

BIODEFENSE (BIOD)

600 Level Courses

BIOD 604: *Emerging Infectious Diseases I: Bacteria and Toxins.* 3 credits.
Covers the microbiology, pathogenesis, clinical effects, and epidemiology of bacteria and toxins that pose threats to global health or can be utilized as biological weapons. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 605: *Emerging Infectious Diseases II: Viral Agents.* 3 credits.
Covers the microbiology, pathogenesis, clinical effects, and epidemiology of viruses that pose threats to global health or can be utilized as biological weapons. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 609: *Biodefense Strategy.* 3 credits.

Introduces students to the biodefense and biosecurity strategies and policies of the United States, other nations, and international organizations. Evaluates the effectiveness of these policies in strengthening defenses, improving intelligence, increasing oversight, enhancing nonproliferation, and reinforcing norms. Examines the interaction of biodefense and biosecurity with homeland, national, and international security. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 610: *Advanced Topics in Global Health Security.* 1-4 credits.
Different topics, depending on instructor's specialty. Topics include ethical, legal, scientific, security, political, and/or policy aspects of global health security, emphasizing current problems and research. Notes: May be repeated when topic is different. Offered by Schar Govt/International Affrs. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 620: *Global Health Security Policy.* 3 credits.

Explores issues emerging from the interaction of health and security that represent novel challenges to policy makers confronting a rapidly changing international landscape. Examines the origin and evolution of the concept of health security. Analyzes strategic impact of infectious disease outbreaks, global health security case studies, global health governance, and formulation and implementation of U.S. global health security policy. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 621: *Ethics and International Security.* 3 credits.

Challenges students to wrestle with dilemmas raised by the desire to behave ethically in an international system in which consensus about ethical matters is absent. Students will develop, apply, and justify their own perspective on an ethical problem related to international security using ethical theory and social science research. Ethical issues related to nuclear, biological, and chemical weapons that confront researchers, policy makers, and practitioners will be addressed. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 622: *Negotiating in the International Arena*. 3 credits.

Provides students with the concepts and tools for analyzing complex negotiation processes and introduces them to the challenges facing international negotiators. Students will read about the frameworks and perspectives that have guided the scholarly research on negotiation, as well as the latest findings from that research; analyze complex cases of actual negotiations in the security, trade, and environmental areas; and negotiate key issues on the agendas of nations and international organizations. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

700 Level Courses

BIOD 705: *Intelligence: Theory and Practice*. 3 credits.

Theory and practice of intelligence, including the intelligence cycle, organization of the intelligence community, and the origins and impact of recent reforms. Examines the capabilities and limitations of the different collection disciplines, analytic methodologies and pathologies, and the relationship between intelligence and policy. Analyzes challenges posed by collecting and analyzing intelligence on weapons of mass destruction programs conducted by states and terrorists. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 706: *Nuclear, Biological, and Chemical Weapons Policy and Security*. 3 credits.

Explores the causes, conduct, and consequences of the proliferation of nuclear, biological, and chemical weapons. Covers the historical, technological, normative, and strategic factors that have promoted

and restrained the spread of these weapons. Addresses the motives for states to develop these weapons and the debate over the security implications of nuclear, biological, and chemical weapon proliferation. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 709: *Nonproliferation and Arms Control*. 3 credits.

Examines the array of national and international measures used to slow, halt, and reverse the spread of nuclear, biological, chemical, and missile weapons. Explores the theory and practice of proliferation to provide insights into the supply and demand aspects of proliferation. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 710: *Health Security Preparedness*. 3 credits.

Examines national and international public health and medical preparedness for and response to natural disasters, terrorist acts, and disease outbreaks. Explores organizational and policy architecture, implementation challenges, and strategies for preventing, detecting, and mitigating these threats. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 722: *Examining Terrorist Groups*. 3 credits.

Introduction to terrorism including the history and evolution of terrorism, case studies of key terrorist groups, the current nature of the terrorist threat and counterterrorism strategies. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 723: *Legal Dimensions of Homeland Security*. 3 credits.

Introduces the impact of legal issues on homeland security and biodefense. Topics include the origins of the Department of Homeland Security, the relationship between public health and law enforcement, the role of the military in homeland security, trade-offs between privacy and security, legal aspects of public-private cooperation in biodefense and homeland security, quarantine authority and enforcement, ensuring compliance with international treaties, and implementing biosecurity regulations. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture**Grading:**

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 725: *Terrorism and Weapons of Mass Destruction*. 3 credits.

Examines the capabilities and intentions of terrorists to acquire and use chemical, biological, radiological, and nuclear (CBRN) weapons. The course provides an in-depth understanding of the history of CBRN terrorism, the current challenges posed by this threat, and the range of national and international policy tools available to address this threat. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture**Grading:**

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 726: *Food Security*. 3 credits.

Analyzes threats to food security globally including those related to climate change and environmental degradation; animal and plant diseases; access to clean water; agricultural terrorism; and antimicrobial resistance. Explores the national and global health, economic, social, and ethical impacts of these disruptive forces. Examines strategies for enhancing the security of the global food production and supply systems. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture**Grading:**

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 751: *Biosurveillance*. 3 credits.

Provides an understanding of the capabilities required to provide reliable early warning of disease outbreaks and identify their etiological agents. Assesses strengths and limitations of physicians, laboratories, epidemiologists, aerosol sensors, and syndromic surveillance systems. Considers challenges posed by the integration and analysis of the

information collected by these sources. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Recommended Prerequisite: BIOD 604 and BIOD 605; or permission of instructor.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture**Grading:**

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 760: *National Security Technology and Policy*. 3 credits.

Introduces students to the intersection of science, technology, and policy in national security. Will examine the players in the formation of science policy; the roles they play; how the types, uncertainties, and availability of data affect science policy debates; and how science policy decisions are made. Topics to be covered include weapons of mass destruction, nonlethal weapons, nanotechnology, bioengineering, energy security, and pandemic influenza. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate, Non-Degree or Washington Consortium level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture**Grading:**

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 762: *Biotechnology and Society*. 3 credits.

Examines the growing role of biotechnology in modern society, including benefits to human and animal health, industrial applications, and potential for misuse. Analyzes key variables influencing the revolution in biotechnology and impact in both developed and developing countries. Explores the political, economic, social, legal, security, and ethical implications of advances in life sciences and biotechnology. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Recommended Prerequisite: BIOD 604 and 605 or permission of instructor.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture**Grading:**

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 766: *Medical Countermeasures for Responding to CBRN Threats and Pandemics*. 3 credits.

Introduces students to the process of developing medical countermeasures such as vaccines, biological therapeutics and small

molecule therapeutics against biological and chemical weapons, emerging infectious diseases (including pandemics), and radiological exposure. Emphasis will be placed on both prevention and treatment of CBRN exposure and emerging infectious diseases. Topics include the scientific, manufacturing, testing, and regulatory strategies for developing these countermeasures. The course examines historical and recent challenges in developing countermeasures against potential threats versus realized threats and how these challenges may be mitigated. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Required Prerequisites: BIOD 604^{B-}, 604^{XS}, 605^{B-} or 605^{XS}.

^{B-} Requires minimum grade of B-.

^{XS} Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 780: Master's Supervised Internship. 1-6 credits.

Internship under supervision of qualified professional in biodefense at a government agency, consulting firm, industrial firm, or other acceptable agency. Offered by Schar Govt/International Affrs. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of program director or advisor.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:

This course is graded on the Satisfactory/No Credit scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 790: Global Health Security Capstone. 3 credits.

Provides students with the opportunity to hone their research, writing, collaboration, and presentation skills through completion of a capstone project that synthesizes the theoretical and subject matter knowledge students have gained in the program. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 793: Directed Studies in Biodefense. 1-3 credits.

Individualized study of topics not otherwise available in graduate program. May involve reading assignments, tutorials, lectures, papers,

presentations, or lab or field study, determined in consultation with instructor. Offered by Schar Govt/International Affrs. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor and program director.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:

This course is graded on the Graduate Special scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 798: Master's Research Project in Biodefense. 3 credits.

Research project related to student's concentration under supervision of faculty advisor. Student produces substantial and original contribution to the field of biodefense on the model of an article in a scholarly journal. Offered by Schar Govt/International Affrs. May not be repeated for credit.

Recommended Prerequisite: 24 credits in BIOD and permission of project director.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:

This course is graded on the Satisfactory/No Credit scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

800 Level Courses

BIOD 810: Advanced Seminar in Biodefense. 3 credits.

Explores issues of contemporary and emerging concern in biodefense and biosecurity. Topics may include legal, ethical, scientific, economic, and political aspects of biodefense and biosecurity. Notes: May be repeated when topic is different. Offered by Schar Govt/International Affrs. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 890: Doctoral Supervised Internship. 1-6 credits.

Internship under supervision of qualified biodefense professional at government agency, consulting firm, industrial firm, or other acceptable agency. Offered by Schar Govt/International Affrs. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of program director or advisor.

This course is graded on the Satisfactory/No Credit scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:

This course is graded on the Graduate Special scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 899: *Directed Research in Biodefense.* 1-12 credits.

Research on a pertinent topic in biodefense; scope and subject determined by instructor. Offered by Schar Govt/International Affrs. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Approval of program director.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:

This course is graded on the Graduate Regular scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

900 Level Courses

BIOD 998: *Doctoral Dissertation Proposal.* 1-12 credits.

Development of a research proposal, which forms the basis for doctoral dissertation under guidance of dissertation director committee. Notes: Only 12 credits may be applied to the degree. Offered by Schar Govt/International Affrs. May be repeated within the degree.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:

This course is graded on the Satisfactory/No Credit scale. (<http://catalog.gmu.edu/policies/academic/grading/>)

BIOD 999: *Doctoral Dissertation.* 1-12 credits.

Doctoral dissertation research under direction of dissertation chair. Offered by Schar Govt/International Affrs. May be repeated within the degree.

Recommended Prerequisite: BIOD 998.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading: