

**BIOMEDICAL FORENSIC SCIENCES
GRADUATE PROGRAM HANDBOOK
2009-2010**



**DEPARTMENT OF ANATOMY AND NEUROBIOLOGY
DIVISION OF GRADUATE MEDICAL SCIENCES
BOSTON UNIVERSITY SCHOOL OF MEDICINE**

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Program Mission

The mission of the Biomedical Forensic Sciences Program is to teach and model scientific rigor with high professional and academic standards as applied to the various disciplines of the forensic sciences in an effort to generate confident, competent and ethical future practitioners.

★ Goals

1. To offer courses in a range of forensic science disciplines with focus on the forensic application of biology and chemistry.
2. To teach current techniques and procedures and provide a strong foundation for developing competency in the various forensic disciplines.
3. To provide students with opportunities for learning and research with focus on the application of critical thinking and data analysis to problem solving and experimental design.
4. To teach and model high standards of professional conduct and ethics.
5. To support program faculty in their various specialties through opportunities for continuing education, consultation, research and service to the forensic science community.

Admission to the Program

Students admitted into the MS Program in Biomedical Forensic Sciences (BMFS) must begin their course of study in the fall semester. Students wishing to begin taking classes during the spring or summer semesters may do so as a non-degree student only and apply for admission into the Program for the following fall. Priority for admission into the Program will be given to applicants whose completed applications are received by February 1st. Completed applications received after February 2nd will be considered as they are received until the start of the fall semester. Applications received after the fall semester begins will be considered for admission for the following academic year.

The credentials of each student applicant will be thoroughly reviewed by at least three members of the Graduate Student Committee or other full-time or part-time faculty before an applicant can be recommended for admission into the Program.

★ Graduate Student Committee

The Graduate Student committee directs and oversees the Biomedical Forensic Sciences Program within the Department of Anatomy and Neurobiology. Its responsibilities include but are not limited to: admission decisions, policy-making, the establishment of academic requirements, the resolution of disputes, curriculum development, and the administration of certain programs affecting graduate students. The Committee consists of the Director of the Biomedical Forensic Sciences Program, the Assistant Director of the Biomedical Forensic Sciences Program and at least one other full-time faculty member.

★ Program Advisors

Upon beginning the BMFS Program, each student will be assigned a Program advisor to assist him/her in selecting an appropriate course of study. Program advisors are full-time or part-time faculty members in the Biomedical Forensic Sciences Program and will have responsibilities such as approving and signing course registration forms, approving and assigning grades for internships and helping students choose an appropriate thesis advisor by the end of the first year of study. Students should initiate a meeting with their Program advisor every semester to be sure they are choosing an appropriate course of study.

Curriculum

The Program for the MS degree consists of the equivalent of approximately two years of fundamental course work, including laboratory-based course work and at least two semesters of thesis research work. Candidates are required to complete 38 credits (22 core coursework credits, 4 lab credits, 4 credits of directed studies/thesis research and 8 elective credits) at the graduate level and pass a competency examination. If desired, students may tailor their choice of elective courses towards one of two specified tracks: Forensic Chemistry-Trace Evidence Analysis or Forensic Biology-DNA Analysis.

✦ Core Courses

Students entering the program will be required to take each of the following core courses. Planning of the academic schedule will be carried out in consultation with the student's program advisor.

- GMS FS 700 Criminal Law and Ethics
- GMS FS 701 Crime Scene Investigation
- GMS FS 702 Forensic Biology
- GMS FS 703 Forensic Chemistry
- GMS FS 707 Trace Evidence Analysis
- GMS FS 712 Forensic Pathology
- GMS FS 720 Forensic DNA Analysis
- GMS FS 800 Criminal Law II - Mock Court
- GMS FS 870 Directed Studies in Biomedical Forensic Sciences
- GMS FS 970/1 Thesis Research in Biomedical Forensic Sciences

✦ Laboratory Courses

All students are required to take a minimum of 2 laboratory courses.

- GMS FS 704 Forensic Biology Laboratory
- GMS FS 708 Forensic Instrumental Analysis Laboratory
- GMS FS 721 Forensic DNA Analysis Laboratory
- GMS FS 807 Trace Evidence Analysis Laboratory

✦ Elective Courses

In addition to the core courses and lab courses, students will be required to complete their credit hours with the following elective courses (subject to change). Course selection will be carried out in consultation with the student's program advisor.

- GMS FS 706 Pattern Evidence Analysis
- GMS FS 709 Medicolegal Death Investigation
- GMS FS 713 Bloodstain Pattern Analysis

- GMS FS 716 Homicide Investigation
- GMS FS 718 Techniques in Firearms Investigation
- GMS FS 730 Advanced Topics in Forensic DNA Analysis
- GMS FS 735 Analysis of Ignitable Liquids and Explosives
- GMS FS 740 Analysis of Controlled Substances
- GMS FS 751 Advanced Topics in Crime Scene Investigation
- GMS FS 803 Advanced Topics in Forensic Chemistry
- GMS FS 830 Forensic Toxicology
- GMS FS 871 Internship in Biomedical Forensic Sciences
- GMS FS 970/1 Thesis Research in Biomedical Forensic Sciences

★ Courses Outside of BMFS

Students may take up to 6 credits in relevant graduate courses offered outside of the BMFS Program. These courses may be offered from within Boston University or by another college/university. Requests for approval of courses from outside of the BMFS Program should be submitted to the student's program advisor and final approval must be granted by the Program Director.

Courses offered through the Forensic Anthropology Program, Division of Graduate Medical Sciences, School of Public Health or the Graduate School of Arts and Sciences may be approved for credit in the BMFS Program. Students should be aware that some of these courses require pre-requisites. Course selection will be carried out in consultation with the student's Program advisor and must be approved by the Program Director. A list of pre-approved graduate courses outside of the BMFS Program can be found on the BMFS website. Students with no prior coursework in statistics are encouraged to register for a graduate level statistics course such as Elementary Biostatistics (SPH BS 701) offered by the School of Public Health.

In addition, students may be granted approval to transfer academic credits for elective courses taken outside of BU if it is deemed that an equivalent and appropriate graduate level course has been successfully completed in the preceding five years at an accredited college or university. In order to obtain transfer credits, students must provide a course description, transcript and syllabus from the completed course. On-line courses will not be approved for transfer credit.

★ Course Requirements for Specialized Tracks

Students may tailor their choice of elective courses toward one of two specified tracks: Forensic Biology-DNA Analysis or Forensic Chemistry-Trace Evidence Analysis. The designated track chosen by the student will not officially appear on the student's transcript though each student who completes a specified track will receive a letter from the Graduate Student Committee stating that the necessary coursework and competency exam for the designated track has been successfully completed.

Forensic Chemistry-Trace Evidence Analysis Track

- Forensic Instrumental Analysis Laboratory
 - Trace Evidence Analysis Laboratory
 - Advanced Topics in Forensic Chemistry
- AND a minimum of 4 credits selected from the following:
- Forensic Toxicology (2 Credits)
 - Analysis of Ignitable Liquids and Explosives (2 Credits)
 - Analysis of Controlled Substances (2 Credits)
 - An approved chemistry-related course from outside the BMFS Program

Forensic Biology-DNA Analysis Track

- Forensic Biology Laboratory
 - Forensic DNA Analysis Laboratory
 - Advanced Topics in Forensic DNA Analysis
- AND a minimum of 4 credits selected from the following:
- Elementary Biostatistics SPH BS 701 (3 Credits)
 - Molecular Biology CAS BI 552 (4 Credits)
 - Experimental Design & Statistical Methods GMS AN 704 (2 Credits)
 - An approved biology-related course from outside the BMFS Program

Students interested in working in the field of forensic DNA analysis should consult Section 5.3.1 of the Quality Assurance Standards for Forensic DNA Testing Laboratories set forth by the Federal Bureau of Investigation to ensure that all of the degree requirements for forensic DNA analysts have been successfully completed. The standard states that DNA analysts must have "successfully completed college course work (graduate or undergraduate level)

covering the subject areas of biochemistry, genetics and molecular biology (molecular genetics, recombinant DNA technology) or other subjects which provide a basic understanding of the foundation of forensic DNA analysis, as well as course work and/or training in statistics and population genetics as it applies to forensic DNA analysis”.

★ Course Descriptions

Core Courses

Criminal Law and Ethics (FS 700, 2 credits)

Spring

An overview of legal, ethical, and practical issues of forensic science, the impact of forensic science on the justice system and a discussion of traditional and emerging admissibility standards involving forensic science evidence is given. The curriculum will include a description of the roles played by law enforcement, attorneys and forensic scientists, as well as professional standards for the practice of criminalistics and ethical issues in forensic pathology, psychiatry and crime scene investigation.

Crime Scene Investigation (FS 701, 3 credits)

Fall/Spring

This combination hands-on and lecture-based course will provide students with an in-depth review of crime scene assessment and management. Methods for identifying, documenting, collecting and packaging physical evidence from various types of crime scenes will be discussed. A hands-on component will be employed in areas such as crime scene sketching, photography and evidence collection.

Forensic Biology (FS 702, 3 credits)

Spring

This lecture-based course will introduce students to biological aspects of forensic evidence including biochemical and physical attributes of blood and other body fluids. Common methods of body fluid identification utilized in forensic

laboratories will be discussed at length. Other topics include guidelines for thorough evidence examination, screening, documentation and report writing.

Forensic Chemistry (FS 703, 3 credits)

Fall

This lecture-based course will provide an introduction to forensic chemistry and will expose students to chemical principles and instrumental techniques associated with the following areas of the field: controlled substances, toxicology, ignitable liquids and explosives. A review of organic and analytical chemistry as they relate to forensic investigations will be discussed.

Trace Evidence Analysis (FS 707, 3 credits)

Fall

This lecture-based course will provide an overview of the principles and concepts on which trace evidence analysis is based. Proper collection, preservation, identification and comparison of items such as glass, paint, hairs and fibers using standard methods and instruments used in crime laboratories will be discussed.

Forensic Pathology (FS 712, 3 credits)

Spring

This lecture-based course will provide the student with an overview of the role of the medical examiner as it relates to death investigations. Specific lectures will cover autopsy procedures in the investigation of gun shot wounds, sharp and blunt trauma, drowning, asphyxia, child deaths, motor vehicle accidents and time since death determination. A general knowledge of anatomy is recommended prior to enrollment.

Forensic DNA Analysis (FS 720, 3 credits)

Fall

This lecture-based course will discuss the theory and application of human genetics and molecular biology to the testing of biological evidence. DNA structure and organization of the human genome and types of genetic variation occurring in humans will be covered. Other topics include the history of DNA analysis and current PCR based methods for testing of autosomal STR loci, Y

chromosome STR loci and mitochondrial DNA. Lecture material will also cover commonly encountered artifacts in PCR testing, DNA profile interpretation and statistical analysis of results.

Criminal Law II- Mock Court (FS 800, 2 credits)

Fall/Summer

This interactive course builds upon the material discussed in Criminal Law and Ethics regarding the criminal trial process, the role of the forensic witness and the presentation of scientific testimony and physical evidence in court. Students will actively participate in presenting testimony as well as critiquing the performance of others in a mock court setting. Instructors may utilize reports and projects prepared in other courses to provide the subject matter for the students' testimony. *Prerequisite: Criminal Law and Ethics*

Directed Studies in Biomedical Forensic Sciences (FS 870, 2 credits)

Students will register for this course in preparation for conducting a library- or laboratory-based thesis project. With direction from the student's thesis research committee, the student will investigate his/her thesis topic, develop a research plan including an outline of the project, become familiar with quality control and quality assurance issues and begin data collection.

Research in Biomedical Forensic Sciences (FS 970/971, 2 credits)

Each student must complete a program of laboratory or library research, the results of which will be incorporated into a thesis of publishable quality. The thesis clearly states a hypothesis or scientific question and presents the author's findings to support the stated proposition. Thesis topics are developed in conjunction with a research committee consisting of faculty members and/or other qualified individuals. Registration for this course should be during the semester in which the student anticipates graduation from the program.

Elective Courses

Pattern Evidence Analysis (FS 706, 2 credits)

Spring

This combination lecture and lab-based course will provide students with an overview of various types of pattern evidence with an emphasis on the systematic approaches to pattern evidence comparison and analysis. The history of fingerprint identification, fingerprint processing and comparison techniques, footwear and tire impression analysis, toolmark analysis, and the importance of photography in pattern evidence documentation will be discussed. Development of pattern evidence using mechanical, chemical and visual techniques is incorporated. *Prerequisite: Crime Scene Investigation*

Medicolegal Death Investigation (FS 709, 2 Credits)

Fall

This lecture-based course will provide the student with an overview of the basic practices and principles of medicolegal death investigations. Specific lectures will cover the procedures and skills necessary to conduct a thorough medicolegal investigation of death, knowledge of various types of traumatic injuries, the knowledge necessary to understand the characteristics that differentiate the manners of death and the skills to conduct an appropriately directed investigation. The curriculum will prepare the students to take the national certification examinations offered by the American Board of Medicolegal Death Investigators. A general knowledge of anatomy is recommended prior to enrollment.

Bloodstain Pattern Analysis (FS 713, 2 credits)

Summer

This lecture and lab-based course will provide students with fundamental knowledge in the area of bloodstain pattern analysis including the scientific principles and practical applications of bloodstain pattern analysis to forensic casework. The procedures and methods for recognition, documentation and evaluation of bloodstain patterns will be covered. Additionally, the principles of physics, blood dynamics and the geometric significance of bloodstain patterns will be explored. *Prerequisite: Crime Scene Investigation*

Homicide Investigation (FS 716, 2 credits)

*Summer**

This lecture-based course will provide the student with an overview of the art and science of homicide investigation, with an emphasis on the “art”. An actual murder investigation and subsequent trial will be used to highlight the investigatory and legal issues an investigator may face, as well as the social and political context in which homicide investigations take place.

Techniques in Firearms Investigation (FS 718, 2 credits)

*Summer**

This hands-on and lecture-based course will provide students with an overview of the analytical methods and underlying theories related to specialized aspects of the investigation of firearms related crimes. Topics covered will include basic construction and operation of firearms/ammunition, bullet trajectory analysis, toolmark comparisons, chemical analysis of primers/propellants, muzzle to target distance determination and serial number restoration.

Advanced Topics in DNA Analysis (FS 730, 2 credits)

Summer

This course will build on topics presented in the Forensic DNA Analysis course and laboratory. Students will gain experience interpreting STR data from compromised and mixed source samples, and will understand the theory behind DNA profile frequency calculations. An in-depth review of the techniques and methodology used in a forensic DNA laboratory and the roles that accreditation, validation and quality assurance play will be discussed. *Prerequisite: Forensic DNA Analysis*

Analysis of Ignitable Liquids and Explosives (FS 735, 2 credits) *Summer**

This course will expose students to an in-depth treatment of the analysis of ignitable liquids and explosives. Practical and theoretical aspects of qualitative and quantitative measurements using current methodologies such as GC/MS and UV-VIS will be discussed. *Prerequisite: Forensic Chemistry*

Analysis of Controlled Substances (FS 740, 2 credits)

TBA

This lecture-based course will provide information on the important methods of analysis of most commonly abused illicit substances including marijuana, cocaine, opiates, hallucinogens and amphetamines. Additionally, the production, distribution and history of these commonly abused drugs will be covered. Laboratory accreditation requirements will also be discussed. *Prerequisite: Forensic Chemistry*

Advanced Crime Scene Investigation (FS 751, 2 credits)

Spring

This hands-on and lecture-based course will provide students with methods and underlying theories related to specialized aspects of crime scene processing. Topics covered will include techniques and principles utilized in search and recovery of human remains. Forensic entomology, mechanisms of human decomposition, use of ground penetrating radar, soil composition, excavation, telltale disturbances in flora and the presence of animal activity will be examined. A semester-long practical exercise will include the search and recovery of mock remains and the reconstruction of events. *Prerequisite: Crime Scene Investigation*

Advanced Topics in Forensic Chemistry (FS 803, 2 credits)

Summer*

This lecture-based course will provide students with an understanding of advanced analytical techniques utilized by modern state and national forensic laboratories. Lecture topics will include: Tandem techniques such as GC/MS-MS and LC/MS-MS, high-resolution techniques such as FT-MS and ICP-MS, Raman, Ion Mobility, and Energy Dispersive Spectroscopy and X-Ray Fluorescence. *Prerequisite: Forensic Chemistry*

Forensic Toxicology (FS 830, 2 credits)

TBA

This lecture-based course will provide an overview of the pharmacology, pharmacokinetics and toxicology of common drugs of interest to the forensic toxicologist. An emphasis will be placed on applying the principles of

pharmacokinetics to the interpretation of drug blood and urine levels, and on developing an understanding of how drugs (including ethanol) interact with the biology and physiology of the human body. Students will also acquire knowledge of the chemical structure of common drugs. *Prerequisite: Forensic Chemistry*

Internship in Biomedical Forensic Sciences (FS 871, 2 Credits)

An internship in a forensic setting is encouraged, and may be approved for academic credit depending on the number of hours and the nature of the work completed during the internship. With prior approval from the student's thesis advisors and the internship site supervisor, work completed at an internship may be used as the basis of the student's thesis. A completed evaluation from the internship supervisor describing the nature of the work completed and the quality of the student's performance will be required. In addition, the student will be required to write a summary of his/her internship experiences and responsibilities.

Laboratory Courses

Forensic Instrumental Analysis Laboratory (FS 708, 2 credits) *Fall/Spring*

This laboratory course will provide an introduction to a variety of instrumentation and equipment utilized in the forensic laboratory and detail the methods used by forensic scientists for chemical and trace evidence analysis. *Concurrent/Prerequisite: Forensic Chemistry*

Forensic Biology Laboratory (FS 704, 2 credits) *Fall/Spring*

This laboratory course will give students an opportunity to apply the principles of forensic biology to actual samples. Techniques utilized will include screening tests, methods used to confirm the presence of specific biological material(s), microcrystalline tests, catalytic color tests, antigen-antibody interactions, gel diffusion and microscopic identification of cellular material. *Concurrent/Prerequisite: Forensic Biology*

Forensic DNA Analysis Laboratory (FS 721, 2 credits)

Fall/Spring

This laboratory course will provide theory and practice in procedures used in forensic DNA analysis. Sessions will include use of several DNA extraction techniques, clean technique for contamination prevention, real time PCR for human DNA quantitation, PCR amplification of STR loci and DNA profile analysis. *Concurrent/Prerequisite: Forensic DNA Analysis*

Trace Evidence Analysis Laboratory (FS 807, 2 credits)

Spring/Summer

This laboratory course will provide hands-on experience with the methods, techniques and instruments used to analyze trace evidence, such as glass, paint, hairs and fibers, with the ultimate goal of identifying and comparing known trace evidence materials with questioned samples. *Prerequisite: Trace Evidence Analysis*

The semester(s) indicated for each course is tentative and may be subject to change

*May not be offered every year

★ **Grades**

To receive graduation credit in any course taken as part of the BMFS Program, students must receive a grade of B- or better.

If a grade of C+ or lower (including grades of an “I” after one year) occurs in a total of three courses or more, a student will be automatically dismissed from the Program.

When the work of a course has not been completed within the semester of registration due to extenuating circumstances, the grade of “I” may be assigned by the instructor. *A grade of “I” can only be given if a student is doing passing work.* This automatically becomes a permanent grade of “I” (unsatisfactory grade) unless the course work is completed within one year. “Incomplete” grades may not be changed after a period of one year from the time the original grade is recorded. Grades of “I” (after one year) and C+ or lower are interpreted as failures.

Seminars and Safety Training

✦ Required Scientific Reading and Writing Seminars

During the first year of the BMFS Program, each student will be required to attend an introductory seminar on scientific reading and a seminar on writing a thesis, which will be presented by a member of the Graduate Student Committee. The purpose of these seminars is to familiarize the student with reading advanced scientific literature and improving the students' skills of understanding and critically evaluating the research publications in their field of study.

✦ BMFS Seminar Series

The BMFS Program in conjunction with the Boston University Forensic Science Society (BUFSS) oversees a graduate seminar series featuring forensic practitioners, researchers and students. The seminars are typically held monthly during the fall and spring semesters and aim to make students aware of the variety of career paths and new developments in forensic science. It is strongly recommended that students enrolled in the BMFS program make every attempt to attend these seminars.

✦ Safety Training

Every student at BU School of Medicine is required to attend a Laboratory Safety and Hazardous Waste Management Training session prior to participating in a laboratory course or lab-based research. The trainings are provided by the Office of Environmental Health and Safety, and are typically given once a month including during new student orientation. Laboratory Safety and Hazardous Waste Management Training is required before performing any work in the lab and annually thereafter. It is the responsibility of the student to attend the training and provide verification of attendance to his/her appropriate lab instructor or thesis advisor.

Competency Examinations

★ General Competency Exam

Near the completion of his/her course work, each student will be required to pass a general competency examination that will cover topics from the core courses completed during the Program. An overall passing grade of 80% (equivalent to a B- or better) is required in order to graduate. The exam will be administered on the first Friday of October, February and June. Students who fail the exam will be required to successfully complete an essay version of the exam four weeks later that contains questions from the topic areas the student previously failed.

★ Specialty Track Exams

Students who opt to complete the requirements for a specialized track will be required to take an additional competency examination covering topics from the courses in the chosen specialty area. The exams will be graded by the instructors who submitted the questions or other qualified personnel. As with the general competency exam, an overall passing grade of 80% (equivalent to a B- or better) is required in order to successfully meet the specialized track requirement. The exam will be administered on the third Friday of October, February and June. Students who fail the specialty exam will not be able to attain specialty track status.

★ Standardized Forensic Science Exam

The Forensic Science Assessment Test (FSAT) is a standardized exam developed by the American Board of Criminalistics (ABC) for students in their last semester of an academic forensic science program. Students may wish to use the test to compare their knowledge to other individuals in their peer group or to show prospective employers their level of forensic science knowledge. The FSAT will be offered to interested students twice a year in accordance with the dates set by ABC. This exam is not required for graduation from the BMFS program.

Thesis Research

To complete the Master's Degree in Biomedical Forensic Sciences each student must complete a program of laboratory or library research, the results of which will be incorporated into a thesis of publishable quality. In addition, each student is required to present the results of his/her research orally in a public forum.

★ Research Committee

By the end of the second semester (or completion of 18 credits) in the Program, each student will select a Research Committee in consultation with his/her program advisor. The Research Committee will consist of one full time BMFS faculty member, one individual with a MS or doctoral degree who is not associated with the program but is knowledgeable in the relevant area of research, and a third member. This third member will be designated by the student's primary thesis advisor and will evaluate the completed project. The student's program advisor may or may not be part of the Research Committee, depending on his/her area of specialty.

One of the Research Committee members will be the primary thesis advisor and the first reader. An additional committee member will be the second reader of the thesis. If a reader is not a full-time faculty member the student will obtain a one-day special appointment for that individual through the Registrar's office to enable the committee member to sign the signature page of the final approved thesis.

The student will meet with his/her Research Committee at least every two months once the student begins planning and working on his/her research. These meetings will be initiated and arranged by the student. The duties of the Research Committee are to consider the student's research plan, assist in implementing that plan and guide the writing process. The Research Committee will evaluate the completed thesis and determine whether it meets the standards required for the degree.

Communication with the Research Committee and attention to detail can contribute significantly to the process of executing the research and writing of the thesis. The student is encouraged to bring additional questions to his/her program advisor or Research Committee members.

✦ Thesis Timeline

The process of conducting research and writing a thesis requires a minimum of **two semesters or 8 to 10 months to complete**. This will include planning and implementing the research and writing the thesis and is the same whether library or laboratory research is conducted. The thesis is not a term paper, book review or an in-depth laboratory report. The thesis will clearly state a hypothesis or scientific question that is being investigated. The hypothesis or question is investigated in a laboratory setting or through scholarly research.

Four credit hours will be devoted to the thesis research. Each student will register for a semester of Directed Studies (GMS FS 870, 2 credits) during which time the student will have the initial meeting(s) with his/her committee, produce and understand the outline of the research plan and begin the project. The student is encouraged to meet regularly with his/her Research Committee during this semester.

The student will register for Thesis Research (GMS FS 970 or 971, 2 credits) in the semester in which the student anticipates graduation from the program. A “draft” of the thesis is the completed work of the student which is presented to the readers for review and comment. The reader(s) and the student may have previously worked on and revised individual sections of the document. The completed draft of the thesis must be submitted to at least one reader at least **4 weeks prior** to the “first draft deadline” set by the registrar’s office. The revised final draft of the thesis must be given to both readers at least **2 weeks prior** to the “final deadline” set by the registrar’s office. The student should consider that the number of drafts or requested changes required for final approval may differ from project to project.

It is the student’s responsibility to obtain the deadlines for graduation from the registrar’s office and to meet these deadlines. Extensions are **not** provided when students do not meet graduate school deadlines. It is highly recommended that students frequently communicate with their advisors regarding their progress as it relates to their anticipated graduation date. It is the responsibility of the student to schedule and meet with the Registrar, Millie Agosto, to ensure the use of proper formatting in advance of all deadlines. **Failure to meet the required deadlines will result in the student being required to register as a continuing student and pay the associated tuition fee for an additional semester.**

✦ Additional Thesis Requirements

The complete set of formal requirements for a thesis is given in material that may be obtained from the Division of Graduate Medical Sciences (*Research Guide for Writers of Theses and Dissertations*, prepared by Boston University's Mugar Memorial Library). Among other requirements are the following:

1. All work must be cited in an accepted format. All statements and facts that are not the student's own conclusions **must** be cited.
2. The majority of citations **must** be from peer-reviewed journal articles. Textbook citations should be limited to less than 5% of literature cited.
3. Use of web sites is highly discouraged and should be limited as many are not peer-reviewed and often contain errors.
4. Students must incorporate a minimum of **30 references** into their overall work. The body of their thesis needs to be **a minimum of 45 double spaced pages in length** not including the bibliography.
5. Arrangements must be made to present one bound copy of the final thesis to the Departmental Library and one copy to the Biomedical Forensic Sciences Office.

Internships

Students may pursue an approved internship in a forensic setting, although an internship is not required for graduation. Students will be responsible for locating their internship with the assistance of the Graduate Student Committee and/or faculty advisors. With prior approval from the student's thesis advisors and the internship site supervisor, work completed at an internship may be used as the basis of the student's thesis. Students may receive 2 credits for their internship at the discretion of the student's program advisor, depending on the number of hours and the nature of the work completed during the internship. A written description of the internship duties/responsibilities and a telephone conversation or in-person meeting between the program advisor and the proposed internship supervisor will be required before approval is granted.

At the end of the internship, a completed evaluation from the internship supervisor describing the nature of the work completed and the quality of the student's performance will be required. In addition, the student will be required to

write an 8-10 page summary of his/her internship experiences and responsibilities. The paper should include a description of any skills or knowledge gained during the internship and the results of any experiments or research conducted.

The basis for evaluation (grade) for an internship will be the written paper, which will be graded by the student's program advisor, as well as input from the internship supervisor. It is the responsibility of the student to make sure the evaluation form and the written paper are turned in to his/her program advisor in order for a grade to be assigned. Students who register for an internship and fail to submit the required documents will receive a grade of "I".

Required Texts

The books listed below represent a series of widely accepted and detailed professional textbooks that cover a range of topics in various forensic disciplines. Students can expect to repeatedly reference these texts in many courses during the Program and again in the workplace. The purchase of this series, therefore, is a required part of the Program.

Forensic Science Handbook Vol. I, 2nd Edition by Richard E. Saferstein, Pearson Prentice Hall, 2002

Forensic Science Handbook Vol. II, 2nd Edition by Richard E. Saferstein, Pearson Prentice Hall, 2005

Forensic Science Handbook Vol. III, 2nd Edition by Richard E. Saferstein, Pearson Prentice Hall, 2010.

Professional Organizations and Scientific Meetings

Professional organizations provide ideal venues for exchanging ideas and information within the forensic sciences. Students are strongly encouraged to join the American Academy of Forensic Sciences (AAFS) as well as other forensic professional organizations such as the International Association for

Identification (IAI) or the Northeastern Association of Forensic Scientists (NEAFS). All membership fees are the responsibility of the student.

Forensic professionals convene at scientific meetings, such as the AAFS annual meeting in February, to present the most current research and information in a variety of forensic disciplines. These meetings provide valuable learning and networking experiences to students who will soon be entering the forensic profession as well as to seasoned forensic practitioners. The BMFS Program promotes attendance at scientific meetings by offering nominal travel grants to those students who have been asked to present their research by their advisor.

Background Checks

While not required for entry into the BMFS Program, students should be aware that employment in a crime laboratory (government or private) or law enforcement agency typically requires successful completion of an extensive personal background check which may include a criminal history investigation, fingerprint check, credit history investigation, medical or physical examination, polygraph examination and drug testing.

Student Resources and Information

✦ Account Information and Grades

The Student Link is an online resource available for all BU students. The website contains useful information for incoming students and continuing students including academic information, job listings and financial aid information. The Link also allows enrolled students to obtain their personal records at BU, including schedules, transcripts and university class schedule information. https://www.bu.edu/link/bin/uiscgi_studentlink

✦ Conflict Resolution

Students should bring any program related issues or concerns that arise to the attention of an appropriate BMFS faculty member, advisor or administrator. If a

satisfactory resolution is not reached, the complaint should be brought in writing to the attention of the BMFS Program Director or Assistant Director. (If the complaint involves the Program Director, the student should see the Chairman of the Anatomy and Neurobiology Department who will designate a representative to assist the student). If the issue is related to perceived discrimination, refer to the BUSM policy found in the Academic Policies and Procedures given to incoming students at the Graduate Medical Sciences Orientation.

✦ Financial Aid

All tuition and financial aid matters should be directed to the GMS Financial Aid Administrator, Sherill Ashe. She can be reached at (617) 638-5216 or sashe@bu.edu

✦ Personal Security

The BUMC Public Safety Department is staffed 24 hours a day, 7 days a week and is responsible for providing faculty and students a safe and secure environment. The Public Safety Department will provide vehicular or pedestrian escorts to the garages, lots and surrounding medical center buildings during night and weekend hours upon request. Service calls for security, facilities, escorts and emergency response can be made at (617) 414-4444. Blue metal emergency call boxes are easily identifiable at a variety of locations within and around the perimeter of the medical center. <http://www.bumc.bu.edu/publicsafety>

✦ BU Links

Biomedical Forensic Sciences Program (BMFS)
<http://www.bumc.bu.edu/biomedforensic>

Boston University Forensic Science Society (BUFSS)
<http://people.bu.edu/bufss>

Boston University Shuttle
<http://www.bu.edu/thebus>

BUMC Alumni Medical Library
<http://medlib.bu.edu>

Division of Graduate Medical Sciences (GMS)
<http://www.bumc.bu.edu/gms>

Educational Resource Center
<http://www.bu.edu/erc>

Financial Assistance
<http://www.bu.edu/finaid>

Graduate Medical Sciences Student Organization (GMSSO)
<http://people.bu.edu/gmssso>

International Students and Scholars Office
<http://www.bu.edu/isso>

Office of Disability Services
<http://www.bu.edu/disability>

Student Employment Office
<http://www.bu.edu/seo>

✦ **Additional Links**

American Academy of Forensic Sciences
<http://www.aafs.org>

American Board of Criminalistics
<http://www.criminalistics.com>

FBI Standards for Forensic DNA Testing Labs
<http://www.fbi.gov/hq/lab/codis/forensic.htm>

International Association for Identification
<http://www.theiai.org>

Northeastern Association of Forensic Scientists
<http://www.neafs.org>

TWGED Report - Education and Training in Forensic Science
<http://www.ncjrs.gov/pdffiles1/nij/203099.pdf>

Zeno's Forensic Site
<http://forensic.to/>

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