

SCHOOL OF MEDICINE GRADUATE EDUCATION (MGRD)

MGRD 310. Introduction to Clinical Inquiry (IQ). 3 Units.

This course is designed for pre-allied health students to introduce key overarching medical topics, including bioethics, public health and health disparities, as well as to integrate key MCAT topics from other courses into a clinically applicable context. Further, select human anatomy and physiology topics will be introduced. An important component of this course is the IQ process, which will reinforce scientific inquiry, self-reflection and constructive criticism. This course will have limited enrollment and is by permission only. Offered as MGRD 310 and MGRD 410.

MGRD 311. Introduction to Clinical Inquiry (IQ) II. 3 Units.

This course is the second semester in a 2 semester series designed for pre-professional health students to introduce key overarching medical topics, including bioethics, public health and health disparities, as well as to integrate key MCAT topics from other courses into a clinically applicable context. Further, select human anatomy and physiology topics will be introduced. An important component of this course is the IQ process, which will reinforce scientific inquiry, self-reflection and constructive feedback. Offered as MGRD 311 and MGRD 411.

MGRD 330. Introduction to Robotic Process Automation (RPA). 1 Unit.

Robotic Process Automation (RPA) is the fastest-growing software segment, growing at 63% in 2018. Many organizations are exploring or have implemented RPA. New college graduates will be a key driver in the future of automation. Students will be provided a comprehensive introduction to RPA centered on these fundamentals: overview of RPA, use of the technology, benefits and risks, and applications, process improvement and application to various work processes/industries. The course also includes guidelines on selecting the appropriate processes, workload and people implications, tools for automation, and strategies for successful implementations. It begins by introducing basic RPA concepts, the course then outlines how to apply these concepts to real working environment. UiPath is the primary software for students to practice and do group projects. The course is primarily intended for undergraduate students (in at least their junior year) who want to kick-start their career in this high-demand domain, have an interest in learning how to improve and want to use software to accelerate processes. Basic programming knowledge of any development language (C#, .Net, VB, Java, etc.) is beneficial but not required. Prereq: Undergraduate Junior or Senior standing.

MGRD 401. PREP-aring for Success in a Biomedical PhD Program. 1 Unit.

This course is designed to prepare NIH Postbaccalaureate Research Education Program (PREP) Scholars for the rigors of a biomedical PhD program. This is a two-semester series (with MGRD 402 offered in the spring) that will help PREP Scholars navigate the biomedical PhD program application and admissions process, improve their application credentials, and prepare them for success in top biomedical PhD programs throughout the nation. Students receive scientific research training, instruction and experience in reading the primary literature, develop oral and written communication skills, and participate in professional development activities. Students will prepare a professional scientific abstract, submit it to a national meeting, prepare a scientific poster presentation on their research and present that research poster at a national meeting. Students will be graded on their quality of their work and the overall level of participation in class. This course is for the eight students accepted and enrolled in the PREP program as of July of each year

MGRD 402. PREP-aring for Success in a Biomedical PhD Program. 1 Unit.

This course is designed to prepare NIH Postbaccalaureate Research Education Program (PREP) Scholars for the rigors of a biomedical PhD program. This is a two-semester series (with MGRD 401 offered in the fall) that will help PREP Scholars navigate the biomedical PhD program application and admissions process, improve their application credentials, and prepare them for success in top biomedical PhD programs throughout the nation. Students continue receiving scientific research training, instruction and experience in reading the primary literature, developing oral and written communication skills, and participating in professional development activities. This semester, students will learn the skills necessary for professional interviews. They will also be exposed to grant writing including determining the proper available grant funding mechanisms, developing a testable hypothesis, generating compelling aims, and searching of relevant literature. They will prepare professional presentation of a journal article. They will also prepare and orally present their own research at our Annual PREP Research Day. Students will be graded on their quality of their work and the overall level of participation in class.

MGRD 410. Introduction to Clinical Inquiry (IQ). 3 Units.

This course is designed for pre-allied health students to introduce key overarching medical topics, including bioethics, public health and health disparities, as well as to integrate key MCAT topics from other courses into a clinically applicable context. Further, select human anatomy and physiology topics will be introduced. An important component of this course is the IQ process, which will reinforce scientific inquiry, self-reflection and constructive criticism. This course will have limited enrollment and is by permission only. Offered as MGRD 310 and MGRD 410.

MGRD 411. Introduction to Clinical Inquiry (IQ) II. 3 Units.

This course is the second semester in a 2 semester series designed for pre-professional health students to introduce key overarching medical topics, including bioethics, public health and health disparities, as well as to integrate key MCAT topics from other courses into a clinically applicable context. Further, select human anatomy and physiology topics will be introduced. An important component of this course is the IQ process, which will reinforce scientific inquiry, self-reflection and constructive feedback. Offered as MGRD 311 and MGRD 411.

MGRD 425. Leadership and Professional Development Skills for Biomedical Sciences. 0 Unit.

This course is designed to give graduate students in the biomedical and health sciences an opportunity to reflect on their professional skills and develop skills in the area of leadership, teamwork, critical thinking, creativity and problem solving.

MGRD 475. Foundations of Career Exploration for Masters. 0 Unit.

This course is designed to help encourage and guide masters level graduate students in the biomedical and health sciences through proactive career planning by equipping them with information, resources, confidence, and self-assessment tools necessary to make informed career choices. Through this course, students will complete self-assessment exercises and participate in career exploration activities such as informational interviewing, researching and presenting summaries of career pathways, and attending a career panel. Students will culminate all that they learn in a final individual development plan (IDP) poster session where the students present at least two careers of interest, career related SMART goals and self-assessment information in a visual IDP format. Through this course, students will reflect on their personal career goals and skills and learn how they fit into a satisfying career.

MGRD 500. Foundations of Career Exploration for PhDs. 0 Unit.

This course is designed to help encourage and guide graduate students in the biomedical and health sciences through proactive career planning by equipping them with information, resources, confidence, and self-assessment tools necessary to make informed career choices. Through this course, students will complete self-assessment exercises and participate in career exploration activities such as informational interviewing, researching and presenting summaries of career pathways, and attending a career panel. Students will culminate all that they learn in a final individual development plan (IDP) poster session where the students present at least two careers of interest, career related SMART goals and self-assessment information in a visual IDP format. Through this course, students will reflect on their personal career goals and skills and learn how they fit into a satisfying career.

MGRD 525. Independent Study for PREP Scholars. 1 Unit.

Independent Study for PREP Scholars enables the Scholar to undertake study of advanced topics in biomedical research science that are not offered as standing courses at Case Western Reserve University. Generally, the Scholar(s) work closely with their primary research mentor to explore the background research literature and current results of the Scholar's research project. A guided program of study using research reviews, primary research papers, discussions, critiques, and grant-writing sessions will ultimately result in written research proposal that focuses on specific aims or goals of the project and the research strategy including the background, significance, innovation, and experimental approach. This is a one-credit graded course that requires approximately 15h of total contact time for the semester and 3-4 hours of outside work each week. The purpose of this course is to provide knowledge and experience in fellowship grant writing, with a focus on the F31 application. This course is for the students accepted and enrolled in the PREP program.

MGRD 529. FDA Regulation in Entrepreneurship and Clinical Research. 1 - 3 Units.

The FDA Regulation in Entrepreneurship and Clinical Research course is designed to provide foundational knowledge in the FDA approval and regulatory process while highlighting scientific, clinical, ethical, and other related emergent factors for consideration. The course includes a series of lecture-based classes delivered by content experts and interdisciplinary team-based learning discussions of case studies designed for the application of lecture content. Students who elect to take the course for three credits as opposed to one credit will go through the process of reviewing an example Investigational New Drug (IND) or Investigational Drug Exemption (IDE) Application (midterm project) and preparing an IND or IDE for submission (final project) with the guidance of nationally renowned experts in FDA regulation and law. The primary goal of this course is that upon completion, students will be able to take the knowledge gained from content experts and apply it to facilitate the movement of their current or future technologies through the FDA approval process. Offered as CRSP 529 and MGRD 529 and PHRM 529 and RGME 529.

MGRD 530. Regulatory Strategy and FDA Communications. 3 Units.

The Regulatory Strategy and FDA Communications course is a class structured to give students the knowledge and resources to generate strategic approaches for regulated medical products in the US. These include drug products, medical devices, biologic products, and combination products. The course will review common sources for regulatory intelligence gathering and their applicability to each type of medical product. Additionally, students will be tasked to craft a fully formed regulatory strategy for a medical product of their choosing to reinforce their learning and understanding of course concepts. Proposed strategies include pre-development testing of possible market products as well as post-market corporate development plans. Additionally, FDA regulatory requirements for product development and marketing and FDA communication mechanisms will be covered as well as common types of meetings conducted. Students will learn to integrate key timepoints, communications, and/or meetings for the development of their regulatory strategies. Prereq: CRSP 529 or MGRD 529 or PHRM 529 or RGME 529.

MGRD 531. Patent Law and the Biomedical Sciences. 1 Unit.

This course is designed for graduate students in the School of Medicine but graduate students from other schools will also be offered course enrollment. We will explore the fundamental principles of patent law generally and, in several classes, apply these principles to biomedical discoveries, including pharmaceuticals, diagnostics, devices, and biologics. The specific patent law topics covered include an exploration of the patent document itself, the major patentability requirements, how to obtain a patent and patenting drafting strategies with a focus on biomedical-related inventions, the rights associated with an issued patent, the Hatch-Waxman Act and generic competition as applied to pharmaceutical patents, and issues associated with access to medicines for the developing world. Familiarization with patent law is crucial for graduate students who aspire to be biomedical researchers that can leverage the knowledge learned during this course to protect their intellectual property, incentivize innovation, navigate legal complexities, and maximize the societal benefits of their biomedical discoveries. It equips researchers with the tools and knowledge needed to advance their work and contribute to the field while also considering ethical, legal, and commercial aspects. Prereq: CRSP 529 or MGRD 529 or PHRM 529 or RGME 529.

MGRD 610. Internship in Biomedical Sciences. 0 - 9 Units.

This course is an ungraded (pass/fail) internship. Students are expected to identify a potential internship that will enhance their career in a meaningful way. For example, a student interested in education might choose to work with the Great Lakes Science Center to develop and help deliver content for a medical-themed summer camp. Students interested in getting a job in industry may find a company in their field and intern with them. Research experiences within CWRU or affiliated hospitals MAY be appropriate only if the student wouldn't otherwise get those experiences in their program and it would significantly help their career. Therefore, all internships must be identified and approved by the course director and, if counting as an elective toward their degree, their program director, prior to enrolling. All students must identify an internship mentor at the location of their internship. The course director will check in with their mentor regularly to ensure an appropriate experience for student as well as the hosting institution. Credits depend on the scope of the internship. For each credit you are enrolled in, you will be expected to work at least 50 hours. So, in other words, if you register for 9 credits in one semester, you will be expected to work a total of at least 450 hours, or about 11-12 weeks full time. Thus, the number of credits registered should coincide with the agreed upon scope of the internship. In order to pass this course, students will be expected to keep, and submit weekly, a reflection log. In addition, students will be expected to present on their experiences, including what they did and what they learned, at an end of the semester, and their internship mentor, program director and other students in this course will be invited to attend this public presentation. Students who do not meet the criteria for hours worked, miss more than 2 of the weekly reflections or do not do an end of the semester presentation will receive a failing grade.

MGRD 701. Dissertation Ph.D.. 1 - 9 Units.

Research experience in a selected faculty research laboratory designed for international exchange students doing PhD dissertation research. Prereq: Predoctoral research consent or advanced to Ph.D. candidacy milestone.