



**TOPIC:** University of Maryland, Baltimore: Master of Science in Forensic Medicine

**COMMITTEE:** Education Policy and Student Life

**DATE OF COMMITTEE MEETING:** June 3, 2014

**SUMMARY:** The proposed Master of Science in Forensic Medicine is a unique interdisciplinary degree graduate program between the University of Maryland, Baltimore campus (UMB) and China University of Political Science and Law (CUPL). It fulfills the UMB plan priority to develop local and global initiatives that address critical issues. Through a sharing of didactic credits and elective credits between the two universities, students will earn the Master of Science (MS) in Forensic Medicine from UMB. Students enrolled in this dual degree program will earn 20 credits at UMB and 65 at CUPL and be awarded the MS by UMB and the Juris Masters (JM) by CUPL. Specifically, 10 credits of coursework from the CUPL will be applied to the MS degree.

As noted above, 10 credits of coursework from CUPL will be applied to the MS degree. Therefore, the initial cohort of students will be recruited from the existing JM program at CUPL. As the program matures, UMB seeks to increase participation by a broader representation including foreign nationals, US citizens and Maryland residents by establishing matriculation pathways with accredited international and domestic institutions. UMB will deliver forensic medicine courses to students with a strong background in forensic science. Additional matriculation agreements will increase US participation and afford UMB the opportunity to meet both the local and global demand for forensic medicine experts.

Graduates from this program will become inter-disciplinary and highly competent specialists in the field of medico-legal death investigation with broad knowledge and comprehensive techniques and skills of forensic medicine. The program mainly focuses on forensic pathology, forensic autopsy, medico-legal death investigation, forensic neuropathology, postmortem radiology, and forensic dentistry, rather than the laboratory forensic sciences. The program will provide graduates with a number of opportunities in the medico-legal death investigation system: Forensic death investigation positions in medical examiner's offices or coroners' offices, Forensic investigation positions in governmental agencies such as Federal Bureau of Investigation, Department of Defense, Department of Justice, State or Federal courts, and Attorney's offices. Admission into professional programs, such as medical school. Admission into pathology residency and forensic fellowship training programs for the individuals who have already obtained Bachelor degree of Medicine (B.M.) or Doctoral degree of Medicine (M.D.), with the ultimate goal of becoming a medical examiner/forensic pathologist. All the graduates will be excellently trained for the positions in the medico-legal death investigation and medical research in the field of forensic medicine.

Motivation for this program is, in part, to address the long-standing need of a high quality of medico-legal death investigation system in the US. Forensic death investigation in the US is in a crisis. The Report by the National Academy of Sciences highlights the significant shortage of forensic scientists. One subsection of this group of forensic scientists works in the death investigation area supporting forensic pathologists as investigators. Almost all graduate and post graduate forensic programs focus on the laboratory forensic sciences. None produce graduates suitable for a death investigator occupation,

which requires additional on the job retraining by the medical examiners. Most accredited Medical Examiner offices use approximately 2 investigators to support a single forensic pathologist. This means there is an immediate need for over 2000 investigators in this field in the U.S.

**ALTERNATIVE(S)**: The Regents may not approve the program or may request further information.

**FISCAL IMPACT**: No additional funding is necessary. The program will be supported through tuition.

**CHANCELLOR'S RECOMMENDATION**: That the Committee on Education Policy and Student Life recommend that the Board of Regents approve the proposal from the University of Maryland, Baltimore to offer the Master of Science in Forensic Medicine.

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COMMITTEE RECOMMENDATION:

DATE:

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BOARD ACTION:

DATE:

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SUBMITTED BY: Joann Boughman

301-445-1992

[jboughman@usmd.edu](mailto:jboughman@usmd.edu)

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**UNIVERSITY SYSTEM OF MARYLAND INSTITUTION PROPOSAL FOR**

- New Instructional Program
- Substantial Expansion/Major Modification
- Cooperative Degree Program
- Within Existing Resources, or
- Requiring New Resources

**University of Maryland, Baltimore**  
Institution Submitting Proposal

**Master of Science in Forensic Medicine**  
Title of Proposed Program

**Master of Science**  
Award to be Offered

**Fall 2015**  
Projected Implementation Date

Proposed HEGIS Code

**43.0106**  
Proposed CIP Code

**Graduate School**  
Department in which program will be located

**Erin Golembewski, PhD**  
Department Contact

**410-706-8323**  
Contact Phone Number

Egole001@umaryland.edu  
Contact E-Mail Address

  
Signature of President or Designee

**05/19/2014**  
Date



## **Proposal for a Master of Science in Forensic Medicine Program**

**May 20, 2014**

### **A. Centrality to institutional mission statement and planning priorities:**

Forensic medicine, also known as legal medicine, is a branch of medicine that applies the principles and knowledge of medical sciences and technologies to the purposes of the law, as in determining the cause of death. Although there are considerable variations in the social and legal systems, as well as the diversity of ethics and religions among the nations in the world, the common goal of a forensic medical investigation is to satisfy the needs of justice, public health, and public safety.

A key theme in the 2011-2016 UMB Strategic Plan is the development of local and global initiatives that address critical issues. These will strengthen the University's social integration with local and global communities by supporting genuine and sustainable partnerships. Another goal is to strengthen the University's capacity to improve the health and the economic, political and social well-being of its community partners locally and globally. Lastly UMB faculty, staff and students will be prepared to be leaders and active civic participants in local and global engagement initiatives.

The proposed MS-FM program is a unique interdisciplinary degree graduate program between the University of Maryland, Baltimore campus (UMB) and China University of Political Science and Law (CUPL). It fulfills this UMB plan priority to develop local and global initiatives that address critical issues. Through a sharing of didactic credits and elective credits between the two universities, students will earn the Master of Science (MS) in Forensic Medicine from UMB. Students enrolled in this dual degree program will earn 20 credits at UMB and 65 at CUPL and be awarded the MS by UMB and the Juris Masters (JM) by CUPL. Specifically, 10 credits of coursework from the CUPL will be applied to the MS degree. The purpose the degree program is to provide educational and professional training in the field of forensic medicine, which will feature areas such as forensic pathology, forensic neuropathology, forensic pediatric pathology, forensic autopsy, systemic pathology, medico-legal death scene investigation, forensic toxicology, forensic dentistry, forensic anthropology, forensic radiology, and epidemiological research of the related areas. The proposed program is consistent with the campus mission of graduate education in public health care, social work, and the law.

As noted above, 10 credits of coursework from CUPL will be applied to the MS degree. Therefore, the initial cohort of students will be recruited from the existing JM program at CUPL. As the program matures, UMB seeks to increase participation by a broader representation including foreign nationals, US citizens and Maryland residents by establishing matriculation pathways with accredited international and domestic institutions. UMB will deliver forensic medicine courses to students with a strong background in forensic



science. Additional matriculation agreements will increase US participation and afford UMB the opportunity to meet both the local and global demand for forensic medicine experts.

Program graduates will possess knowledge and skills to contribute to the medico-legal death investigation system and legal justice systems including the generation of knowledge in the field through submission of a manuscript for publication.

Students in the MS Forensic Medicine Program will complete their graduate education, including research, to provide patient care and public service which are part of the central UMB mission. The foundation of the MS program is student understanding of biomedical science, conducting primary research as part of an interdisciplinary team. The knowledge generated from research will be used to solve many important problems in our community.

**B. Adequacy of curriculum design and delivery to related learning outcomes consistent with Regulation .10 of this chapter:**

The proposed MS in Forensic Medicine will be a non-thesis, full-time program, requiring 30 credits of coursework. The courses are offered in a combination of in-class and online lectures, case discussions, laboratory training, including pre-recorded lectures and web conferences by accomplished faculty. The program will mainly focus on forensic pathology, forensic autopsy, medico-legal death investigation, forensic neuropathology, postmortem radiology, and forensic odontology and forensic anthropology, rather than the laboratory forensic sciences; although some of the laboratory skills will be addressed. Students will complete 20 credits at UMB and 10 credits at CUPL. At UMB, all students will take 15 credits of core courses in Forensic Pathology, Forensic Autopsy and Systemic Pathology and Epidemiological Data Research Capstone Project. Students may choose an additional 5 credits of elective courses to complete the required 20 credits.

Courses offered by UMB (30 credits offered)

\*FMED 710 -Forensic Pathology (6 credits), required

\*FMED 720 -Forensic Autopsy (3 credits), required

FMMD 730 -Medico-legal Death Scene Investigation (3 credits), elective

\*FMED 740 -Epidemiological Data Research Capstone Project (3-5 credits), required

\*PATH 602- Systemic Pathology (3 credits), required (currently offered by Pathology Assistant MS program)

TOXI 607- Forensic Toxicology (3 credits), elective (currently offered by Toxicology PhD program)

FMED 610- Forensic Toxicology Laboratory (3 credits), elective

FMED 820 -Forensic Neuropathology (2 credits), elective

FMED 830 -Forensic Radiology (2 credit), elective

FMED 840 -Forensic Odontology and Forensic Anthropology (1 credit), elective

\*core courses required for all students

Courses offered by CUPL (Beijing, China) prior to enrollment at UMB (10 credits)

Introduction to Forensic Science (1 credit)

Evidence Investigation (3 credits)



Forensic biological evidence (3 credits)  
Clinical Forensic Medicine (3 credits)

Course sequence offered by UMB:

Fall Year 1

\*Forensic pathology (6 credits);

\*Forensic autopsy (3 credits)

Forensic neuropathology (2 credits)

Medico-legal death scene investigation (3 credits)

\*Epidemiological data research capstone project (1 credit)

Winter Year 1

\*Epidemiological data research capstone project (1-2 credits)

### Spring Year 1

Forensic toxicology (3 credits)

Forensic toxicology laboratory (3 credit)

\*Systemic Pathology (3 credits)

Forensic radiology (2 credits), Forensic odontology (1 credit) or Forensic anthropology (1 credit).

### Summer Year 1

\*Epidemiological data research capstone project (1-2 credits)

\*core courses required for all students

### Course descriptions

#### FMED 710 - Forensic pathology (6 credits)

Forensic pathology is the foundation of forensic medicine and deals with the study of the cause and manner of death by examination of a dead body during the medico-legal investigation of death in criminal and civil law cases in some jurisdictions. The course is designed to provide students with the principles and basic knowledge of forensic pathology practice in the US and around the world. It provides the core for the curriculum and is a pre-requisite for all the other courses. The elements include the medico-legal death investigation system in the United States and China, the categories of medico-legal cases; the objectives of medico-legal investigation; the concept of cause and manner of death, common types of injuries associated with deaths; investigation of sudden unexpected deaths, the role of forensic pathology in criminal justice, public health and safety, and pattern of various trauma. The course will be given by lectures, seminars, laboratory, and by some pre-recorded study lectures, and computer/online.

#### FMED 720 - Forensic autopsy (3 credits)

Forensic autopsy is a key procedure required in all medico-legal cases to identify the cause of death, especially in questionable cases. Forensic autopsy, or post-mortem examination as it is often called, is conducted to identify any deviation from normal anatomy. These variances from normal include diseases and injuries and help determine: 1) the cause of death, 2) the mechanism of death and 3) the manner of death of the victim in question. This course is designed to teach students to perform eviscerations as well as organ block dissection; select tissue for histological processing and special studies; and obtain specimens for biological and toxicological analysis. The course of forensic autopsy will be given by case presentation with discussion and laboratory training with hand-on instruction.

#### FMED 730 - Medico-legal Death Scene Investigation (3 credits)

Medico-legal death scene investigation is often critical in the final determination of the manner of death documenting observations and collecting physical and trace evidence from death scenes that include homicides, suicides, accidents or natural deaths. The course is designed to show students how to conduct scientific, systematic and thorough death scene investigation for medical examiner and coroner offices; how to obtain essential facts regarding the death scene,

medical history, and social history. The course will be given by case presentation with discussion, death scene visits with death scene investigation, and simulation laboratory work (death scene reenactment training).

FMED 740 -Epidemiological data research capstone project (1-2 credits per term, 3 credits total)  
Well-designed epidemiological data research in the field of forensic medicine is essential to identify risk factors of certain deaths, which will produce valuable information useful in public health and public safety. This course is almost year-long sequence that will start in the spring and end in the summer. Students will learn how to design and conduct epidemiological data analysis and research. Each student is required to develop a formal research proposal, conduct one research project under supervision of a faculty member, complete a publishable paper, and present his or her paper to the class and faculty panel.

PATH 602 Systemic Pathology (3 credits) (existing course)

Forensic pathology is a subspecialty of pathology. A good knowledge of general pathology is the foundation forensic pathology. Detailed in this course, are disease entities and disease processes of the following organ systems: cardiovascular; respiratory; gastrointestinal; liver; pancreas; head and neck; renal; male and female reproductive; breast; endocrine; skin; bone; peripheral nervous system, central nervous system, and eye. Instruction is by lecture, laboratory and computer.

TOXI 607 -Forensic Toxicology (3 credits) (existing course)

Forensic toxicology is an interdisciplinary science applying the methods of analytical chemistry, pharmacology, biochemistry, and toxicology to analyze and interpret drugs and chemicals in biological samples for legal purposes. This course is designed to teach students the mechanisms of absorption, distribution, metabolism, and elimination of drugs and chemicals, and postmortem redistribution of drugs and chemicals. The course will also teach students how to evaluate the role of drugs and/or chemicals as a determinant or contributory factor in the cause and manner of death. The course will be given by lectures and computer.

FMED 610- Forensic Toxicology Laboratory (3 credits)

Forensic toxicology laboratory will provide students with basic analytical methods to detect drugs and chemicals in biological samples. Students will also learn the procedures of sample collection, storage and testing result analysis. The course is given by case presentation with discussion and hand-on laboratory training.

FMED 820 -Forensic Neuropathology (1 credit)

Forensic neuropathology is a subspecialty of forensic medicine which focuses on all aspects of neurologic diseases and injuries that are relevant in judicial cases. This course will teach students the mechanisms, morphology, and dating of various neurologic traumas, neurologic causes of sudden death, and the effects of drugs and toxins on the central nervous system. The principles, practices, and current developments in the field of forensic neuropathology will also be discussed. The course will be given by lectures with case discussion and laboratory brain and spinal cord examination.



FMED 830 -Forensic Radiology (2 credit)

Image technologies are powerful tools in forensic sciences. The course is designed to teach students the basic radiology technologies, including postmortem x-ray and CT scan operations and postmortem radiology case studies. The course will be given by lectures, case presentation with discussion, and laboratory training.

FMED 840- Forensic Odontology and Forensic Anthropology (1 credit)

Forensic odontology is involved in assisting investigative agencies in the identification of whole or fragmented recovered human remains. This course is designed to teach students the basic skills to determine the age and race of unidentified human remains by comparison of antemortem and postmortem dental records and use of the unique features visible on dental radiographs. Students will also learn how to do the assessment of bite mark injuries and the source of bite mark injuries in cases of assault or suspected abuse. Forensic anthropology is the application of the science of anthropology in criminal investigation where the victim's remains are in the advanced stages of decomposition, severely burned, mutilated, or otherwise unrecognizable. The course is designed to teach students the basic anthropological techniques and analysis to assess the age, gender, race, stature, and evidence for estimation of postmortem interval of the individual, as well as if the individual sustained any trauma or disease prior to or at time of death. The combined course will be given by lectures and laboratory case studies.

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Introduction to Forensic Science (1 credit)

Forensic science is a multidisciplinary subject and covers a wide spectrum of professional interests and deals with aspects of forensic field which interact with the law. Forensic science serves not only the criminal justice system, but also the public health and public safety. The medico-legal or forensic investigations provide scientific and physical evidence to convict the guilty and protect the innocent. Forensic investigations also aid civil litigation, such as in medical malpractice, personal injury, and life insurance claims. The services of forensic science and medicine are critical for many aspects of public health practice and medical research, including disease surveillance and injury prevention, as well as evaluation of the quality of health. The course is designed to teach students different subfields of forensic science in general. The course will be given by lectures and seminars.

Evidence Investigation (3 credits)

Evidence investigation is a newly emerged subject in the field of forensic science. It studies the rules of evidence in the court of law and methods of evidence collection and investigation, which is closely related to the other disciplines in the field of forensic science and medicine. The main contents of the course include history of evidence investigation, basic principles of the evidence investigation, basic procedures and methods of evidence collection. The course focuses on the use of evidence investigation in the court of law. The course is designed to teach students how to perform evidence investigation and how to apply the learned theory and knowledge to analyze specific cases. The course will be given by lectures and seminars.

Forensic biological evidence (3 credits)

Forensic biological evidence is one of the most fast developing subjects in the field of forensic science. It deals with the study of biological sample, such as blood, skin cells, semen, hair, saliva

and tissue. Biological materials can also be a source of DNA which can be used to link to a scene or an individual. The course is designed to teach students the principles and basic knowledge of forensic biological evidence. The elements include molecular genetics, polymorphisms of red cell blood groups, enzyme groups, and serum proteins, as well as DNA analysis in personal identification and paternity testing. The course of forensic biological evidence will be given by lectures and seminars.

#### Clinical Forensic Medicine (3 credits)

Clinical forensic medicine refers to a branch of forensic medicine that involves an evaluation and interpretation of injuries and illness in living individuals. Clinical forensic medicine is principally concerned with the provision of forensic medical services to the living patients and medical advice particularly in the investigation of crimes. The course will teach students: (1) examination of body injury and determination the degree of injury, (2) evaluation of the degree of body impairment in motor vehicle accident cases, occupational accident cases or personal injury cases, (3) examination of victims in sexual assault cases, (4) assessment of illness or disabilities of criminal suspects or detainees whom are to be released on parole for medical treatment, (5) identification of disabilities or illnesses of life insurance cases, (6) identification of injury due to domestic violence, (7) evaluation of medical malpractice and the degree of body impairment, (8) determination of medical compensation, and (9) estimation of the age of living human beings. The course of Clinical forensic medicine will be given by lectures and seminars.

#### **Admission Requirements**

- a. Candidates who wish to enter the MS in Forensic Medicine must have a bachelor's degree or an equivalent degree from an accredited U.S. or international institution with at least 90 semester hours of accredited arts and science college credit (The students' undergraduate program must reflect the successful completion of the following coursework: general biology, general chemistry, organic chemistry, biochemistry, microbiology, mathematics and English composition), or bachelor's degree in medicine (B.M.) or equivalent from an accredited international institution that possesses adequate preparation for the graduate program.
- b. Applicants also must take the Graduate Record Examination (GRE). Accepted applicants typically have competitive GRE scores and high undergraduate GPA. Strong preference is given to students who do well on the Verbal and Quantitative sections of the GRE, and have an Analytical Writing score of >4.5.
- c. International students whose native language is not English must provide current, official test scores of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS)
- d. Applications for admission are evaluated on the basis of the following:
  - (1). Minimum 3.00 GPA or higher on a four-point scale
  - (2). Competitive GRE scores
  - (3). TOEFL scores for international applicants: minimum 600 for the paper-based test and 100 for the internet-based test; or minimum score of 8 on the IELTS

- (4). Three letters of recommendation using graduate School form
- (5). A “Personal Statement” that discusses career objectives pertaining to forensic medicine
- (6). A Curriculum Vitae
- (7). Once admitted, students must comply with Graduate School Standards, policies and degree requirements including maintain a minimum of GPA of 3.0 at all the time.
- (8). Admitted students must apply 10 credits from CUPL toward the 30 credits required for the MS. The following course can be applied to the MS: Introduction to Forensic Science (1 credit), Evidence Investigation (3 credits), Forensic biological evidence (3 credits) and Clinical Forensic Medicine (3 credits)

### **1. Describe the educational objectives and intended student learning outcomes.**

#### Educational objectives of the program

Graduates from this program will become inter-disciplinary and highly competent specialists in the field of medico-legal death investigation with broad knowledge and comprehensive techniques and skills of forensic medicine. The program mainly focuses on forensic pathology, forensic autopsy, medico-legal death investigation, forensic neuropathology, postmortem radiology, and forensic dentistry, rather than the laboratory forensic sciences.

The program will provide graduates with a number of opportunities in the medico-legal death investigation system: Forensic death investigation positions in medical examiner’s offices or coroners’ offices, Forensic investigation positions in governmental agencies such as Federal Bureau of Investigation, Department of Defense, Department of Justice, State or Federal courts, and Attorney’s offices. Admission into professional programs, such as medical school. Admission into pathology residency and forensic fellowship training programs for the individuals who have already obtained Bachelor degree of Medicine (B.M.) or Doctoral degree of Medicine (M.D.), with the ultimate goal of becoming a medical examiner/forensic pathologist. All the graduates will be excellently trained for the positions in the medico-legal death investigation and medical research in the field of forensic medicine.

#### Student learning outcomes

A graduate of the MS in forensic medicine program will:

- Understand the medico-legal death investigation system and court system in the United States
- Be able to conduct thorough death scene investigation, document and collect scene evidence
- Understand principles of basic forensic pathology including forensic neuropathology, postmortem changes, pattern of injuries, common causes of sudden expected death, and the concept of cause and manner of death

- Be able to perform or assist in forensic autopsies, collect blood and tissue specimens for toxicological analysis, postmortem biochemical studies, and microbiological tests
- Understand principles of forensic radiology and be able to conduct postmortem X-ray and CT scans
- Understand principles of forensic odontology and anthropology, and be able to apply critical elements of odontology and anthropology to determine the age, gender, stature, and race of unidentified human remains
- Understand principles of medical research, be able to conduct a literature review, be able to design a research project and collect data, and be able to write a scientific paper

No special accreditation or certification is necessary for this program.

Affiliation Agreement- see appendix

**C. Critical and compelling regional or Statewide need as identified in the State Plan:**

The keystone of Maryland State Plan for Postsecondary Education is to maintain and strengthen a system of postsecondary education institutions recognized nationally and internationally for academic excellence and effectiveness in fulfilling the educational needs of students and the economic and societal development needs of the state and the nation, so that Maryland becomes an international model of educational excellence. This program will be the first MS program in forensic medicine established in the U.S educational institutions. This MS Program will also bring together the many different cultures within Maryland and those from Asia. The richness in such diversity will ensure a diversity consciousness. Medico-legal death investigation serves the criminal justice system by detecting criminal activity or collecting evidence and developing opinions for use in criminal or civil law proceedings. During the last several decades, forensic medicine has significantly benefited public health and safety. The public service goal of forensic medicine is to investigate death for the benefit of the living by the development of strategies to prevent injury, disease, and death. Graduates of this program will become highly skilled in the medico-legal death investigation. This program will contribute to criminal and civil justice, public health and safety, and societal outcomes.

**D. Quantifiable & reliable evidence and documentation of market supply & demand in the region and State:**

Motivation for this program is, in part, to address the long-standing need of a high quality of medico-legal death investigation system in the US. Forensic death investigation in the US is in a crisis. The Report by the National Academy of Sciences (see appendix) highlights the significant shortage of forensic scientists. One subsection of this group of forensic scientists works in the death investigation area supporting forensic pathologists as investigators. Almost all graduate and post graduate forensic programs focus on the laboratory forensic sciences. None produce graduates suitable for death investigators which requires additional on the job retraining by the medical examiners. Most accredited Medical Examiner offices use approximately 2 investigators to support



a single forensic pathologist. This means there is an immediate need for over 2000 investigators in this field in the US.

As the US implements the recommendations in the NAS report, the over 2000 death investigation systems in the US will be replaced by fewer large regionalized facilities as seen here in Maryland. Maryland employs 15 full time and over 100 part time investigators. This will increase the demand dramatically. The NAS report stresses that persons must be certified in the discipline they work in and this is not the case at this time. Graduates from this program will also have expertise in assisting the pathologists in autopsy performance greatly increasing their versatility and allowing the same individual to be used in several different functions now traditionally occupied by multiple staff.

The confrontation clause in the US constitution is now being interpreted such that not just the pathologist who is called to court. More and more the investigators are called and their credibility is challenged due to lack of formal training.

Finally there is a substantial shortage of forensic pathologists. It is estimated that the US only has about 2/3 of the needed forensic pathologists. While graduates of this program cannot replace a pathologist this may well be a path for a forensically inclined individual to gain the needed premed credits to enter medical school with the ultimate goal of becoming a forensic pathologist. Individuals obtaining this degree may also use it to complement and enhance an already obtained advanced degree. Graduates with an already obtained Bachelor degree of Medicine (B.M.) or Doctoral degree of Medicine (M.D.) will be well prepared to fill the increasing demand for forensic pathology fellows and then medical examiners' positions. While there is little data on this subset of the forensic sciences, the call by the NAS and the resulting Federal Administrations forming a forensic sciences council, and bills being written in both the senate and the house suggest fundamental changes are coming in the forensic field.

The non-medical aspects of forensic sciences can be taught in any laboratory. This particular field can only be taught in an institution similar to Maryland's OCME and this is the only one at this time with the resources to undertake this program in the US.

In addition to US and statewide demand , there is also a substantial shortage of forensic scientists, especially forensic medical experts and forensic pathologists in China. China is a large country noted for its dense population of over 1.3 billion people. At present, medico-legal death investigation are conducted by forensic medical experts mainly within five relatively independent agencies: (1) the police organizations; (2) the prosecutors' offices; (3) the departments/divisions of forensic medicine/science in medical colleges and universities; (4) the Institute of Forensic Science of the Ministry of Justice; (5) the government or private forensic medical societies. Today China has an estimated less than 15,000 qualified forensic medical experts serving for the 1.3 billion people. There is a strong market demands for forensic medical experts. The Chinese medico-legal death investigation system is deeply influenced by the political system. As

a result of rapid development of China's social and economic status and gradual reform of its political and legal system, the medico-legal death investigation system has begun to receive more and more attention. In the past 10 years, our Office of the Chief Medical Examiner has trained many visiting forensic medical students, Ph.D. students, and forensic medical experts from China. We believe that graduates from this program will be the future leaders in the field of forensic medicine and medico-legal death investigation in China.

**E. Reasonableness of program duplication:**

Office of the Chief Medical Examiner (OCME) in the State of Maryland is the first statewide agency established in 1939 and designated by law to investigate deaths from injury, homicide, suicide, under unusual or suspicious circumstances, or when a person is not attended by a physician. OCME is a national leader in medico-legal death investigation. Along with the medico-legal responsibility to determine cause and manner of death OCME serves a critical public health role by identifying injury trends or potential infectious diseases that may pose risk to Marylanders.

OCME also provides educational and training programs and offers the only forensic medicine education program in Maryland. OCME currently provides teaching to pathology residents from UMB, The Johns Hopkins University, George Washington University, Georgetown University, Howard University and Bethesda armed forces pathology program. Academically, as part of the UMB, staff members at OCME also teach forensic medicine to UMB medical students, pathology assistants, pathology residents, and forensic fellows. Several forensic pathologists at OCME are also faculty members of University of Maryland School of Medicine. In the past 10 years, OCME has established broad collaborations in education, training, and research with several universities in China including China University of Political Science and Law (CUPL). Last year, CUPL received a Chinese Presidential Grant to establish a "China-American Evidence Science and Expert Witness System Research Center" and selected OCME as their US training site. An academic program in forensic medicine will synergistically benefit from, as well as enhance, on-going forensic medicine at UMB.

A few colleges and universities in the state of Maryland have established masters programs in forensic sciences such as forensic nursing at JHU, Forensic sciences in Stevenson University, Forensic Sciences in Towson University, and Forensic Science-High Tech Crime in the University of Baltimore. None of the existing program focuses on forensic medicine and medico-legal death investigation. There is no similar degree program in the entire US. This MS Program will bring together the many different cultures within Maryland with those from Asia.

**F. Relevance to Historically Black Institutions (HBIs)**

No Historically Black Institutions in Maryland offer a program that is comparable to the proposed Master of Science in Forensic Medicine at UMB. The proposed program will neither have an impact on the implementation or maintenance of high-demand programs at HBIs nor will it have an impact on the uniqueness and institutional identities and missions of HBIs.

**G. If proposing a distance education program, please provide evidence of the [Principles of Good Practice](#) (as outlined in COMAR 13B.02.03.22C).**

Not Applicable

**H. Adequacy of faculty resources (as outlined in COMAR 13B.02.03.11).**

Faculty members below have regular appointments at OCME and hold either an M.D., or Ph.D. degree. We anticipate adding adjunct faculty with expertise in forensic medicine if topics in other evolving areas. Faculty currently contribute to teaching in UMB Pathology Assistant Program, medical school students, pathology residency programs, and other Master's programs including the Master's program of Evidence Science and Law at CUPL.

David Fowler, MD :

Chief Medical Examiner, forensic pathologist, UMB Associate Professor, CUPL Adjunct Professor, member of Ph.D./M.D. program advisory committees of Tongji Medical College; Fudan University Medical School; and Juris Master program in Forensic Science advisory committee of CULP; Adjunct professor of CUPL; Has co-authored more than 40 peer-reviewed journal articles and several book chapters. Has given lectures on forensic pathology to UMB medical students, pathology residents and forensic pathology fellows in the past 20 years. In addition, has also given many lectures on forensic medicine to medical students and law school students in several major Chinese medical schools and CUPL in the past 10 years.

Ling Li, MD:

Assistant Medical Examiner; Forensic Pathologist with specialty in forensic pediatrics; UMB Associate Professor; CUPL Adjunct Professor; Master and Ph.D. program Examination Committee member of the Department of Mechanical Engineering, UMBC; member of Ph.D./M.D. program advisory committees of Tongji Medical College, Fudan University Medical School; and advisory committee member of Juris Master program in Forensic Science of CUPL. Has authored and co-authored more than 60 peer-reviewed journal articles and 3 book chapters. Has given lectures on forensic pathology to UMB medical students, pathology residents and forensic pathology fellows in the past 10 years. In addition, has also given many lectures on forensic medicine to medical students and law school students in several major Chinese medical schools and CUPL in the past 15 years.

Mary Ripple, MD:

Deputy Chief Medical Examiner; UMB and JHU Assistant Professor, assistant director of forensic pathology fellowship program at OCME, UMB Pathology Assistant's Program advisory committee member, guest professor of College of Evidence Science of CULP, Forensic pathologist with specialty also in in custody deaths, forensic pediatrics and forensic toxicology. Has co-authored 30 peer-reviewed journal articles and book chapter. Has given lectures on forensic pathology to UMB medical students, pathology residents and forensic pathology fellows in the past 15 years. In addition, has also given



many lectures on forensic medicine to medical students and law school students in several major Chinese medical schools and CUPL in the past 10 years.

David R. Fowler	M.D.	Chief Medical Examiner	Associate Professor School of Medicine UMB  Adjunct Professor, CUPL
Ling Li	M.D.	Assistant Medical Examiner	Associate Professor School of Medicine, UMB  Adjunct Professor, CUPL
Mary Ripple	M.D.	Deputy Chief Medical Examiner	Associate Professor School of Medicine, UMB  Assistant Professor, JHU
Jack Titus	M.D.	Deputy Chief Medical Examiner	Assistant Professor School of Medicine, UMB
Ana Rubio	M.D.	Assistant Medical Examiner	Assistant Professor School of Medicine, UMB
Pamela E. Southall	M.D.	Assistant Medical Examiner	Adjunct Professor University of Baltimore
Zabiullah Ali	M. D.	Assistant Medical Examiner	Clinical Instructor School of Medicine, UMB
Theodore M. King	M.D.	Assistant Medical Examiner	UMB Clinical Instructor
Patricia A. Aronica	M.D.	UMB Clinical Instructor	Adjunct Professor Towson University
Melissa A. Brassell	M.D.	Assistant Medical Examiner	Graduate School Adjunct Faculty, Towson University
Russell Alexander	M. D.	Assistant Medical Examiner	
Donna M. Vincenti	M.D.	Assistant Medical Examiner	
James Laron Locke	M.D.	Assistant Medical Examiner	Assistant Professor School of Medicine, UMB
Carol Allan	M.D.	Assistant Medical Examiner	
Barry Levine	Ph.D.	Toxicologist (OCME consultant)	Associate Professor School of Medicine, UMB
Rebecca Jufer-Phipps	Ph.D.	Chief Toxicologist	
Saki Saffia	M.D.	Assistant toxicologist	
Xiang Zhang	M.D.	Assistant toxicologist	Adjunct Professor, CUPL



Warren Tewes	DDS	Chief Forensic Odontologist	Assistant Professor Dental School, UMB
Bill Rodriguez	Ph.D.	Forensic anthropologist	
Rudy Castellani	M.D.	Neuropathologist (OCME consultant)	Professor School of Medicine, UMB
Allen Burke	M.D.	cardiopathologist (OCME consultant)	Professor School of Medicine, UMB
Juan Troncoso	M.D.	neuropathologist (OCME consultant)	Professor School of Medicine, JHU
Frederic N. Smalkin	J.D.	retired Chief United States District Judge	

### **I. Adequacy of library resources (as outlined in COMAR 13B.02.03.12).**

Health Sciences and Human Services Library (HS/HSL) Facilities and Resources:

As the only publicly funded health sciences library in the state and one of the largest health sciences libraries in the eastern United States, the HS/HSL serves the schools of dentistry, law, medicine, nursing, pharmacy, and social work; the Graduate School; the University of Maryland Medical Center; and other affiliated institutions. The physical space of the Library offers a large array of resources to assist users with access to over 50 computer workstations and study spaces, over 120 study carrels, and 45 small-group study rooms including five which are technology-enhanced. There are three teaching labs where hundreds of classes are taught every year using innovative teaching and learning technologies. A soundproof presentation practice studio with state-of-the-art software, equipment, and expert assistance is available by reservation. Two videoconferencing facilities are available for use. And, to encourage informal group study, there are flexible learning pods and rolling white boards available throughout the library. The HS/HSL has a building-wide wireless network enabling users to connect to all web-enabled and mobile resources.

The HS/HSL provides onsite and offsite access to over 110 databases, 17,916 e-books, a print collection of 366,755 and 4,902 journals. 99% of the journal literature is available electronically. The Library's popular web site ([www.hshsl.umaryland.edu](http://www.hshsl.umaryland.edu)) served as a gateway for over 1.5 million accesses to library resources. Reference service and research consultations including systematic review support, are available for all programs on campus. Library faculty are assigned to work with different user communities to facilitate access and advance knowledge informatics.

The HS/HSL is also home to the National Network of Libraries of Medicine/Southeastern Atlantic Region (NNLM/SEA), whose mission is to advance the progress of medicine and improve the public health by providing all U.S. health professionals with equal access to biomedical information and improve the public's access to information to enable them



to make informed decisions about their health. There are only eight regions in the U.S. designated as regional medical libraries under contract to the National Library of Medicine at the National Institutes of Health. The HS/HSL has held this designation for over 30 years.

The OCME maintains a collection of field specific journals, books and other publications.

**J. Adequacy of physical facilities, infrastructure and instructional equipment (as outlined in COMAR 13B.02.03.13)**

The new OCME was built with education as an integral function. The autopsy area has large viewing platforms capable of holding up to 60 individuals, with intercoms into the autopsy room below to discuss the autopsy dissection with the pathologist.

The facility can autopsy 22 cases simultaneously. The autopsy facility has both BSL2 and BSL3 autopsy capacity.

The facility is one of only 2 in the civilian arena in the US with advanced radiological imaging capacity (LODOX and CT scan). Dedicated neuropathology, anthropology and odontology labs are available with all appropriate equipment for each of those disciplines.

The building has 7 conference rooms ranging in size from 4 persons to 75 persons. All have multiple computer access points, and most have projectors, smart boards and other modern teaching aids.

There is ample space to house and teach and the modern infrastructure will easily support this additional program. Presently this facility provides teaching to UMB and The Johns Hopkins Hospital medical students, UMB Pathology Assistant students and pathology residents from the Johns Hopkins Hospital, Howard University, George Washington, Georgetown, and Bethesda Naval hospital.

This office is independently accredited through ACGME for its own fellowship program in Forensic Pathology.

**K. Adequacy of financial resources with documentation (as outlined in COMAR 13B.02.03.14)**

The program will start with a cohort of 8 full-time, students and expand to include 15 full-time and 1 part-time student by the fifth year. The initial cohort of students will be recruited from a larger group of students from the China University of Political Science and Law. However, by Year 4 UMB plans to establishing alternative matriculation pathways for students from other accredited international and domestic institutions. Tuition revenue (see Table 1) will support the program's expenditures (Table 2). One focus of the program is the generation and dissemination of new knowledge in the

disciple of Forensic Medicine. Other Expenses (#7) includes funds for student research, presentation and publication expenses.

**L. Adequacy of provisions for evaluation of program (as outlined in COMAR 13B.02.03.15).**

The program will be reviewed every seven years under the Graduate School Guidelines for Purpose, Procedures and Self-study Guidelines. A steering committee will be appointed by the Graduate School and will function to serve as an admission committee and a curriculum committee. At course completion, courses and individual faculty will be evaluated by student using an anonymous web-based survey. Collected by the Dean's Office, such evaluations are reviewed immediately by the course manager and graduate program director, and annually by the steering committee. Student grading is based upon the course syllabus. Other issues will be addressed by the Graduate Program Director. Overall student progress will be monitored by the program director, who will work with the Graduate School in enforcing Graduate School policies for academic standing.

**M. Consistency with the State's minority student achievement goals (as outlined in COMAR 13B.02.03.05 and in the State Plan for Postsecondary Education).**

A key feature of UMB's mission and strategic planning involves respecting, valuing, and achieving "diversity". The Strategic Plan states the following: "diversity" represents a core value, which is defined as being "committed to a culture that is enriched by diversity, in the broadest sense, in its thoughts, actions, and leadership." UMB realizes that it must embrace and celebrate diversity and become culturally competent. In a similar fashion, the State has a goal of expanding educational opportunities for minority and educationally disadvantaged students.

The proposed MS Program will track admission applicants to ensure that the numbers that are representative and make appropriate changes in our recruitment efforts. Also, the Graduate Program Director will coordinate support services to ensure the success of our students. This MS Program will bring together the many different cultures within Maryland with those from Asia. The richness in such diversity will ensure a diversity consciousness.

**N. Relationship to low productivity programs identified by the Commission:**

Not Applicable



TABLE 1: RESOURCES					
Resources Categories	(Year 1)	(Year 2)	(Year 3)	(Year 4)	(Year 5)
1.Reallocated Funds <sup>1</sup>					
2. Tuition/Fee Revenue <sup>2</sup>	164800	196472	218192	218286	326536
(c+g below)					
a. #F.T Students	8	9	10	10	15
b. Annual Tuition/Fee Rate	20600	21630	21630	21630	21630
c. Annual Full Time Revenue (a x b)	164800	194670	216300	216300	324450
d. # Part Time Students	0	1	1	1	1
e. Credit Hour Rate	572	601	631	662	695
f. Annual Credit Hours	0	3	3	3	3
g. Total Part Time Revenue (d x e x f)	0	1802	1892	1986	2086
3. Grants, Contracts, & Other External Sources <sup>3</sup>					
4. Other Sources					
TOTAL (Add 1 - 4)	164800	196472	218192	218286	326536

TABLE 2: EXPENDITURES					
Expenditure Categories	(Year 1)	(Year 2)	(Year 3)	(Year 4)	(Year 5)
1. Total Faculty Expenses					
(b + c below)	60,000	61,800	63,654	65,564	67,531
a. # FTE	0.5	0.5	0.5	0.5	0.5
b. Total Salary	60,000	61,800	63,654	65,564	67,531
c. Total Benefits	0	0	0	0	0
2. Total Administrative					
Staff Expenses (b + c below)	12,690	13,071	13,463	13,867	14,283
a. # FTE	0.1	0.1	0.1	0.1	0.1
b. Total Salary	9,000	9,270	9,548	9,835	10,130
c. Total Benefits	3,690	3,801	3,915	4,032	4,153
3. Total Support Staff					
Expenses (b + c below)	11,844	12,199	12,565	12,942	13,331
a. # FTE	0.2	0.2	0.2	0.2	0.2
b. Total Salary	8,400	8,652	8,912	9,179	9,454
c. Total Benefits	3,444	3,547	3,654	3,763	3,876
4. Equipment					
5. Library					
6. New or Renovated Space					
7. Other Expenses	16,000	18,000	20,000	20,000	30,000
TOTAL (Add 1 - 7)	100,534	105,070	109,682	112,373	125,144

Appendices

<https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf>

Affiliation Agreement

**UNIVERSITY OF MARYLAND  
AND  
CHINA UNIVERSITY OF POLITICAL SCIENCE AND LAW**

**DUAL MASTERS DEGREE PROGRAM AFFILIATION AGREEMENT  
FOR MS FORENSIC MEDICINE AND JM FORENSIC SCIENCE**

**PURPOSE**

The University of Maryland (UM) at Baltimore and China University of Political Science and Law (CUPL) in Beijing enter into this Agreement to describe how the UM and CUPL will cooperate to deliver a dual master's degree program. The program will consist of a MS in Forensic Medicine delivered by UM and a Juris Master in Forensic Science delivered by the CUPL for Chinese students from CUPL.

The proposed MS-JM program is a unique, interdisciplinary dual master's degree graduate program between the University of Maryland (UM) at Baltimore and China University of Political Science and Law (CUPL) in Beijing. Through a sharing of elective credits between the two universities, students will earn the Master of Science in Forensic Medicine from UM and the Juris Master in Forensic Science from the CUPL. The purpose of dual degree program is to provide educational and professional training in the field of forensic medicine, which will feature areas such as forensic pathology, forensic autopsy, medico-legal death scene investigation, forensic toxicology, forensic dentistry, forensic anthropology, forensic radiology, forensic neuropathology, forensic pediatric pathology, and epidemiological research of the related areas. The proposed program is consistent with the mission of graduate education in public health care, social work, and the law.

Program graduates will possess knowledge and skills to contribute to the medico-legal death investigative system and legal justice system including the generation of knowledge in the field through submission of a manuscript for publication.

The Juris Masters in Forensic Science program is an existing program at the CUPL. The current program requires 65 credits. The dual master's degree program at CUPL will recognize 10 credits from the MS in Forensic Medicine program from UM as required credits. The MS program in Forensic Medicine at UM is a new program (See "attached MS-FM program introduction"). It consists of 30 credits for didactic courses, laboratory activities and clinical observation. The MS program in Forensic Medicine at UM will recognize 10 credits from the Juris Master's program at CUPL to fulfill MS requirements. American students enrolled in the MS in Forensic Medicine program at UM who are interested in studying at CUPL, may apply for CUPL's overseas study program (Forensic Science Courses). The students may take one semester of forensic science courses, including one credit of Chinese Language course at CUPL to earn up to 10 credits to fulfill the MS program in Forensic Medicine requirements. These American students will only receive the MS degree from UM.

Admission to the dual degree of Master of Science in Forensic Medicine from UM and the Juris Master in Forensic Science from the CUPL is contingent upon satisfactory admission into the Graduate School of UM and CUPL. Students will begin study at UM in Fall, 2015.

## **RESPONSIBILITIES OF UM**

1. Certify student eligibility for enrollment in the MS degree program, admit, and award the MS degree upon successful completion of degree requirements.
2. Maintain student records pertaining to matriculation and progression toward the MS degree.
3. Conduct orientation for students entering the MS degree program.
4. Be responsible for the academic and administrative standards and accreditation of the MS degree requirements.
5. Collect tuition from students enrolled in the MS program and provide financial support to the MS program
6. Maintain accreditation of the MS program from Middle States Commission on Higher Education.
7. Provide information to students regarding visa status and U.S. export control screening.
8. Designate Program Directors dedicated to the MS degree program. Two program directors will be from the Office of the Chief Medical Examiners, State of Maryland. Director Dr. David R. Fowler will be act as a liaison between CUPL and UM. Additionally, the Program Co-Director Dr. Ling Li will work closely with the Graduate School to ensure effective operations of all academic and student affairs functions. The responsibilities of these positions are to:
  - a. develop the courses that are part of the MS program curriculum;
  - b. establish of the Admissions, Curriculum and Student Progressions committees;
  - c. Serve on an ongoing basis on the Admissions, Curriculum and Student Progressions committees;
  - d. Oversee the delivery of coursework described herein for students enrolled in the MS program in accordance with the MS curriculum;
  - e. Meet regularly with the Graduate School Administration.

## **RESPONSIBILITIES OF CUPL**

1. Certify student eligibility for enrollment in the JM degree program, admit, and award the JM degree upon successful completion of degree requirements.
2. Maintain student records pertaining to matriculation and progression toward the JM degree.
3. Be responsible for the academic and administrative standards and accreditation of the JM degree requirements.
4. Collect tuition from students enrolled in the JM program and provide financial support to the JM program
5. Maintain accreditation of the JM program from Ministry of Education.
6. Provide information to students regarding visa status.
7. Designate Program Directors dedicated to the JM degree program. Two program directors will be from the Collaborative Innovation Center of Judicial Civilization, China and the College of the Evidence Science (Key Laboratory of Evidence Science, Ministry of Education) at CUPL. Director Prof. Lin Chang will be act as a liaison between CUPL and UM. Additionally, the Program Co-Director Dr. Dong Zhao will work closely with the Graduate School to ensure effective operations of all academic and student affairs functions.

## **JOINT RESPONSIBILITIES**

1. UM and CUPL will each designate two Program Directors for purposes of administering this Agreement. In the event a Program Director is unwilling or unable to serve, an alternate may be designated.
2. Consult with each other promptly on any alleged violation of UM of CUPL policy or applicable law, including (by way of example only) allegations of sexual harassment, discrimination, unprofessionalism or academic misconduct. Cooperate in investigation and resolution of complaints in accordance with applicable policies and procedures.
3. At the end of each academic year, the parties will discuss the effectiveness of this Agreement and make suggestions as to what mutually agreeable programmatic changes or amendments, if any, should be made to the Agreement.

## **EQUAL OPPORTUNITY**

Both institutions subscribe to the policy of equal opportunity and will not discriminate on the basis of race, sex, sexual orientation, gender identity or expression, age, ethnicity, religion, or



national origin. Both institutions shall abide by these principles in the administration of this Agreement.

## GOVERNING LAW AND LANGUAGE VERSION

- A. The Agreement is translated into Chinese and English, and each language version shall be equally authentic. However, in case of conflict between the meaning of any terms in the English or Chinese language version of this Agreement, the English language version shall prevail.


## MISCELLANEOUS

1. Either UM at Baltimore or CUPL, upon 90 calendar days written notice sent to the address or email address given below, shall have the right to terminate this Affiliation Agreement for any reason, but to the extent feasible, each shall perform the roles and responsibilities provided herein up to the time of termination. Students currently enrolled in courses at time of termination would not be affected.
2. This Agreement is a public record of the State of Maryland.
3. Unless otherwise noted, this Agreement shall be in force and binding upon the parties hereto for a period of ten years from the date of this agreement, and it is renewable upon written consent of UM and CUPL. This Agreement may be reviewed and revised at any time by mutual written consent of the UM and CUPL prior to the expiration of the foregoing period. Any dispute about the content of the Agreement can be resolved through consultation and discussion between UM and CUPL. If the informal resolution fails, UM and CUPL, at the written request of either party, may submit the dispute for mediation before a neutral third party at a location as mutually agreed. During any such mediation, the parties will continue diligent performance of the Agreement.

BY SIGNING BELOW, EACH PARTY REPRESENTS THEY AGREE WITH THE INFORMATION HEREIN AND THEY ARE AUTHORIZED TO EXECUTE THIS AGREEMENT ON BEHALF OF THEIR ORGANIZATIONS.

FOR: University of Maryland Baltimore

BY:

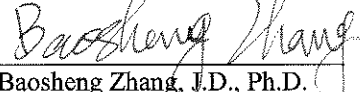
  
\_\_\_\_\_  
Bruce Jarrell, MD

4/17/14  
Date

Vice President  
620 West Lexington Street  
Second Floor, Room 2112  
Baltimore, MD 21201, U.S.A  
Phone: 410-706-2304  
Fax: 410-706-0500  
Email: bjarrell@umaryland.edu

FOR: China University of Political Science and Law

BY

  
\_\_\_\_\_  
Baosheng Zhang, J.D., Ph.D.

29/04/14  
Date

Vice President  
25 West Tucheng Road  
Haidian District  
Beijing 100088, P. R. China  
Phone: 86-10-58908030  
Fax: 86-10-58908029  
Email: bensenzh@cupl.edu.cn

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