Student Research Handbook

(2024-2025)

Table of Contents

2024-2025 Academic Year Required Research Events

See your Research Foundations Course Materials for Exact Dates for Required Events

Faculty Research Presentations and Mentor Match (OMS I)
Case Study Presentation Day (OMS III-IV)
Research Foundations IV Capstone (OMS IV)
Noorda-COM Symposium
Research Track Begins (only those enrolled)

Student Research Requirements

Year 1 Research Requirements for Medical Students

Semester 1:

1. CITI Training Certification: Complete all CITI Core Training Certification Modules (see section “CITI Training Certificates”), which will provide you with the necessary knowledge and understanding of research ethics, regulations, and best practices.

2. Research Foundations I: Complete all modules given for the first semester through your research foundations course. These modules will teach you the essentials of journal article writing and publishing.

Semester 2:

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3. Abstract Submission and Presentation: Submit an abstract and present your research findings at the May Noorda-COM Symposium. This event allows you to showcase your work, gain valuable feedback from peers and faculty, and learn about the research being conducted by other students.

Year 2 Research Requirements for Medical Students

Semester 1:

All students must complete:

1. Research Foundations II: Complete all modules given for the first semester, second year through your research foundations course. These modules will teach you the essentials of clinical research and data gathering.

Those in a mentored research lab must additionally complete the following:

2. Research Engagement: Engage in research in your mentored lab. This ongoing commitment to research will allow you to deepen your understanding of your chosen field, refine your research skills, and contribute to the advancement of medical knowledge. Please note that research assignments may differ between research mentors. Satisfactory participation will be evaluated by your research mentor via end of semester interviews/meetings (see section “Research Mentor Interviews”). Fulfillment of research lab requirements is required for satisfactory completion of Research Foundations for the semester.

3. Optional Clinical Case Study Presentation: You will have the option of presenting a clinical case study during the Fall Student Case Studies Presentation Day. This opportunity allows you to further develop your analytical, communication, and presentation skills while learning from the experiences of your peers.

Semester 2:

All students must complete:

1. Research Foundations II: Complete all modules given for the first semester, second year through your research foundations course. These modules will teach you the essentials of data analysis and visualization.

Those in a mentored research lab must additionally complete the following:

2. Research Engagement: Continue to engage in research in your research lab. This sustained involvement in research projects will help you build a strong foundation for your future career as a physician-scientist or a clinician with a commitment to evidence-based medicine. Please note that research assignments may differ between research mentors. Satisfactory participation will be evaluated by your research mentor via end of semester interviews/meetings (see section

“Research Mentor Interviews”). Fulfillment of research lab requirements is required for satisfactory completion of Research Foundations for the semester.

3. Abstract Submission and Presentation: Submit an abstract and present your research findings at the May Noorda-COM Symposium. This event allows you to showcase your work, gain valuable feedback from peers and faculty, and learn about the research being conducted by other students in different stages of their medical education.

By meeting these research requirements during your second year, you will continue to develop essential research skills, foster a spirit of inquiry, and make meaningful contributions to the medical community. Your ongoing commitment to research will not only benefit your medical education but also have a lasting impact on your future patients and the broader field of medicine.

Year 3 Research Requirements for Medical Students

As you enter the clinical phase of your medical education at Noorda College of Osteopathic Medicine, the focus of your research shifts towards applying the knowledge and skills you have gained during your preclinical years to real-world clinical scenarios.

The process of preparing and writing case studies will help you develop essential skills for lifelong learning, critical thinking, and evidence-based practice. By analyzing and reflecting on the cases you encounter, you will gain a deeper understanding of the complexities of patient care and the importance of staying informed about the latest medical research.

To ensure the quality and relevance of your case studies, be sure to collaborate with your clerkship preceptors and research mentors. Their guidance and feedback will be invaluable in helping you to identify suitable cases, access relevant literature, and refine your case study write-ups.

By fulfilling these research requirements in your third year, you will continue to advance your medical knowledge, hone your research skills, and contribute to the medical community's understanding of various clinical scenarios. Thq meevancriouss. Thq meudiesrievait

The mentor-student matching process is carefully designed to ensure that both students and mentors benefit from the partnership. Students are encouraged to consider their future career goals and how the mentor's research aligns with these aspirations when indicating their preferences.

Within two weeks of the faculty research presentations and student interest submissions, the results of the matching process will be announced. Students and mentors will be notified of their matches, allowing them to begin planning their research endeavors for the academic year.

The selection of a research mentor is a significant step in a student's medical education journey. A well-matched mentor can provide invaluable guidance, support, and inspiration, fostering a productive and enriching research experience for the student.

Students may not be eligible for the selection of a research mentor due to academic performance in their first semester. This will be a decision made by the research department in collaboration with academic affairs. These students will still be required to follow the content of research foundations and complete required modules. Any student concerned about their placement, or that want to select a research mentor can

Each research mentor will then provide a report of these interviews to the research department for grading purposes. The research mentor will be asked to evaluate whether the student has satisfactorily participated and worked, considering the specific circumstances of the lab, mentor, and student.

Students who do not fulfill their research obligations for a semester will be referred to the Professionalism, Academics and Clinical Committee (PACC) for a professionalism review. Further,

4. Electronic Device Etiquette: Be mindful of your use of electronic devices during research events and laboratory sessions. Silence your cell phone and refrain from using it for non-essential purposes during presentations and discussions. When using a laptop or tablet, ensure it is for note-taking or relevant research purposes only.

5. Laboratory Safety and Reporting: Safety is an important aspect of all research. Link to Noorda-COM Biosafety Manual. Some aspects of safety are great enough that they have received dedicated sections within the handbook.

    a. Training: CITI training will be used for safety training. Training may be unique to laboratories so your research mentor will provide you with the information on which CITI courses will be required for your laboratory. See section the section titled “CITI Training Certificates” for further information. (ed)-I 53 B((c)C((c)) 53 (s)-1 ( )-1m ((a))-2f)3ti)-2 (ni)

Here are some guidelines to promote respect for faculty and staff:

1. Communication: Maintain open, honest, and respectful communication with faculty and staff. Address them using appropriate titles (e.g., Dr., Professor) and express your thoughts or concerns in a clear and courteous manner. Be receptive to feedback and be open to engaging in constructive dialogue.

2. Active Listening: Demonstrate your commitment to learning by actively listening to faculty and staff during lectures, presentations, or discussions. This includes taking notes, asking relevant questions, and providing thoughtful feedback when appropriate.

3. Time Management: Respect the time and efforts of faculty and staff by being punctual for classes, meetings, and research sessions. Submit assignments and complete tasks on time and notify the appropriate individuals in advance if you are unable to attend or need an extension.

4. Professional Behavior: Uphold a high standard of professionalism in all interactions with faculty and staff, whether in person, via email, or on social media. Be aware of your tone, language, and non-verbal cues, and always maintain a respectful demeanor.

5. Support and Collaboration: Foster a supportive and collaborative atmosphere by being open to the perspectives of faculty, staff, and your peers. Recognize and appreciate the diverse backgrounds, expertise, and contributions of everyone involved in your medical education.

6. Confidentiality and Privacy: Respect the privacy and confidentiality of faculty and staff by not

1. Meeting Frequency: Mentors should meet with students at a frequency appropriate to ensure that students have a research plan aligned with their future goals for residency. Regular meetings help students stay on track and address any challenges or concerns that may arise.

2. Deadlines and Communication: Mentors should ensure that students are aware of and informed about upcoming deadlines related to their research responsibilities including

Review Board (IRB), Institutional Animal Care and Use Committee (IACUC), and Institutional Biosafety Committee (IBC).

Students are encouraged to pursue external research opportunities with the following guidelines:

1. Proposal Submission: Students must fill out the External Projects Request Form, outlining the nature of the project, the proposed plan of work, and the parties involved. This proposal should be submitted for review to the Associate Dean for Research. The link can be found here: Link to External Project Request Form

2. Ethics Approval: Along with the proposal, students should also provide documentation indicating the ethics approval of the project. This step is crucial to ensure the proposed research aligns with the ethical standards set by Noorda-COM and the broader scientific community.

3. Noorda-COM Mentor Involvement: Every external project should have a Noorda-COM member acting as a mentor. This could be the student's primary research mentor or another faculty member approved by the primary mentor. The mentor's involvement may vary, but they should, at the very least, maintain regular communication with the student about the project's progress.

4. Review and Approval: The Associate Dean for Research (or other faculty member designated by the Associate Dean for Research) will review the proposal and, if it complies with Noorda-COM's research practices, grant approval for the external project.

We aim to facilitate this process and ensure a smooth transition for students participating in external research projects. However, we also emphasize the importance of maintaining our high standards of research integrity and professionalism in all endeavors, whether internal or external.

Noorda-COM Symposium

The Noorda-COM Symposium is an annual event held every May to celebrate and showcase the research accomplishments of our medical students. This intercollegiate symposium invites students from various institutions to present their research findings in the fields of clinical medicine, medical education, and basic science.

As a student of Noorda College of Osteopathic Medicine, you are required to submit your research and present it at the symposium. We are proud to accept all student abstracts for presentation as posters. This provides an opportunity for every student to share their work with peers, faculty, and other professionals in the field. Poster presentations offer a unique format for interactive discussions and networking, allowing presenters to engage with attendees and receive valuable feedback on their research.

In addition to poster presentations, a select number of outstanding projects will be chosen for the prestigious podium presentations. These presentations represent the highest level of achievement in research and are reserved for those projects that demonstrate exceptional quality, innovation, and potential impact on the field. Being selected for a podium presentation is a significant honor

and provides an excellent opportunity for students to showcase their work in a more formal setting.

Committee (PACC) for review. This could have implications for your academic standing, so it's crucial to prioritize these events and communicate effectively if issues arise.

Poster Printing at Noorda-COM

At Noorda College of Osteopathic Medicine, we understand the importance of presenting research findings in a professional and visually appealing manner. To support our students and faculty in their research endeavors, we are pleased to offer in-house poster printing services for large scientific posters.

Our state-of-the-art printers and resources allow us to create he (ng s41 t)-6 (o)-4 (c)6 (()5 (P)-2 (A)4.tETq527

their own cost. Posters printed externally must still comply with Noorda-COM poster guidelines.

BiomedicalTrack CITI Courses

- Biomedical Research (Human Subjects)
- Data or Specimens Only Research
- Revised Common Rule
- Social, Behavioral & Educational Researchers -

5. Communicate Effectively: Keep open lines of communication with your affiliate laboratory mentor and peers. If you have questions or concerns, don't hesitate to ask. Regular updates about your work progress can also facilitate a smoother collaboration.

6. Safety Compliance: Safety is paramount in all research settings. Always adhere to the safety protocols of the affiliate laboratory, including using personal protective equipment (PPE) when required, handling materials and equipment safely, and following emergency procedures.

Working in affiliate laboratories is an excellent opportunity to expand your research skills, build professional relationships, and contribute to the advancement of medical knowledge. By adhering to these guidelines, you help to create a positive and productive working environment that benefits all involved. You can find links to our affiliate lab's safety manuals here:

Link to Roseman University Lab Safety Manual

Link to Rocky Mountain Lab Safety Manual (RMU uses the same manual as Noorda COM)

RockyMountain/Noorda COM Collaborative Wet Lab Access:

To obtain access to the RMU/NCOM collaborative Wet Lab one must complete the following CITI trainings in addition to the Noorda COM required CITI trainings:

1. Personal Protective Equipment (PPE)
2. OSHA Blood Borne Pathogens
3. Initial Biosafety Training

After completing these CITI trainings, one must complete this lab access form Lab Access Request Form and get it signed by their research mentor and a member of the Office of Research at Noorda COM or RMU (e-signatures are approved). Please send proof of these completed CITI trainings, completed lab access request form, and a profile picture to Denisse Castaneda for laboratory access (denisse.castaneda@rm.edu).

2. Exposure to Diverse Research Areas: Internships provide students with the opportunity to explore various research fields and specialties. This exposure helps students identify their specific areas of interest and potential career paths within the research realm.

3. Collaboration and Networking: Working with experienced researchers, students have the chance to collaborate on interdisciplinary projects and build professional relationships. Networking with experts in the field can open doors to future research opportunities, mentorship, and potential collaborations.

4. Skill Development: Engaging in research internships allows students to refine their critical thinking, problem-solving, and analytical skills. They learn how to design experiments, collect and analyze data, and draw meaningful conclusions from their findings.

5. Scientific Communication: Internships provide a platform for students to communicate their research findings effectively. They learn to write research reports, create scientific posters, and deliver presentations, honing their scientific communication skills.

Finding External Research Internships:

Medical students can explore various avenues to find external research internships:

- Research Institutions: Universities, hospitals, and research organizations often offer internship programs for medical students.
- Government Agencies: National institutes and government research bodies may have internship opportunities in specialized fields.
- Non-Profit Organizations: Non-profit organizations conducting research relevant to healthcare and medicine may offer internship positions.
- Pharmaceutical and Biotech Companies: Pharmaceutical and biotechnology companies often have research internship programs for students interested in the industry.

Application and Selection Process:

Students should thoroughly research available internship opportunities, review eligibility criteria, and carefully follow application instructions. The selection process may involve submitting a resume, cover letter, and academic transcripts. Some internships may require interviews or letters of recommendation. It is essential to adhere to application deadlines and maintain professionalism throughout the application process.

Considerations:

While pursuing external research internships, students should consider the following factors:

Time Commitment: Assess the required time commitment for the internship to ensure it aligns with academic responsibilities and personal commitments.

The Office of Research recognizes the importance of fostering student innovation and supporting their exploration of new ideas and research endeavors. In line with this objective, students have the opportunity to request pilot discretionary funds through their mentor. These funds, with a maximum allocation of $500 per academic year, are intended to provide financial support for projects or initiatives that require additional resources beyond the standard provisions.

It is important to note that the availability of discretionary funds is subject to the discretion and approval of the Associate Dean for Research. While we strive to accommodate as many requests as possible, the allocation of funds is dependent upon the availability of resources and the merit and feasibility of the proposed projects.

To apply for discretionary funds, students should submit their request to their mentor, who will submit an email to the Office of Research for review. It is recommended that the email provide a clear and comprehensive description of their project, including its objectives, methodology, expected outcomes, and a budget breakdown outlining how the funds will be utilized.

Please bear in mind that the availability of discretionary funds may vary from semester to semester based on the research priorities and budgetary considerations of the institution. As such, it is advisable to plan ahead and submit requests well in advance of the intended project start date.

Authorship Etiquette in Peer-Reviewed Publications at Noorda COM

equitable manner, considering the substantiality and significance of each individual's involvement.

5. Continued Authorship Recognition: Students who have contributed to a research project during their time at Noorda COM may maintain authorship on papers resulting from that work, even after leaving the medical school. However, it is important to recognize that research may continue after a student's departure, and the PI may exercise their judgment to incorporate additional authors based on ongoing contributions.

6. Dispute Resolution: Any disputes or concerns regarding authorship should be brought to the