-Spec jargon. In a teaching context, they can have our students work up the samples and take them to ETRL, or use the facilities at ETRL to work up the samples ... Megan does need some quality control evidence about the samples that our students will bring over having been worked up under the supervision of our wet lab class, if the students will not be working up the sample on site at ETRL under their supervisory eye. Megan says the charges will be in terms of 'instrument time' (\$50/hr) and 'staff time' (\$60/hr). Megan asks how many samples will be brought over by each student (including building calibration curves), how many times during the semester will the each student be bringing over , etc.

So, Rick, can you provide here Megan some estimates of the above, so she can provide us some estimate of the cost that we can then provide to the Dean's office on Monday?

Thanks all (and thanks Tom for connecting us with Megan).

# Davy

Davy Jones, Professor Dept. of Toxicology and Cancer Biology University of Kentucky Lexington, KY 40506

From: Combs, Megan L

**Sent:** Friday, May 11, 2018 10:56 AM **To:** Jones, Davy; Mellon, Isabel

Cc: May, John; Tobin, Thomas; Brion, Gail

Subject: Mass Spec facility

# Hi Isabel and Davy,

Thomas reached out and told us about your new programming. As far as where ERTL may align — we have a mass spec facility that I think would be a nice fit for your students to have hands-on learning. A large part of our work is student development in analytical chemistry. We would be happy to set up a call or meeting at your convenience.

I hope you have a great weekend.

Megan Combs
Research Facility Manager
Environmental Research and Training Laboratories
College of Engineering
University of Kentucky
161 Raymond Building C340
Lexington, KY 40506-0281
Megan.combs2@uky.edu
859-257-6757
http://ertl.uky.edu

From: Tobin, Thomas

**Sent:** Friday, May 11, 2018 10:18 AM

To: Combs, Megan L < megan.combs2@uky.edu>

**Cc:** John May (jmay@engr.uky.edu) <jmay@engr.uky.edu>; Jones, Davy <djones@uky.edu>;

Mellon, Isabel <mellon@uky.edu>

Subject:

Megan, John,

Apologies John, I know you are out of town, Megan, give me a call.

Thomas T

# Thomas Tobin

# www.thomastobin.com

Prof of Vet. Science & Prof. Department of Toxicology and Cancer Research. Room 128C, Maxwell H. Gluck Equine Research Center, University of Kentucky, 1400 Nicholasville Rd., Lexington, KY 40546-0099 UK Tel 1-859 218-1092 UK Fax 1-859 257 8542 Personal Cell US 1-859 229 9392, Dubai, 011-971 50 458 9012 E-mail ttobin@uky.edu or Thomastobin@me.com.

RE: <a href="http://www.jarvm.com/articles/Vol2Iss2/TOBINJARVMVol2No2.pdf">http://www.jarvm.com/articles/Vol2Iss2/TOBINJARVMVol2No2.pdf</a>
RE: <a href="http://www.vetlearn.com/Media/PublicationsArticle/VTX 04 04 324.pdf">http://www.vetlearn.com/Media/PublicationsArticle/VTX 04 04 324.pdf</a>
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From: Wei, Sainan
To: Mellon, Isabel

Subject: RE: Hi and New Master"s degree

Date: Monday, April 09, 2018 11:41:34 AM

#### Hi Isabel,

Just let you know that Dr. Jennings is fully supportive of this. Let me know how and when we can proceed or sometime we can talk with the details.

Thanks. Sainan

From: Mellon, Isabel

Sent: Sunday, April 08, 2018 9:44 AM

To: Wei, Sainan

Subject: RE: Hi and New Master's degree

That is great news and please let us know what Dr. Jennings thinks. Yes it would be great if you could participate! This is a draft of the advanced course but we don't need to work on the details right now. Thank you so much. Isabel

From: Wei, Sainan

**Sent:** Saturday, April 07, 2018 8:06 PM **To:** Mellon, Isabel < mellon@uky.edu > **Subject:** RE: Hi and New Master's degree

Hi Isabel,

Thank you for contacting. I think this is very interesting program. I would love to be engaged in both laboratory and lecture teaching, particularly in concentration 2 analytical genetics if you need.

I believe what you ask is feasible and actionable. I will talk to Dr. Jennings for details.

I will be in touch. Let me know if I can make contribution.

Thanks. Sainan

From: Mellon, Isabel

Sent: Saturday, April 07, 2018 10:12 AM

To: Wei, Sainan

**Subject:** Hi and New Master's degree

Hi Sainan, This is Isabel Mellon in Tox and Cancer Bio – we sat next to each other in the bias training

workshop. We are developing a professional master's degree program: Master of Forensic Toxicology and Analytical Genetics. I have attached a description. For the DNA Concentration part we are developing an advanced course with a laboratory component. I am researching what they need as part of this and I am copying some links below as a starting point. I am inquiring to see if the genomics core would have the capabilities and instrumentation for similar types of analyses. My thinking is the students would work up samples in our own wet lab under our supervision, then samples would go to a core or instrumentation facility for measurements (the students would not be touching anything, but maybe observe?) then the data would come back to them and we would teach them how to analyze it. I understand that a large component of the genomics core is devoted to clinical activities. They would not need to have things done exactly as they would in a forensics lab — more to teach fundamentals and introduction to instrumentation. They will be doing two internships their last semester where they would get more hands on experience. There will also likely be sequencing experiments but I have not gotten to that yet and thought that I would start with this. Any suggestions would be most helpful. Thank you, Isabel

#### STR Analysis:

https://www.promega.com/products/genetic-identity/genetic-identity-workflow/str-amplification/Quantitation of human DNA from forensic sample such as buccal swab:

https://www.promega.com/products/genetic-identity/genetic-identity-workflow/human-specific-dna-quantitation/plexor-hy-system/?catNum=DC1001

https://www.promega.com/-/media/files/resources/protocols/technical-manuals/0/plexor-hysystem-for-the-applied-biosystems-7500-and-7500-fast-real-time-pcr-systems-protocol.pdf?la=en

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

Assessment Plan: Master of Forensic Toxicology and Analytical Genetics Department of Toxicology and Cancer Biology College of Medicine

#### 1. Introduction

#### **Unit Mission Statement:**

Our education mission is to provide students with an education in Toxicology that is based on an understanding of biochemistry, physiology, molecular/cell biology and metabolomics, coupled with in-depth research experience on the mechanisms by which specific agents induce toxicity, and/or the basic cellular processes upon which environmental agents impact to cause disease.

#### **Basic Assessment Approach:**

Most outcomes will be assessed each year, some each semester, using direct and indirect methods. Curriculum Map and Data Collection Tables are provided below and in PDF attachments.

#### 2. Assessment Oversight

The two program directors, The Director of Forensic Toxicology/Chemistry and The Director of DNA and Forensic/Analytical Genetics, will work together with the departmental Director of Graduate Studies and the Faculty of Record to appoint committees that will coordinate assessment and include an Admissions Committee and a Curriculum and Education Committee. The directors will lead the assessments after the completion of each spring semester of the program to evaluate progress. The Curriculum and Education committee will review assessments and discuss student performance with the Admission's committee and provide assessments and their summaries to the Directors and the DGS. The Directors and DGS will write and submit an assessment report to the Advisory Board before the start of the fall semester. The Directors and DGS will meet with the advisory board during the fall semester to evaluate strengths and weaknesses of the program. This will be used to identify and implement strategies for areas in need of improvement.

#### 3. Program-Level Learning Outcomes

**Outcome #1:** Students will demonstrate advanced knowledge of the theory and practice of a range of core disciplines in the Forensic Sciences.

Outcome #2: Students will demonstrate knowledge of ethical principles, professional practices, law-enforcement and courtroom testimony required for professionals employed in forensic toxicology/chemistry or Forensic/Analytical Genetics.

Outcome #3: Students will demonstrate knowledge of theoretical and practical applications of modern instrumentation and laboratory techniques required for professionals employed in forensic toxicology/chemistry or Forensic/Analytical Genetics.

Outcome #4: Students will integrate the use of theory from their didactic coursework within an experiential setting in forensic chemistry and genetics laboratories in industry, government, or medical settings.

#### 4. Curriculum Map

Course	SLO 1	SLO 2	SLO 3	SLO 4
BCH 401G: Fundamentals of	1		1	
Biochemistry				
IBS 611: Practical Statistics	I		1	
TOX 800	1	1	1	1
Fundamentals in Forensic Science				
TOX 810	1	1		1
Communicating in the Forensic				
Science Profession				
TOX 780	I, R	I, R		1
Special Problems in Toxicology:				
Preparing Professionals in Forensic				
Science and Analytical Genetics				
TOX 840	I, R	1	I, R	I, R
Forensic Science Standards and				
Practices				

**NEW** MASTER'S DEGREE

TOX 860	I, R	1	1	1
Forensic and Analytical Toxicology				
TOX 780	I, R			1
Drug metabolism and Disposition				
BIO 405G	I, R		1	1
Human Genetics				
ABT 461G	I, R		1	1
Population Genetics				
TOX 880	I, R, M	I, R, M		I, R
Ethics and Professional Practice in				
Forensic Science and Analytical DNA				
TOX 920 General Instrumentation	R, M	R	R, M	I, R
Techniques in Forensic Chemistry				
IBS 602	I, R		1	1
Molecular Biology and Genetics				
TOX 910 Forensic and Analytical	R, M	R	R, M	I, R
DNA				
TOX 980	М	М	М	М
Internship in Forensic Toxicology				
and Analytical Genetics				

#### 5. Assessment Methods and Measures

- a) A written evaluation of each student will be performed by their Primary Advisor during a meeting with the student at the end of each semester. The primary advisor will evaluate the student's performance/grades in each course, discuss any weaknesses with the student relating to specific areas of the curriculum or performances in exams related to didactic lectures and laboratory practicums, continuations or changes in specific employment goals and selection of guided electives. A report will be reviewed by the DGS and when needed the DGS will discuss intervention strategies with the Program Director and the Primary Advisor if needed to address weaknesses. The report will address all four SLOS.
- b) Student performance on selected written and oral presentations will be reviewed by the course directors, DGS and Program Director each year using specific grading rubrics for expectations of content. Selected oral and written presentations will be evaluated in the TOX 810 and TOX 880 courses. Selected laboratory practicums will be evaluated in each of the 3 laboratory containing courses. These rubrics will address SLOs 1-3.
- c) An evaluation rubric will be used to evaluate student performance in internships by the internship supervisor and the internship course director upon completion of the internship and poster session. This rubric will address SLO4.

#### 6. Data Collection and Review

	Assessed	Data 1	Data 2	Data 3
Year 1 and 2	Outcome #1: Students will demonstrate advanced knowledge of the theory and practice of a range of core disciplines in the Forensic Sciences.	Performance on Blocks of Questions from Selected Exams in Selected Courses TBD.	Evaluation of Student by Primary Advisor	
Year 1 and 2	Outcome #2: Students will demonstrate knowledge of ethical principles, professional practices, law-	One Selected Written or Oral Presentations TBD: TOX 810 Communicating in	Evaluation of Student by Primary Advisor	

	enforcement and courtroom testimony required for professionals employed in forensic toxicology/chemistry or Forensic/Analytical Genetics.	the Forensic Science Profession TOX 880 Ethics and Professional Practice in Forensic Science and Analytical DNA		
Year 2	Outcome #3: Students will demonstrate knowledge of theoretical and practical applications of modern instrumentation and laboratory techniques required for professionals employed in forensic toxicology/chemistry or Forensic/Analytical Genetics.	One Selected Laboratory Practicum, Written Assignment or Blocks of Questions from Selected Exams: TOX 800 Fundamentals in Forensic Science; TOX 910 Forensic and Analytical DNA; TOX 920 General Instrumentation Techniques in Forensic Chemistry	Student, Advisor and Faculty Internship Surveys TOX 7XX Internship in Forensic Toxicology and Analytical Genetics	Evaluation of Student by Primary Advisor
Year 2	Outcome #4: Students will integrate the use of theory from their didactic coursework within an experiential setting in forensic chemistry and genetics laboratories in industry, government, or medical settings.	Student and Faculty Internship Rubric Evaluations TOX 980 Internship in Forensic Toxicology and Analytical Genetics	Evaluation of Student by Primary Advisor	

NEW MASTER'S DEGREE Page 9 of

#### 7. Assessment Cycle and Data Analysis

Student Advisor reports will be collected at the end of each semester and reviewed by the Program Director each semester. The rubrics for oral and written presentations, scores on block exam questions, laboratory practicums and internship reports will be collected by each course director and stored on the departmental share drive. Initially, these measures will be evaluated at the completion of each year for the first two years of the program and then every other year in subsequent years. Reports will include scaled metrics with the following ratings: A = Outstanding; B = Above Average; C = Average; D = Below Average; E = Poor. The standard will be ratings to fall in the outstanding and above average categories as an indication that the outcome is meeting expectations. The Program Directors, DGS and Advisory Board will meet in the fall and submit annual reports describing program progress, successes and identify and address areas in need of improvement.

# 8. Teaching Effectiveness

All instructors will use the University Teacher Course Evaluation (TCE) process to be evaluated by their students each semester. Additionally, each course will be peer reviewed at least once a year by the Education and Curriculum Committee. Each instructor will be asked to provide a self-reflection which will include areas of improvement. The Program Directors and DGS will review the TCE results, any available peer review forms, and the self-reflection with the instructors and provide feedback to the instructor. This will occur on an annual basis.

# 9. What are the plans to evaluate students' post-graduate success?

The program will look at data provided by job placement statistics, the Alumni Questionnaire and will work with the Office of Institutional Research to looks at other possible methods.

NEW MASTER'S DEGREE Page 10 of

### Master of Forensic Toxicology and Analytical Genetics Curriculum Map

The following 4 student learning outcomes are based on required skills needed by professionals to facilitate employment in forensic chemistry and genetics laboratories in industry, government, and medical settings.

**Outcome #1:** Students will demonstrate advanced knowledge of the theory and practice of a range of core disciplines in the Forensic Sciences.

**Outcome #2:** Students will demonstrate knowledge of ethical principles, professional practices, law-enforcement and courtroom testimony required for professionals employed in forensic toxicology/chemistry or Forensic/Analytical Genetics.

**Outcome #3:** Students will demonstrate knowledge of theoretical and practical applications of modern instrumentation and laboratory techniques required for professionals employed in forensic toxicology/chemistry or Forensic/Analytical Genetics.

**Outcome #4:** Students will integrate the use of theory from their didactic coursework within an experiential setting in forensic chemistry and genetics laboratories in industry, government, or medical settings.

Table: Curriculum Map

I = Introduce, R = Reinforce, M = Mastered

Course	SLO 1	SLO 2	SLO 3	SLO 4
BCH 401G: Fundamentals of	1		1	
Biochemistry				
IBS 611: Practical Statistics	1		I	
TOX 800	1	1	1	1
Fundamentals in Forensic Science				
TOX 810	1	1		1
Communicating in the Forensic				
Science Profession				
TOX 780	I, R	I, R		1
Special Problems in Toxicology:				
Preparing Professionals in Forensic				
Science and Analytical Genetics				
TOX 840	I, R	1	I, R	I, R
Forensic Science Standards and				
Practices				
TOX 860	I, R	1	1	1
Forensic and Analytical Toxicology				
TOX 780	I, R			1
Drug metabolism and Disposition				
BIO 405G	I, R		1	1
Human Genetics				
ABT 461G	I, R		I	1
Population Genetics				
TOX 880	I, R, M	I, R, M		I, R

Ethics and Professional Practice in				
Forensic Science and Analytical DNA				
TOX 920 General Instrumentation	R, M	R	R, M	I, R
Techniques in Forensic Chemistry				
IBS 602	I, R		1	1
Molecular Biology and Genetics				
TOX 910 Forensic and Analytical	R, M	R	R, M	I, R
DNA				
TOX 980	M	M	М	М
Internship in Forensic Toxicology				
and Analytical Genetics				

## Begin forwarded message:

From: Richard Sams < <a href="mailto:Richard.Sams@LGCGroup.com">Richard.Sams@LGCGroup.com</a>>

**Date:** March 30, 2018 at 10:11:57 AM EDT **To:** "Tobin, Thomas" < <a href="mailto:ttobin@uky.edu">ttobin@uky.edu</a>>

Subject: RE: Tom, can you please communicate this to Dr. Sams?

#### Tom -

Thank you. It was good speaking with you and hearing about this toxicology program. The description of the program seems quite comprehensive and would appear to be well-focused on the attributes that a professional would need. However, I would recommend inclusion of a general pharmacology course with emphasis on pharmacokinetics and metabolism for those who will be working with drugs and toxicants.

#### Rick

 From:
 Lucy A. Davis

 To:
 Mellon, Isabel

 Subject:
 RE: DNA Concentration

**Date:** Thursday, April 05, 2018 12:48:54 PM

Isabel,

It looks great, I'm a strong advocate that forensic master's programs should be a true master's degree and not just basic courses focused just to get people a master's degree. This is a strong science program.

My one concern is BIO 510. It is a strong laboratory course, but it does lack some of the experiments that are needed for a forensic DNA analyst. The first part is very good, but as it goes deeper into protein and RNA testing it loses a lot of relevance to the forensic student. Also, I don't see any instrumental work especially with fragment analysis or sequencing. I'm sure one major issue is the availability of instrumentation, but it seems to miss any similar lab work related to human forensic DNA testing. I know you say that they might add some forensic related analysis which I think is absolutely needed. I've been trying to think of some related tests they can do without a capillary electrophoresis instrument but not coming up with much.

I saw the letter from Ted Shults, I think his ideas are great, especially bringing in the law students. That will be a great asset and more stable than relying on working attorneys. My master's program had an excellent class taught out of the law school on basic law related to science and criminalistics and it is one of my favorite and most valuable classes. So working with the law school in my opinion is great.

Thanks for letting me look at this, I love it. Lucy A. Davis LDH Consultants, LLC 518.258.5428 LADavis@LDHConsult.com From: Jones, Davy
To: Mellon, Isabel

Subject: RE: Professional Master"s Degree

Date: Wednesday, May 09, 2018 1:33:54 PM

Attachments: <u>image001.png</u>

From: Davis, Gregory J

**Sent:** Wednesday, May 9, 2018 1:31 PM

To: Jones, Davy

Subject: Professional Master's Degree

Davy,

I was honored and pleased to support the approval of the proposed new Professional Master's Degree in Forensic Toxicology and Analytical Genetics at the recent Department of Toxicology and Cancer Biology faculty meeting. In my experience over the last few years, there has been a significant interest in the forensic sciences among high school and undergraduate students, as I have an inquiry from such students on average about once per week asking me to discuss various careers in forensics.

With warm regards,

Greg

Gregory J. Davis, MD, FCAP
Professor & Director, Division of Forensic Consultation Services
Department of Pathology and Laboratory Medicine
Department of Toxicology and Cancer Biology
University of Kentucky College of Medicine
Consultant to the Office of the Chief Medical Examiner, Commonwealth of Kentucky
800 Rose Street, Suite MS 117
Lexington, Kentucky 40536-0298

Direct: 859-257-5175

Case Manager Ms April Arth: 859-323-5223 / april.mitchuson@uky.edu



Meeting with Kentucky State Police Central Lab: Captain Derek Grant (Directs all labs), Laura Sudkamp (Directs all Central Lab), Ryan Johnson (Director Tox lab) and Whitney Collins (Director of DNA/molecular section)

## http://www.kentuckystatepolice.org/for lab/central.html

DNA curriculum – must follow FBI quality standards. I will be sent a link that describes what they are. Standards audit for coursework can be done by the molecular person in Frankfort or other technical leaders that they have. I think this is very important especially for the DNA concentration. The DNA concentration requires 9 hours at a minimum. Essential courses are Molecular Biology, Genetics, Population Genetics, Biochemistry, and stats. Essential to establish prereqs for program that are rigorous and clearly spelled out. For DNA they look for people with strong background in biology and not forensics. They have looked at people who had MS in Forensic Science who had bachelors in history and they were largely unsuited for the forensic science. Trace analysis is becoming less important. Chemistry and DNA analysis are most important. For stats it was less clear that this needed to have a forensic focus. General Stats that apply to biology and chemistry would be important – what's a standard deviation, etc maybe some population stats.

Big things is preparing the analysts for trial. Huge problem when the get beaten up in court and fold. Mock trial free standing course where they get hands on experience in thinking on their feet and responding to court room intimidation. To build up to the Mock trial maybe a seminar course where they present on something they learned in class or on how to use an instrument. Test their ability to think about what they learned and explain it to other science people down to the kindegarden or lay person. Test their ability to defend their own results. Have this earlier on and may be used to weed people out of program. Public speaking, testifying. Maybe partner with local lawyers or the law school. Highly important.

Suggested change of title of specialization to Drug Chemistry and Toxicology Have the focus on drugs in the courses – solid dose drugs.

Instrumentation for chemistry in addition to mass spec – FTIR, GCMS, RAMEN

Instrumentation for DNA – realtime pcr, pcr, robotics, cap electrophoresis, some next gen sequencing but not sure where that is going yet.

Validation training also an important need – Lab report, data analysis, presentation. Not sure if better in a course or rotate in a research lab.

Internships – after they have hands on experience with working with instruments. They take interns locally and from other states. We could send ours to other states. They have an intern co-ordinator.

They were very enthusiastic about having a local masters program – Kentucky instead of trying to recruit applicants from other states. I think this also plays a role in their interest in helping with curriculum and other aspects of the program – they would know what they are getting.

Bench methods very important and some way of monitoring this – again maybe having them rotate in a research lab?

Maybe seminars in criminal work and have outside speakers.

Job market: Major contributors
Private Pain management Industry
Performance Testing
Maybe horse or other veterinary testing.

Especially needed is the person who has been immersed in exercising in the advanced instrumentation. They don't mind that they might need to spend a few days being mentored on a particular software, but they don't want someone who needs mentoring on using the hardware. An undergraduate in chemistry would not yet have the needed depth of experience in exercising the advanced machinery.

 From:
 Grant, Derek R (KSP)

 To:
 Sudkamp, Laura B (KSP)

Cc: Mellon, Isabel; Goswami, Mamta (CHFS PH)

**Subject:** Re: Meeting time regarding masters degree in Forensic Science

**Date:** Tuesday, July 25, 2017 8:10:13 PM

Just saw this, sorry. I'm good with 1 on Thursday as well

Sent from my iPhone

On Jul 25, 2017, at 5:45 PM, Sudkamp, Laura B (KSP) < <u>Laura.Sudkamp@ky.gov</u>> wrote:

1:00 would work for me. Thanks for understanding.

On Jul 25, 2017, at 6:08 PM, Mellon, Isabel < mellon@uky.edu> wrote:

Either is fine with me - 1:00 works for me or anytime Friday or we can look at next week.

Sent from my iPad

On Jul 25, 2017, at 6:00 PM, Sudkamp, Laura B (KSP) < <u>Laura.Sudkamp@ky.gov</u>> wrote:

I have an unexpected conflict that has arisen. Could we shift the time back to 1:00 on Thursday or find a new day?

On Jul 25, 2017, at 4:59 PM, Mellon, Isabel <<u>mellon@uky.edu</u>> wrote:

Yes – that is great. Thank you.

From: Sudkamp, Laura B (KSP)
[mailto:Laura.Sudkamp@ky.gov]

**Sent:** Tuesday, July 25, 2017 4:57 PM **To:** Mellon, Isabel < <a href="mailto:mellon@uky.edu">mellon@uky.edu</a>>

**Subject:** RE: Meeting time regarding masters

degree in Forensic Science

We can do it off of my IPad of that works for you.

Laura B. Sudkamp Laboratory Director Kentucky State Police Forensic Laboratories (502) 564-5230 (phone) (502) 564-4821 (fax)

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From: Mellon, Isabel [mailto:mellon@uky.edu]

**Sent:** Tuesday, July 25, 2017 4:46 PM

To: Sudkamp, Laura B (KSP)

**Subject:** RE: Meeting time regarding masters

degree in Forensic Science

Hi Laura, Would we be able to talk with my colleague here at UK via Skype from your office? He can't join us in Frankfort. Should I bring my laptop if so? Alternatively he can join us by phone. Thank you. Isabel

From: Sudkamp, Laura B (KSP)
[mailto:Laura.Sudkamp@ky.gov]
Sent: Friday, July 21, 2017 3:59 PM

To: Mellon, Isabel <mellon@uky.edu>

**Subject:** Re: Meeting time regarding masters

degree in Forensic Science

We are at 100 Sower Blvd. Frankfort 40601

On Jul 21, 2017, at 3:49 PM, Mellon, Isabel <mellon@uky.edu> wrote:

That would be perfect for me. Where should I meet you there?

**From:** Sudkamp, Laura B (KSP)

From: **Charles Fox** To: Moe, Luke

Cc: Mellon, Isabel; Jones, Davy

Subject: Re: Permission for program use of ABT 461 Date: Thursday, November 08, 2018 9:54:46 AM

I agree that this timeline is fine. I'll discuss this with Luke and we will get this moving forward.

In Thu, Nov 8, 2018 at 9:52 AM Moe, Luke < <u>luke.moe@uky.edu</u> > wrote:
Hi Isabel,
We are happy to hear that this is progressing. I'll get together with Chuck and discuss this. I don't see any issues with this timeline.
Best,
Luke
Luke A. Moe
Associate Professor
Dept. of Plant & Soil Sciences
311 Plant Science Building
University of Kentucky
Lexington, KY 40546-0312
office: 859-218-0761
fax: 859-257-7125
http://moelab.weebly.com/

From: "Mellon, Isabel" < mellon@uky.edu > Date: Thursday, November 8, 2018 at 8:59 AM

**To:** "Fox, Charles" < <u>cfox@uky.edu</u>>

Cc: "Moe, Luke" < luke.moe@uky.edu >, "Jones, Davy" < djones@uky.edu >

**Subject:** RE: Permission for program use of ABT 461

Hello Chuck and Luke, Our program is at the level of Graduate Council and it has been progressing well through the different levels of review. Could you prepare to make the change to ABT 461 to incorporate the G part for our program. Please let me know if I can assist in anyway or if you have any questions. We are moving for a fall 2019 start date but the students would enroll in your course in the spring of 2020. We look forward to working with you. Thank you for all of your help. Isabel

From: <a href="mailto:callomac@gmail.com">callomac@gmail.com</a>] On Behalf Of Charles Fox

**Sent:** Wednesday, April 18, 2018 2:10 PM **To:** Mellon, Isabel <mellon@uky.edu>

**Cc:** Moe, Luke < <u>luke.moe@uky.edu</u>>; Jones, Davy < <u>djones@uky.edu</u>>

**Subject:** Re: Permission for program use of ABT 461

We'll need to add the G to the course, which will require it go through the course revision process. It's officially a major course change, though one that's actually pretty minor. Once you are sure that your program does indeed want to include this, I can start the process to make the course change.

Chuck

On Wed, Apr 18, 2018 at 2:07 PM, Mellon, Isabel < mellon@uky.edu > wrote:

That is wonderful news – thank you so much for all of your help and allowing us to make such a great and unique course available to our students. I will be back in touch if we need anything else but I think this is it for now. Isabel

From: Moe, Luke

**Sent:** Wednesday, April 18, 2018 1:57 PM

**To:** Mellon, Isabel < mellon@uky.edu>

From: Rudolph, Mike
To: Mellon, Isabel
Subject: RE: Assessment

**Date:** Thursday, April 19, 2018 5:58:31 PM

Attachments: <u>image001.png</u>

5 Assessment April 9 mjr comments 4-19-18.docx

Assessment Plan for Master of Forensic Toxicology and Analytical Genetic April 10 mir comments docx

## Hi Isabel,

Sorry for the delay. I was out of the office part of last week for a conference and am just now getting up on email.

The attached documents are much improved. The curriculum map and overall assessment framework are well done!

I have added just a few more comments in the Assessment Plan document and the sections from the proposal that you had pulled out that specifically pertain to assessment. The curriculum map looks great and I don't have any comments on it.

Let me know if you have any questions or there is anything else I can do to assist.

## Thanks, Mike



# Mike Rudolph, PhD

Director of Institutional Effectiveness
Office of Strategic Planning & Institutional Effectiveness
549 Patterson Office Tower | Lexington, KY 40506
859-257-4945 | rudolph@uky.edu

From: Mellon, Isabel

**Sent:** Tuesday, April 10, 2018 11:23 AM **To:** Rudolph, Mike <rudolph@uky.edu>

**Subject:** Assessment

Hi Mike – Can you please look at this again? Thank you. Isabel

Isabel Mellon, Ph.D.
Associate Professor
Director of Graduate Studies
Department of Toxicology and Cancer Biology
University of Kentucky
859-257-6253

From: Jackson, Brian A

Sent: Thursday, April 12, 2018 11:11 AM To: Weber, Ann D <ann.weber@uky.edu>

Subject: RE: Public Policy - Track

Many thanks for this information Annie.

Best,

Brian

\_\_\_\_\_\_

From: Weber, Ann D

Sent: Thursday, April 12, 2018 10:18 AM

To: Jackson, Brian A < Brian. Jackson@uky.edu < mailto: Brian. Jackson@uky.edu > ; McCormick,

Katherine < kmcco2@uky.edu < mailto: kmcco2@uky.edu > >; Farrell, Herman

<herman.farrell3@uky.edu <mailto:herman.farrell3@uky.edu> >; Nikou, Roshan

<Roshan.Nikou@uky.edu <mailto:Roshan.Nikou@uky.edu> >; Zimmer, Ronald <ron.zimmer@uky.edu

<mailto:ron.zimmer@uky.edu> >; Petrovsky, Nicolai <nicolai.petrovsky@uky.edu

<mailto:nicolai.petrovsky@uky.edu> >

Cc: Brothers, Sheila <sbrothers@uky.edu <mailto:sbrothers@uky.edu>>

Subject: RE: Public Policy - Track

Dear Katherine,

I have also reviewed the applicable SACSCOC and CPE policies about this issue, and agree that multi-track programs can have variable credit hours. As long as each track meets the minimum requirements for the type of degree (30 credits for a master's, 120 for a bachelor's), SACSCOC will be satisfied. And the CPE Program Inventory system is specifically set up to handle the tracking of variable credit hour tracks.

I also checked in with the person who enters and maintains program data into SAP, Kim Wielgus, and she also reports that there is no internal SAP reason why this is not allowed, and in fact is fairly common among UK programs.

Please let me know if you have more questions.

Best,

Annie

Annie Davis Weber, Ed.D.
Assistant Provost for Strategic Planning & Institutional Effectiveness
SACSCOC Accreditation Liaison
University of Kentucky
355B Patterson Office Tower