



The Joint School of Nanoscience and Nanoengineering

Department of Nanoscience

2017 – 2018 Graduate Student Handbook

[Date: August 13, 2017]

**Let not what you do define what you are.
Rather, let what you want to become define what you do.
- John Hurt. NSF (1997)**



JSNN

Joint School of
Nanoscience and Nanoengineering



August 14, 2017

Dear JSNN Nanoscience Students:

To our continuing students, "Welcome back", and to our incoming students, "Welcome".

The 2017 – 2018 academic year marks the 8th year of the Joint School of Nanoscience and Nanoengineering (JSNN). Over the past seven years, we have seen much growth in our infrastructure, research scope, course offerings, faculty, and students, and collaboratively creative culture; as well as in our relationships with host and sister universities, our community, and our industrial colleagues. In the spring of 2012, JSNN Nanoscience department graduated its first student and awarded its first two Ph.D. degrees in May 2014. This year, we plan to continue the 'Selected Reading's in Nanoscience' course for incoming students, as well as several new elective courses, as part of our continuous improvement process.

Consider this handbook as a quick reference guide. This year's Nanoscience department update should contain details of the program revisions, mentioned above. Please let us know if you find any errors or omissions, so that we can incorporate these refinements in future handbook updates. During the year, UNCG may also post updated documents. For the most up-to-date UNCG related materials, please read the corresponding documentation on the UNCG's web site.

Remember that "Innovation/creative genius is one percent inspiration and ninety-nine percent perspiration" – Thomas Edison (Harper's Monthly, 1932). We look forward to working with you, and to another exciting, creative, and productive year. Our team is here to provide the tools, resources and stewardship that support your career goals. If you have any questions, please ask. If you have any recommendations, please share them. Other key factors that will impact your success include your work ethic, creativity, and course of study, as well as critical thinking, communication, time management and collaborative skills.

Best wishes for the coming year.



Daniel J. C. Herr

Professor and Nanoscience Department Chair
Director, Nanomanufacturing Innovation Consortium (NIC)
The Joint School of Nanoscience and Nanoengineering
2907 East Lee Street, Greensboro, North Carolina 27401

(336) 285-2862 [Office]
(919) 656-5585 [Mobile]

djherr@uncg.edu



<http://jsnn.ncat.uncg.edu/>

Table of Contents

Preface	4
JSNN Vision and Mission	6
Degree Programs	7
Application and Admission to the Nanoscience Program	8
Registration	10
Financial Support for Graduate Students	11
Degree Requirements: Doctoral Program	13
Degree Requirements: Professional Master of Science Program	16
Degree Progression, Expectations, and Evaluation Procedures	18
Sequence of Events for Graduation	21
Dissertation Guidelines	23
Funding	24
Recognition and Awards	24
Expectations, and Requirements	24
Responsible Conduct in Research	27
Academic Good Standing and Termination at JSNN	28
Other Considerations:	29
Academic Integrity	29
Interpersonal Skills and Team Development	29
Communication Skills	30
Feedback and Recommendations	31

Preface

This handbook provides Nanoscience graduate students with a single portal for accessing some key information during their tenure at JSNN. Handbook updates will be time stamped. Much of this document reflects official material posted on UNCG's website. As such, this handbook is intended to serve as an abridged reference source for selected relevant topics of interest for JSNN's Nanoscience students. Please note that this handbook may not be comprehensive, nor does the information contained in this document supersede material posted by UNC Greensboro. Your recommendations are welcome and should be forwarded to the Nanoscience Department Chair.

JSNN Nanoscience Graduate Student Handbook: http://jsnn.ncat.uncg.edu/wp-content/uploads/2017/09/NS_FY1718_Graduate_handbook.pdf

UNCG Graduate School Bulletin: <http://www.uncg.edu/grs/bulletin/nano.html>

UNCG Academic Calendar: <http://www.uncg.edu/reg/Calendar/acaCal/fa12.html>

Other Sources of Information and support for graduate students:

UNCG Graduate School Academic Office

The University of North Carolina at Greensboro
241 Mossman Building
1202 Spring Garden Street
Greensboro, NC 27412
Phone: (336) 334-5596
General Fax: (336) 334-4424
Admissions Office Fax: (336) 256-0109
E-mail: inquiries@uncg.edu
URL: <http://www.uncg.edu/grs/>
Office Hours: Monday - Friday 8:00 am - 5:00 pm

Joint School of Nanoscience and Nanoengineering [JSNN]

Professor James G. Ryan
Founding Dean,
Room - 204
Joint School of Nanoscience and Nanoengineering
2907 East Lee Street
Greensboro, NC 27401
E-mail: jgryan@ncat.uncg.edu
Phone: (336) 285-2805; Cell: (336) 479-2487
General Fax: (336) 500-0115

URL: <http://jsnn.ncat.uncg.edu/?s=graduate+school>

Dean's Staff	Title	E-mail	Phone	Room
Mr. Elie Azzi	Research Associate	e_azzi@uncg.edu	(336) 285-2802	204B
Ms. Jerri Price	Executive Assistant	jlpri22@uncg.edu	(336) 285-2889	204C

Nanoscience Department

Professor Daniel J. C. Herr

Chair, Nanoscience Department

JSNN Room -208L, Phone: (336) 285-2862; Cell: (919) 656-5585, E-mail: djherr@uncg.edu

Ms. Nancy Knight	Executive Assistant	neknight@uncg.edu	(336) 285-746	208M
------------------	---------------------	--	---------------	------

Nanoscience Faculty	Title	URL	Room
<u>Herr</u> , Daniel J. C. [336-285-2862; djherr@uncg.edu]	Professor and Chair	http://jsnn.ncat.uncg.edu/faculty/daniel-joseph-christian-herr-ph-d/	208L
<u>Ignatova</u> , Tetyana [336-285-2791; t_ignato@uncg.edu]	Assistant Professor	http://jsnn.ncat.uncg.edu/faculty/tetyana-ignatova-ph-d/	106J
<u>Kepley</u> , Christopher [336-285-2865; ckkepley@uncg.edu]	Associate Professor	http://jsnn.ncat.uncg.edu/faculty/christopher-kepley-ph-d/	106H
<u>LaJeunesse</u> , Dennis R. [336-285-2866; drlajeun@uncg.edu]	Associate Professor	http://jsnn.ncat.uncg.edu/faculty/dennis-r-lajeunesse-ph-d/	208D
<u>Rathnayake</u> , Hemali [336-285-2860]; hprathna@uncg.edu]	Associate Professor Director of Graduate Studies	http://jsnn.ncat.uncg.edu/faculty/hemali-rathnayake-ph-d/	208K
<u>Ryan</u> , James G. [336-285-2805; jgryan@uncg.edu]	Professor and Founding Dean	http://jsnn.ncat.uncg.edu/faculty/james-g-ryan-ph-d/	204E
<u>Starobin</u> , Joseph M. [336-285-2871; jmstarob@uncg.edu]	Associate Professor	http://jsnn.ncat.uncg.edu/faculty/joseph-m-starobin-ph-d/	208F
<u>Wei</u> , Jianjun [336-285-2859; j_wei@uncg.edu]	Associate Professor	http://jsnn.ncat.uncg.edu/faculty/jianjun-wei-ph-d/	208J

Dyakonov, Tatyana [336-285-2800]	Adjunct Instructor		
Taylor, E. Will [336-256-0459; ewtaylor@uncg.edu]	Adjunct Professor	http://jsnn.ncat.uncg.edu/faculty/ethan-will-taylor-ph-d/	

The JSNN Nanoscience faculty is responsible for this department’s academic, research, and operates in accordance with established UNCG policies. For academic advising, or policies regarding research, students are encouraged to consult with any of the professors, listed above, as warranted.

From the JSNN Vision and Mission:

Vision: The Joint School of Nanoscience and Nanoengineering (JSNN) was formed as a collaborative project of North Carolina A&T State University and The University of North Carolina at Greensboro. The JSNN’s research and educational programs focus on Nanoscience and Nanoengineering. The strengths of the two universities in the basic sciences and in engineering make them ideal partners for this new interdisciplinary school.

Mission: The mission of the JSNN is to train students to conduct basic and applied research in nanoscience and nanoengineering; offer interdisciplinary Master of Science and Ph.D. degrees and a Professional Master of Science in Nanoscience degree; enhance the access of undergraduate and K-12 students to the fields of nanoscience and nanoengineering; provide nanoscience and nanoengineering training for scientists and engineers already in the workforce; engage in activities that influence economic development locally and globally; and support the entrepreneurial activities at both campuses to better transfer innovation to practice. Limited only by your imagination...

“I’d like to express my appreciation to the North Carolina legislature for its support of the Joint School of Nanoscience and Nanoengineering. Even during these challenging economic times, our leaders have not lost sight of the bigger picture and our vision for a bigger, better and brighter future for economic development accomplished by investing in education and its long-term ability to sustain our region’s growth.

One of the most visible and tangible outcomes of this joint collaboration and its convergence of technologies will be our ability to leverage the research completed by faculty members at both universities which will then translate into viable companies and businesses that support economic development in this area. The resulting outcome is that there is a direct impact for all of us from readily available technologies and new products fueled by nanotechnology that will relate to everyday use - outside of the laboratory and classroom - and inside our homes and businesses.

The launch of this joint school will assist in developing an enhanced faculty and educated workforce in the areas of Nanoscience and Nanoengineering. The bottom line is economic

development because we will be a more attractive area for academic, professional and corporate recruitment. We envision that the Joint School of Nanoscience and Nanoengineering will be a model for other public universities and systems of higher education to adopt.” - Dr. Linda P. Brady [Former Chancellor, UNC Greensboro]

“Culture refers to a clearly articulated and broadly shared set of values that define the very nature of an organization”

A set of values that builds that culture:

- **Shared fate.** “We have a shared fate,” he said. “We have to collaborate.”
- **Excellence.** “There has to be a common standard of excellence in everything we do,” he told the faculty and staff gathered.
- **Accountability.** “People have to be held accountable. We all do.”
- **Innovation.** “We have to have an entrepreneurial spirit,” he said. “We have to act like we’re a start-up.”
- **Transparency.** “That means clarity – about how decisions are made.”
- **Inclusion.** “We all have a stake in UNCG,” he explained. Ideas can come from anyone and anywhere, he added. UNCG needs inclusive decision-making and communications.
- **Fun.** We’re at college, he said. “We should get joy out of that – the joy in what we accomplish together.”

- Excerpts from Chancellor-elect Dr. Franklin Gilliam’s 124th State of the Campus Address, August 12, 2015

Degree Programs

Ph.D. in Nanoscience

The PhD in Nanoscience requires a minimum of 60 hours and is designed to prepare students to take positions in industrial, governmental, or academic research settings by providing a solid background in nanoscience theory and experimental techniques through course work and dissertation research. Advanced elective courses in nanoscience areas ensure students will have substantial depth of understanding in their area of interest and enable them to effectively carry out advanced nanoscience research.

Professional Master of Science in Nanoscience

The 30-hour, non-thesis, MS in Nanoscience follows the Professional Science Master’s degree model, featuring coursework in nanosciences and business and an internship to provide

practical experience. It is designed for students with strong backgrounds in technical fields who seek additional specialized training to qualify them for positions in companies that work in the field of nanotechnology.

The 30-hour, MS Thesis concentration is designed for students who seek gaining in-depth, hands-on research experience, while improving their scientific writing and mastery of nanoscience in order to continue further in their higher education.

Admission to The Nanoscience Graduate Program

Applicants are notified of offers of admission by letter from The Graduate School. Successful applicants are offered full graduate admission or provisional admission for a specific program in a specific term. Students must confirm their acceptance into the graduate program. If the admitted applicant does not register for the term specified in the admission letter, the admission may be subject to subsequent review. If necessary, students can defer admission for one year and not be subject to subsequent review via Graduate School policy.

Full Graduate Admission

All applicants must have obtained the following:

1. A bachelor's degree from an accredited college or university. For students from non-U.S. schools, applicants must submit their transcript for evaluation by the Graduate School, to demonstrate that their undergraduate performance satisfies this requirement.
2. Satisfactory academic standing as an undergraduate. This corresponds to a "B" (3.0 GPA) average or better in the undergraduate major and in courses prerequisite to the proposed graduate study.
3. Verification that the applicant has taken the Graduate Record Examination (GRE) (verbal, quantitative, and analytical writing) or other authorized examination. Students from non-U.S. schools also must demonstrate proficiency in the use of the English language.
4. In addition to the application materials required by The Graduate School, applicants must submit a personal statement indicating their interest in the program and a current Curriculum Vitae.
5. Qualified applicants will have a BS degree in an area related to nanoscience (physics, chemistry, biology, mathematics, computer science, or engineering) and, as a minimum, completed calculus through differential equations.

Provisional Admission

Promising applicants who hold a baccalaureate degree but do not meet the formal requirements listed above may be granted provisional admission. Full graduate standing is granted when these students satisfactorily complete prescribed courses or otherwise remove deficiencies. They must meet any special conditions attached to their admission, by either The Graduate School or their major department, no later than upon the completion of 15 semester hours of graduate credit.

Among provisionally admitted applicants may be the following:

1. Applicants with a bachelor's degree from a non-accredited institution
2. Applicants with a bachelor's degree from an accredited institution, who lack undergraduate work considered essential for graduate study— Such as not having the proper background in math, calculus to differential equations.

A graduate student admitted provisionally is not eligible for appointment to an assistantship or fellowship until full graduate standing is achieved. Provisionally admitted students will have specifically stated conditions that must be met to progress in the program. Provisionally admitted students who are dismissed for failing to meet the provisions of their admission will be eligible to submit a new application to The Graduate School after two semesters or the equivalent and may be admitted only upon the recommendation of the Department Head or Director of Graduate Study and with the approval of the Dean of The Graduate School. While on academic dismissal, students are not eligible to take courses through the VISIONS program.

Deferral of Admission and Leave of Absences

Graduate admission to a degree or certificate program may be deferred for a maximum of one year from the initial term of admission. The student is responsible for contacting the department to determine if admission for subsequent terms is allowed.

To request a deferral of admission, admitted students must submit a completed 'Deferral of Admission Form' to the admitting department's Director of Graduate Study no later than the first day of classes of the term of initial admission. This form may be found by cutting and pasting the following URL into your web browser: <http://grs.uncg.edu/forms/> and clicking on the 'Admitted Student Forms' bar at the upper left of the screen. The deferral request must be for a specific term and may not exceed one year from the original term of admission. After considering the request, the department will forward the form to The Graduate School for processing and The Graduate School will notify the student of the decision. Merit-based financial aid (teaching/research assistantships, scholarships, and fellowships) will not be deferred and the student must compete again for the awards for the term of deferral (if approved).

Students who have not enrolled after one year and have not requested a deferral of admission will be required to reapply.

Students can take a leave of absence, as warranted.

Registration

Dates for registration periods for each semester are published in the University's Academic Calendar, pages 2-3 of the Graduate Bulletin, and on the University Registrar's website

(www.uncg.edu/reg). Registration at UNCG is an automated process conducted online through UNCGenie.

All eligible students (new and continuing) receive electronic personal data (EPD) information and registration access window information via their UNCG email prior to each registration period. Most graduate students will find a pre-assigned advising code in their EPD; however, in certain programs students must see their advisors to obtain advising codes.

Continuing students who do not pre-register for the next semester during the Early Registration periods in November (for spring semester) and in April (for summer/fall semester) will be required to pay a late registration fee.

Immunization Clearance

Students who have been admitted to UNCG are required by North Carolina State law to submit an immunization form with appropriate verification of immunizations. This form is available online and must be satisfactorily completed and returned to Student Health Services. Failure to comply with this requirement within 30 calendar days from the first day of each semester will result in the student's being administratively withdrawn from the University.

This requirement applies to all students, regardless of whether they are part-time or full-time. Students subjected to an administrative withdrawal for failure to comply with medical clearance requirements are entitled to a refund, subject to the guidelines of the University's Refund Policy. (See the section on 'Tuition Policies' below).

Tuition Policies

Currents tuition related policies and fees may be found at the following URLs: <http://grs.uncg.edu/financial/estimated-cost/> and <http://grs.uncg.edu/bulletin/> .

Financial Support for Graduate Students:

- **Graduate, Research and Teaching Assistantships,**
- **Scholarships and Fellowships, and**
- **Research and Travel Funds**
- **Grant Support**

The Department attempts to provide support for as many eligible Ph.D. students as possible. The support is intended to (1) assist you in meeting the expenses of graduate study and (2) provide student assistance to faculty in meeting their research and lab supervising responsibilities.

Departmental Graduate Assistantships

Departmental Graduate Assistantships are provided for well-qualified Ph.D. students for the first year, but it is necessary to maintain GPA at 3.0, with no grade lower than a B (3.0). The Assistantships are intended to (1) support the research activities of one or more faculty members and (2) support the student's exposure to the JSNN's mission and to the breadth of Nanotechnology. As such, the work areas are assigned by the department chair, based on recommendations from the JSNN's faculty and staff.

Work assignments associated with the Graduate Assistantship require the most general knowledge and skill base. The Service/Work Assignments are intended to provide service to the school. Students should expect reassignment with each semester in order to broaden exposure and experience; however, some positions will require commitment for multiple semesters. Service hours are flexible with respect to academic schedules, but must meet 20 hours per week by agreement with the assigned supervisor. Satisfactory progress of students' service assignments is subject to evaluation by the assigned supervisor at the end of each semester for first year students.

Please remember that students who accept assistantship support are expected to work on the specified service assignment, as discussed above. If you refuse to carry out your assigned duties, you will lose your assistantship.

If you believe that you are being asked to perform excessive or inappropriate work as a graduate assistant, you should discuss this with your supervisor. If you cannot resolve the problem, you should discuss it with the Director of Graduate Studies and/or the Department Chair. The payment stipends attached to graduate assistantships are paid monthly.

Graduate Research Assistantships

Once you pass the qualifying exam and secure a graduate research advisor, you may be supported with a Graduate Research Assistantship. A student with a graduate assistantship will work with specific faculty member to develop a research project that will enable progress to complete their dissertation. Vacation and Holidays follow the UNCG Graduate School Assistantship work schedule. However, we strongly encourage students to use their time wisely and to partner with your advisor for additional guidance and approvals.

Graduate Teaching Assistantships

Two semesters of teaching or the equivalent is expected before graduation. If the dissertation advisor deems it appropriate experience and supportive of future career ambitions, and the student has sufficient advanced credits, the student may look for a Graduate Teaching Assistantship through other departments. While there are no undergraduate classes or labs associated with JSNN, there may be opportunities to teach as either partner institution or an undergraduate college affiliated through consortia agreement. Other forms of meeting the teaching experience e.g. STEM outreach materials development may be done under a Graduate Assistantship. Students who receive graduate assistantships through the department must meet the teaching requirement by the end of second year. The program with UNCG's School of

Education provides Teaching Assistantships where the student must teach two semesters to receive the financial support.

External Grants

Some private foundations and federal funding agencies make grants available to support graduate student research and dissertation progress. You are strongly encouraged to explore these types of funding opportunities by inquiring at the Office of Research Services and by looking for announcements in newsletters of professional organizations, or others that your advisor may know about. Your advisor can assist in identifying possible sources of external support and in the preparation of the proposal. Formal proposals for research often must be routed through the Office of Research Services.

Students seeking individual external funding must have a faculty sponsor. The faculty sponsor is responsible for ensuring that the procedures for submission of the application are followed appropriately. Faculty members who assign or supervise research conducted by students are responsible for the scientific integrity of the study, for safeguarding the rights and welfare of subjects in the research. Faculty sponsors serve as the PI on student grants. All student-initiated proposals for funding must be mutually agreed upon by the student and his/her advisor. The faculty advisor has the final say as to whether the proposed activities are consistent with the goals and mission of the School, and whether they place inappropriate burdens on faculty, staff or students.

Other Funding for Research and Travel

A. Graduate Student Association (GSA) Funds

The GSA represents the interests of graduate students on campus. Each department that grants graduate degrees, including the Department of Nanoscience, has representatives and representation of a department in the GSA is required for the taking advantage of GSA sponsors programs. The GSA ensures that graduate students have a voice in all aspects of university life. The GSA also sponsors some activities of interest to graduate students and provides funds for some professional activities. For more information, please contact Nancy Poole, Vice President of Public Relations, at gsavppub@uncg.edu.

The GSA office in Elliot Center has application forms for dissertation/dissertation awards and for travel support awards. The completed application forms must be submitted to the GSA Finance Committee in 256 Elliot. At the present time, dissertation/dissertation awards of \$300 are made available on a first-come/first-serve basis. Funding is received in the form of reimbursement for incurred expenses; all receipts must be submitted within 45 days of the purchases made. Conference travel awards of up to \$300 (if presenting), or \$150 (if attending only), are also made available for graduate students. Travel grants are in the form of "professional development funds." If presenting, students can receive up to 2 awards per year. If attending only, one award per year is the maximum. Students must provide a formal request describing the purpose of the

trip and professional development outcome along with a written note of recommendation from the dissertation advisor.

Grant Support

As mentioned above, research grants typically support dissertation research once a student has passed the qualifying examination. This funding is critical to the success of a student's dissertation research, as it supports the overhead, equipment, and supplies. Please note that research grants awards must be used for research described in the proposal, which has direct alignment with the dissertation project.

Degree Requirements: Doctoral Program [See the 2017-2018 Graduate Bulletin (<https://grs.uncg.edu/graduatebulletin/graduate-programs/graduate-degree-programs/departamental-and-program-listings/jsnn/>)]

Fundamentals of Nanoscience Courses (15 credit hours)

NAN 601 – Nanochemistry (3)

NAN 602 – Nanobiology (3)

NAN 603 – Nanophysics (3)

NAN 604 – Nanotechniques (3)

NAN 605 – Mathematical Methods (3) or

Laboratory Rotations (4 credit hours)

Students will rotate through four research labs during the course of the first two semesters (seven weeks in each lab). The purpose of these rotations is to aid in choosing a research advisor by familiarizing students with faculty research at JSNN. The labs will be selected by the student based on the student's interests with the goal of helping the student select a potential dissertation research advisor. Students may take a lab rotations taught by NCAT faculty, with the permission from that faculty member and through the consortium process.

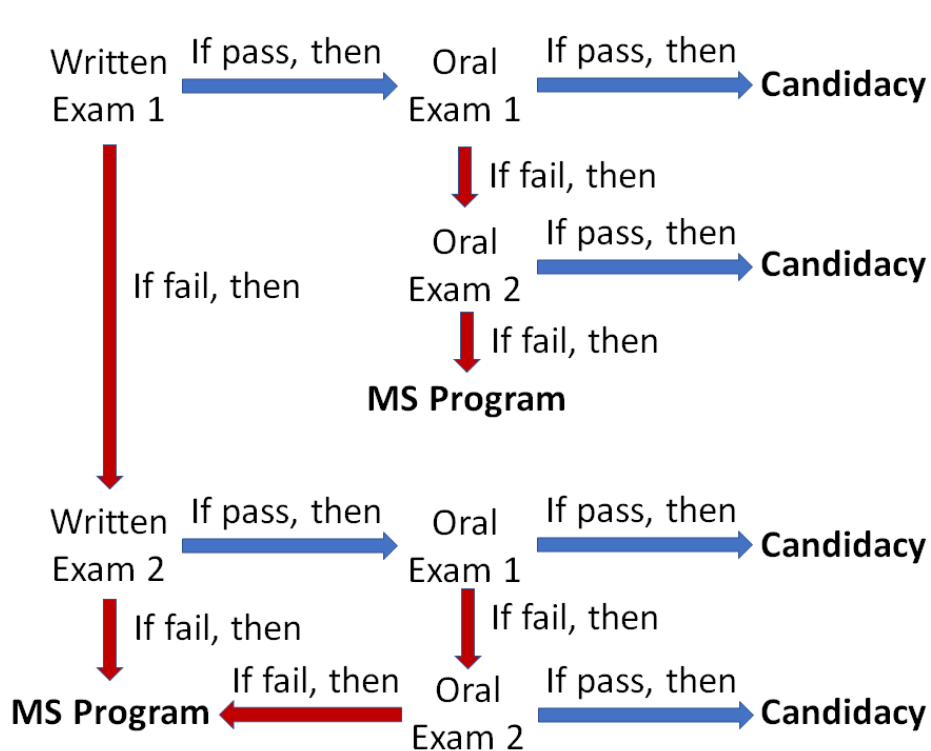
The format of the rotation is determined by the faculty member and may include attending group meetings, visiting with graduate students in the lab, having individual meetings with the faculty member, and some limited research-related activities.

NAN 611 – Nanoscience Laboratory Rotation (4x1)

Professional Development Seminars (2 credit hours)

In the first two semesters of study, students will take professional development seminars that will expose them to a variety of research and professional development topics such as

intellectual property issues, confidentiality, ethical issues in nanoscience, writing successful grant proposals, effective presentation and writing skills.



NAN-621:
Professional Development Seminar I (1)
NAN-622:
Professional Development Seminar II (1)

NAN-692-08 Directed Studies-Selected Readings in Nanoscience (1 credit hour)
This one credit seminar course is offered each fall semester. It

provides first year students with an overview of each Nanoscience faculty’s research program, and an opportunity to network with potential graduate research advisors.

Qualifying Examination (QE)

The qualifying exam for the Ph.D. in Nanoscience degree is a two-stage process that provides a critical assessment of a candidate’s original research proposal (ORP), which includes a written prospectus and oral presentation. In the first stage, the candidate writes a five-page proposal, excluding cover page and references, to the Nanoscience Faculty Committee (NFC). In the second stage, the candidate provides an oral presentation of the ORP, followed by an oral examination by the NFC, based on the student’s original research proposal.

The timing of key milestones can be found in this document under the heading “Format of the ORP Document”. The NFC will consist of all Nanoscience faculty and they will evaluate the student’s written proposal, the oral presentation, and knowledge of and ability to think critically about the proposed research topic. The documents and the examination for the ORP further give students an opportunity to demonstrate their written and oral communication skills. An overall flow chart of the QE process is summarized in the figure below.

Figure 2. A flow chart of the two part, written and oral, Nanoscience Qualifying Examination

During the student's first semester, the student will be appointed to a faculty member to act as temporary advisor and that student's ORP committee chair to guide the student through the ORP process. During that first semester, the student will schedule a meeting of the ORP NFC to share and discuss a title and an outline of the Original Research Proposal. During the student's second semester, the student will submit the first written draft of the ORP document to the committee chair for review, followed by a final ORP document to the NFC for review and evaluation. If the student passes the written portion of the QE, then the student will be scheduled to provide an oral presentation of the ORP to the ORP NFC, who will conduct an oral examination of the student. After successful defense of the ORP, a PDF of the approved ORP document (signatures not required) should be emailed by the student to the department's Director of Graduate Studies.

Evaluation method and Outcome of the ORP:

The rubrics for the ORP prospectus and presentation formats may be found in Appendix I. Primary rubrics that the NFC will consider in their assessments include demonstrated proficiency in: The scientific method, intellectual merit, broader impacts, the quality of the written and oral communication, references, and critical thinking. The faculty will use the evaluation rubric forms included in Appendix I to evaluate the written prospectus and oral presentation of the QE, and will provide a rating of pass or fail for each rubric. The student must achieve a pass rating for

each component to receive a passing grade for the QE. Specifically, a failure in one of the rubric's metrics is a failure of the examination.

Students who fail the written prospectus will be given one opportunity to resubmit their written ORP for the ORP NFC evaluation before the beginning of the oral ORP presentation period. Students who fail the oral presentation will be given an additional attempt to successfully complete the oral ORP examination, which must be completed within 90-days of the student's first oral ORP presentation.

Role of the Committee Chair in the ORP

At the both stages of the QE, the Committee Chair serves as an advocate and non-voting member of that student's ORP NFC and QE proceedings.

Format of the ORP Document

The title and abstract of the potential project must be submitted to each member of the committee before the end of the first semester. A first draft must be submitted to the committee chair on or before January 15th. The final five page ORP document (plus cover page and references) must be submitted to the committee by March 15th. The NFC will pass or fail the student on the written ORP and provide further guidance to improve the proposal prior to the student's second attempt at reconstructing and passing the written stage of the ORP QE. Students passing the written stage of the QE will be invited to the second stage of QE, i.e., the oral ORP presentation, which comprehends the student's overall demonstrated performance and communication skills. The format of the written ORP document is shown below.

Items and content	# Of Pages
Cover page – Proposal title, Name, and submission date	1
Summary – Intellectual Merit and Broader Impact	1
Background and Scientific Significance	1
Approach and method	2
Discussion (support data and results) and Conclusion	1

Note: The final written ORP document must be readable and written in a font size of ≥ 11 .

Copies of the ORP Document

Note: The ORP is strictly a departmental requirement; therefore, no copy is needed for the Graduate School.

For the Nanoscience Department, however, the student submits (emails) a PDF of the entire approved document, including title/signature page, to the department's Director of Graduate Studies. (Signatures are not needed for the ORP document.)

Advanced Nanoscience Electives (15 credit hours)

Beginning in the second year of the program, the faculty advisor will recommend 3-5 doctoral-level elective courses from the following areas: physics, chemistry, nutrition, engineering, mathematics, computer science, biology and environmental science. Faculty advisors may excuse up to 6 credits of advanced courses and substitute research credit.

NAN-710 Scientific Integrity (1 credit hour)

Students are required to take the JSNN Scientific Integrity class as an advanced elective. This class explores contemporary issues related to scientific integrity and responsible conduct in research (RCR). Topics expose students to the issues that arise in scientific research such as authorship on publications, use of animals and human subjects, conflicts of interest, etc. and ways to handle these issues.

Dissertation Research (24 credit hours minimum)

By the end of the first year, students will be assigned a dissertation advisor and prepare a dissertation proposal. Students will present their proposals to a general JSNN audience in the form of a seminar and defend the proposal in the form of an oral exam.

Dissertation research begins in the second year and students will take a minimum of 3 hours of dissertation research each semester.

Students will complete a written dissertation of their research and give a public oral presentation of the completed work. The student also must defend orally the dissertation to the dissertation comment. The seminar and defense must occur in the same term that the student applies for graduation.

NAN-799: Nanoscience Dissertation Research (24)

Other Requirements

Seminars: Students are required to attend departmental and JSNN seminars, so they may acquire a broad understanding of various current problems in nanoscience.

Teaching Experience: Students are **required to gain the equivalent of two semesters of teaching experience**, which may be met through a variety of means. Students will work with their advisor/committee to develop a suitable plan to gain appropriate teaching experience.

Degree Requirements: Professional Master of Science Program [See the 2017-2018 Graduate Bulletin ([Page 17](https://grs.uncg.edu/graduatebulletin/graduate-</p></div><div data-bbox=)

programs/graduate-degree-programs/departmental-and-program-listings/jsnn/)]

Nanoscience Survey Courses (9)

Students choose three courses to introduce them to fundamental concepts, methods, and discoveries in different areas of nanoscience. Courses include, and are not limited to the following:

NAN 601 Nanochemistry (3)

NAN 602 Nanobiology (3)

NAN 603 Nanophysics (3)

NAN 604 Nanotechniques (3)

NAN 605 Mathematical Methods in Nanoscience and Nanoengineering (3)

Disciplinary Foundation Courses (9)

Appropriate courses to build on the undergraduate degree ensuring appropriate depth of knowledge in the student's discipline will be selected with the student's program advisor.

Business/Management Courses (9 credit hours)

Internship/Project (3) (Capstone Experience)

All students must complete a 3 -hour internship in an appropriate private or public enterprise engaged in research, commercialization, or manufacturing or 6-hour project on an appropriate subject.

MS Thesis Concentration

The MS thesis concentration follows 30-hour MS degree with thesis option and anticipated completing six hours of thesis credits. BSc students admitted to this program are expected to start their research project during their first year in the MS program.

Degree Requirements:

Fundamentals of Nanoscience Courses/ Survey courses (12)

Select 12 credit hours from following listed courses.

NAN 601 Nanochemistry

NAN 602 Nanobiology

NAN 603 Nanophysics

NAN 604 Nanotechniques

NAN 605 Mathematical Methods in Nanoscience and Nanoengineering

Disciplinary Foundation Courses (6)

Appropriate courses to build on the undergraduate degree ensuring appropriate depth of knowledge in the student's discipline will be selected with the student's program advisor.

Students can select disciplinary foundational courses from the courses listed above.

Laboratory Rotations (4)

NAN 611 Nanoscience Laboratory Rotation

Nanoscience Seminar course (2)

NAN 621 Professional Development Seminar I

NAN 622 Professional Development Seminar II

Thesis credits (6)

NAN 699 Thesis Course

Degree Progression, Expectations, and Evaluation Procedures

Course of Study for the Ph.D. Program:

Semesters 1 to 3: Core classes and preliminary qualifying exam

A student's first year at JSNN will be a challenge. It is a time for the incoming class to learn to work as a team, and to help each other navigate through the broad interdisciplinary curriculum. It is a time to learn about JSNN's nanoscience culture and help students refine potential research directions. Students are expected to be on- and nanoengineering research platforms and potential research options, to research the dual faculty and to secure at least one faculty member as a potential dissertation advisor, by making a compelling case for them to accept you as an advisee. A student's options are greatly enhanced by how they conduct themselves on and off site. First year students are expected to be at the JSNN during regular university business hours. They are encouraged to speak with senior student researchers and to meet with potential advisors early and often. This will facilitate a greater understanding of JSNN's research site, to participate in relevant JSNN activities, to contribute to the School's success from the beginning through the end of each semester, and to successfully complete each required course. **Key goals for first year students include: passing all courses with a grade of ≥ 3.0 , pass the qualifying examination, and secure a graduate research advisor.**

Fundamentals of Nanoscience (15 hours):

NAN 605 – Mathematical Methods (3)

NAN 601 – Nanochemistry (3)

NAN 602 – Nanobiology (3)

NAN 603 – Nanophysics (3)

NAN 604 – Nanotechniques (3)

Laboratory Rotations (4 hours): Laboratory Rotations are an opportunity to become conversationally proficient in areas outside of the student's current area of expertise. In the first two semesters, students will rotate through four research labs to become familiar with research at JSNN and to provide training in laboratory techniques needed for dissertation research, under course number NAN 611. ***Lab rotations are 1 credit hour per lab, with two seven week lab rotations per semester.***

These lab rotations provide the students with an opportunity to clarify their preferences for potential dissertation advisors. These rotations also provide an opportunity for Nanoscience faculty members to know and assess the potential advisees, with respect to the alignment of research interests and grants, mastery of the fundamental science, lab techniques, creativity, innovation, work ethic, etc. Students are expected to proactively use this time, when not in class, to demonstrate their initiative to potential faculty advisors and to develop a compelling justification to be selected and supported by a preferred research group. This is a time for a student to become exposed to the work that is done in a lab outside of his or her expertise in order to develop the foundation of understanding of how radical interdisciplinary cooperation can develop into intelligent cooperation in innovation.

Nanoscience Seminar (2 hours):

In the first two semesters of study, students will take professional development seminars that will expose them to a variety of research and professional development topics, under course numbers NAN 621 and NAN 622.

Qualifying Exam:

Students must pass the course work and qualifying exam to be accepted into a Research Group. Student must maintain a grade of $\geq B$ (3.0) in each of their first and second semester foundational courses and pass the qualifying exam to enter PhD program. If they do not satisfy the one of the specific requirements for course grades or qualifying exam, then their assistantship may be reduced by half, while they re-take needed course work or qualifying exam. If they do not meet both thresholds, the student will then be moved into the self-supporting Master's program. Students must pass written prospectus and oral presentation of the QE to continue in the Ph.D. program, and are allowed to take one additional written prospectus prior to the oral presentations and allowed to take one additional attempt for the oral presentation within 90-days after the first attempt. See Degree Requirements for more information.

Procedure for Choosing and Securing a Dissertation Advisor

The student will provide a ranked list of four faculty for four lab rotations.

New graduate students who have passed both course work and qualifying exam by the end of their second semester will have research advisors. Soon after the fourth and final lab rotation ends (approximately the last day of classes), students submit their ranked choices for research adviser via email to both Department Chair and Director of Graduate Studies. The assignment of research advisers will be announced within a week after the oral examinations. Finalizing the assignment of research-advisers involves the Department Chair consulting with the requested research-advisers. Every effort is made to grant the student's first choice. However, problems may arise, when a given faculty member cannot accommodate all the students requesting him/her or if some investigational foci of the departmental research are not sufficiently fulfilled. Hence, the need for students to make realistic and well-informed choices, and to have viable back-up options with regard to research advisers is critical.

It goes without saying that students should be seeking out and communicating with their prospective advisors before the end of rotations and before submitting their ranked choices. Students and faculty need to talk about research and determine compatibility for that particular lab. Also, students should be aware of that each year each faculty will have a limited number of spaces in her/his lab and should consider alternative choices.

Please note that matching an advisor with an advisee, entry into a research phase of the Ph.D. program and financial support are based on many factors, such as the student's interest, performance, quality of work, creativity, transdisciplinary focus, teamwork, productive time on-site, work ethic, initiative, etc. Prior to submitting the ranked advisor request, each student is expected to speak with each Nanoscience faculty member, and gain a foundational understanding of each research group's scope, culture, and potential funding opportunities. Please invest a significant effort in getting to know your faculty team. The matching of an advisor an advisee and an advisor's decision to accept a new student is an important milestone, as they will be working closely together for several years. For example, each faculty member's expectations may differ slightly with regards to publications, funding, work ethic, supervision, and expectations, e.g., working during summers, vacations, and weekends.

By establishing this Advisor-Advisee relationship, the advisor agrees to mentor and support the advisee through the dissertation research process. Correspondingly, the advisee commits to working with that advisor. The advisee agrees to remain in good standing, to demonstrate creativity in research and a good work ethic, and to persevere and successfully complete the work required for the degree, in a timely manner.

Defining a Course of Study and Elective Courses:

Once a student secures a dissertation advisor, the advisor and student will compose a draft course of study tailored to help that student prepare for a successful dissertation research program. ***Within one semester***, the advisor will work with the student to prepare and submit a signed course of study form and committee cover page that provides specific and customized guidance for each student's set of elective courses, defines the dissertation research topic area, suggests appropriate outreach and teaching activities, provides an initial timeline for key programmatic milestones, and identifies the Chair of the student's dissertation committee. The advisor also will provide guidance on what external activities and engagements, such as

potential teaching assignments, would best serve the advisee. A completed and signed off course of study should be submitted about two months after taking the qualifying examination.

Semesters 3 to 4: Identify dissertation theme and begin research and elective course of study

Defining a Dissertation Topic:

During the first semester of the second year and after passing the qualifying examination, the student and dissertation advisor prepare a draft statement of the student's interim project area. This topic provides the framework for the student's research and continuing course of study. The specific dissertation topic would be defined before the end of the 5th semester, before the presenting the Preliminary Research Proposal, publicly in the doctoral seminar.

Dissertation research begins in the second year and students will take a minimum of 3 hours of dissertation research each semester. The student's dissertation research will be tracked under course number NAN 799, Dissertation Research.

Advanced nanoscience Electives (15 hours):

Beginning in the second year, each student will choose 3 doctoral level courses from a diverse set of the topic options, such as: Physics, nutrition, engineering, mathematics, computer science, biology and environmental science. Students may substitute dissertation research for two electives in the third year, with consent of the student's advisor/committee.

NAN-710 Scientific Integrity (1 credit hour)

Students are required to take the JSNN Scientific Integrity class before they graduate. Explores contemporary issues related to scientific integrity and responsible conduct in research (RCR). Topics expose students to the issues that arise in scientific research such as authorship on publications, use of animals and human subjects, conflicts of interest, etc. and ways to handle these issues.

Semesters 5 to 8: Continue research and elective course of study

Semesters 9 to 14: Potential research program extension

Sequence of Events for Graduation

Year 1:

Semester 1:

- Required Coursework:

- Core classes: NAN 605 – Mathematical Methods and Nan 601– Nanochemistry (3 credits each).
- 2 Laboratory Rotations: NAN 611, two one credit seven week-long workshop style courses (1 credit each).
- Seminar: NAN 621 Professional Development Seminar I (1)
- Departmental Seminar, attendance once per week
- Interview all Nanoscience faculty by the end of the semester
- NAN 692-08 – Selected Reading in Nanoscience (1)

Semester 2:

- Required Coursework:
 - NAN 603 - Nanophysics and NAN 602 - Nanobiology (3 credits each).
 - 2 Laboratory Rotations: NAN 611, two one credit seven week long workshop style course (1 credit each)
 - Seminar : NAN 622 Professional Development Seminar II (1)
- Departmental Seminar, attendance once per week.
- Qualifying Exam - first draft must be submitted to assigned committee chair on or before January 15th
- Qualifying Exam- Stage 1 – Final Original Research Proposal document is due by March 15th to the NS faculty committee.
- Submit documentation of faculty interest from potential dissertation advisors, due by April 15th, or date designated by the department.
- Qualifying Exam- Stage 2 – Original research proposal defense to the committee (date set by department)

Summer year 1:

- If you pass the exam, you will be assigned a dissertation advisor. This assignment provides the student an opportunity to begin developing and working on their dissertation research under the mentorship of their advisor.
- With your advisor, you fill out plan of study and secure a dissertation committee for the graduate school prior to the beginning of semester 3. This committee may vary by advisor, but generally will include your advisor, two to three other Nanoscience/UNCG faculty members, and one member from outside UNCG.

Year 2:

Semester 3:

- Required Coursework:
 - NAN 604 - Nanotechniques
 - Take an elective course, selected from the department approved list and chosen with consultation with your dissertation advisor.
- Engage in Dissertation work, NAN 799
- Begin to formulate dissertation project

Semester 4:

- Required Coursework:
 - Elective courses (if needed)
- Prepare your dissertation proposal, NAN 799.
- Present your dissertation proposal

Summer year 2:

- Continue dissertation work
- **Present your dissertation proposal.**

Year 3:

Semester 5: Present your dissertation Proposal. MUST BE DONE BY SEMESTER'S END!!

Continue Research, NAN 799

Year 3.5-and beyond

- Annual dissertation committee meeting/progress reports.
- Prepare, write and defend your doctoral dissertation.
- Upon a successful defense, file for graduation with the Graduate School.

Ph.D. Student Time-Line Options

Fall1	Spring1	Summer1	Fall2	Spring2	Summer2	Fall3	Spring3	Summer3	Fall4	Spring4	Summer4	Fall 5	Spring 5	Summer5	Fall6	Spring6	Summer6	Fall 7	Spring 7	Summer7
C/M	QE	W/B/P	QEO1	TC/SP/R		PP														
C/M	QE	W/B/P	QEO1	QEO2	TC/SP/R	PP														
C/M	QE	W/B/P	QEO1	QEO2	Masters															
C/M	QE	W/B/P	QEO1	QEO2	Masters															
C/M	QE	W/B/P	Masters						Performance <3.0 in two foundational courses											
C/M	QE	W/B/P	QEO1	C/M	TC/SP/R	PP														
C/M	QE	W/B/P	QEO1	C/M	Masters															
C/M	QE	W/B/P	QEO1		B/P	TC/SP/R	PP													
C/M	QE	W/B/P	QEO1		B/P	Masters														
		C=Chemistry	M=Math		B=Biology	P=Physics														
		QE		W=Written Qualifying Exam	QEO=Oral Qualifying Exam															
		TC/SP/R=Thesis Committee/Study Plan/Research			PP=Proposal Presentation															
		Black indicates performance ≥3.			Red indicates performance <3.0															

Dissertation Guidelines

UNCG provides guidelines for preparing a dissertation. It provides students with an overview of a timeline and key dates, style and format requirements, and the online submission process. A current copy of the UNCG Dissertation manual may be found at the following URL:

<http://grs.uncg.edu/current/td-manual/>

Funding

Funding is not guaranteed and support will be based on performance. Please note that progress towards degree completion may impact student support.

Recognition and Awards

Each year, the Nanoscience faculty may recognize outstanding students, who best exemplify and reflect JSNN's goals, vision, work ethic, and culture. One or more first year students may be recognized for demonstrating an exemplary integrated and interdisciplinary educational, training, collaborative, peer mentoring, and service experience. Additionally, each year, a senior level graduate student may be recognized for serving as a role model by demonstrating: creativity, collaboration, innovation, progress, thrift, and entrepreneurship in their research.

Expectations and Requirements

Expectations:

- Class attendance is mandatory, and students are expected to understand and follow each instructor's attendance policy. If you have an unavoidable conflict, religious observance or other situation where you are not able to attend class, let the instructor know before class. Consideration will be given for sudden illness and unexpected emergencies.
<https://grs.uncg.edu/graduatebulletin/academic-regulations/general-policies/attendance/>
- You are expected to attend JSNN events and functions, e.g. attendance at seminar is mandatory.
- Students may be asked to assist with outreach and other school programs. Second year Nanoscience students who have passed their qualifying exam will work with their research advisers.

- Students will begin the process of satisfying their teaching requirement once they have passed the qualifying examination.
- Work safely and attend every safety seminar by GURP. Each student must read and understand the "Chemical Hygiene Plan and Hazardous Materials Safety Manual"

Requirements:

- Minimum credit hours for degrees: The minimum number of credit hours required for the Ph.D. degree is 60, including dissertation. The minimum number of credit hours for the Professional M.S. degree is 30 credit hours including internship.
- Grades Required: Students are required to achieve a GPA of 3.0 or above to graduate from the program with no more than 6 credits below B. If a student receives more than 6 credits below a grade of B or one failing grade, he/she will be dismissed from the program. Only grades of B or better will count toward the doctoral degree.
- Amount of transfer credit accepted: Students entering the program with graduate credits received while enrolled in another doctoral program may transfer up to 15 non-dissertation credit hours of appropriate doctoral level coursework with the approval of Joint School of Nanoscience and Nanoengineering Graduate Studies Committee and by the Graduate School prior to entering the doctoral program (preferably) but no later than the completion of their first graduate semester. Students must provide syllabi from the courses for which they would like transfer credit.
- Time limits for completion: A typical time-frame for completion of the Ph.D. degree on a full-time basis will be 4 years; however, students may take up to 7 academic years to complete all of the requirements for the degree. Students may take up to a maximum of 72 credit hours in the Nanoscience doctoral program depending on individual needs. Students may petition the JSNN Graduate Studies Committee and the Graduate School for an extension if there are compelling reasons for requiring more than seven years to complete the requirements (e.g. part time students will typically take 2 – 3 years more to complete their courses of study). No credit will be given for courses taken more than five years prior to enrollment at JSNN. Transfer credit is also tied to time. Transfer credit can expire. See the Graduate School policy.
- Qualifying exam: Students will take two-stage qualifying exam at the end of their first and second semesters of full-time study in order to continue in the program. Students, who do not pass the exam, in May, will be allowed to take one additional oral examination within 90-day period, measured from the date of the last class in the semester in which the examination was scheduled.
- Dissertation proposal: By the end of the first year, students will be assigned a dissertation advisor. This individual must hold tenure-track faculty status within the JSNN or be a tenure-

track faculty member within either of the two parent universities with affiliated faculty status in the JSNN, including collaborating and adjunct faculty. In consultation with the advisor, the student will prepare a dissertation proposal. The dissertation proposal is a statement document on how the student intends to accomplish the proposed goals of his/her research. A written document in the form of a (NIH or NSF) grant proposal needs to be prepared along with a 45 min presentation. Students will present their proposals to a general JSNN audience in the form of a seminar, followed by a defense of their proposal in the form of an oral exam. (timing: end of 2nd yr, beginning 3rd yr) A week prior to their seminar, student need to provide their committee members a copy of their dissertation proposal. In addition, students are responsible to send out a public announcement to the JSNN community including the following information: title of dissertation topic, abstract, advisor's name, time and location of the presentation (1 week prior to their presentation date).

- Seminars: Students will be required to attend departmental and JSNN seminars so that they may acquire a broad understanding of various current problems in nanoscience.
- Safety Training: All students need to go through safety training to access any of the laboratories at JSNN. Each laboratory has specific guidelines for training please consult with the lab manager for access.
- Teaching experience: Students are required to gain the equivalent of two semesters of teaching experience. The teaching experience requirement may be met through a variety of means and the student is expected to work with his/her advisor/committee to develop a suitable plan to gain appropriate teaching experience.
- Dissertation: Each student must complete a written dissertation of his/her research and give a public oral presentation of the completed work. In addition, the student must defend this dissertation orally to his/her dissertation committee. The seminar and defense must occur in the same term that the student applies for graduation.
- Ethics and Integrity: Students must read and understand the UNCG Academic Integrity Policy, Student Code of Conduct, and Ethics and Professional Standards, which may be found at the following links:
 - <http://sa.uncg.edu/handbook/academic-integrity-policy/>
 - <http://sa.uncg.edu/handbook/student-code-of-conduct/>
 - <https://sites.google.com/a/uncg.edu/cap-hesa/professional-standards>"Students should recognize their responsibility to uphold the Academic Integrity Policy and to report apparent violations to the appropriate persons. Students who do not understand the Policy or its application to a particular assignment are responsible for raising such questions with their faculty member. By enrolling in the university, each student agrees to abide by the Academic Integrity Policy." Fundamental values that provide the framework for UNCG's Academic Integrity Policy include: "Honesty, trust, fairness, respect, and responsibility. Academic Integrity Policy violations include, but may not be limited to: Cheating, plagiarism, misuse of academic resources, falsification, and facilitating academic dishonesty. Code of

Conduct violations include student actions that convey: Threats, coercion, harassment, intimidation, or hostile environments. Ranges of sanctions for the permanent record process vary by the type of charge. Procedures for handling academic integrity charges also may be found at the links listed above.

These requirements are designed to prepare graduates for competitive careers in a dynamic and evolving global work environment.

Responsible Conduct in Research

Students should review the NIH update on the requirements for instruction in responsible conduct in research (RCR) as outlined on Nov. 24, 2009 in Notice Number NOT-OD-10-019 (<http://grants.nih.gov/grants/guide/notice-files/not-od-10-019.html>). The update provides information about the purpose of RCR training, the applicability, the background and development of NIH criteria, and best practices in RCR education.

All research activities conducted by faculty or students at JSNN must comply with UNCG policies on research. The Office of Research Compliance (ORC) coordinates compliance measures on campus and acts as a resource for the university community's concerns regarding compliance requirements. The ORC website, <http://www.uncg.edu/orc>, contains links and details about the University's required policies. It is incumbent upon each Principal Investigator and research team member to comply with the most up to date protocols, guidelines and processes. These policies include:

1. The University Policy and Procedure for Ethics in Research
2. The Policy on the Protection of Human Subjects in Research
3. The Policy on the Protection of Animal Subjects in Research
4. The Policy on Data Safety and Compliance Monitoring
5. The Copyright and Use Policy
6. The Patent and Copyright Policies
7. The Guidelines on Use of Indirect Cost Recovered
8. Policy on Data Safety and Compliance Monitoring

The JSNN has additional procedures that are specific to faculty, staff, and students. Selected JSNN procedures are provided below. Policies are provided to assist faculty, staff and students in the timely, appropriate and successful conduct of research.

Scientific Integrity

Ensuring Scientific Integrity is expected by all students, staff and faculty members. This includes

not only the appropriate conduct of studies, protection of human subjects, financial disclosure, conflict of interest, citations of relevant work, and storage and use of data, but authorship and ownership issues. Furthermore, there will be strict enforcement protecting the integrity of data. Absolutely no tolerance is afforded to manipulation or falsification of data, including (but not limited to): data point manipulation, image manipulation (inappropriate photoshopping, etc.), and fabrication of data. Supplementary federal and UNCG policies may be found on the UNCG webpage. Additional oversight is provided by various School and university committees, as well as funding and state or federal agencies.

Data and Safety Monitoring.

The UNCG Compliance Officer coordinates Data Safety Monitoring. The UNCG IRB and the JSNN Research and Scholarship Committee assist with safety and compliance monitoring to ensure adherence to approved study procedures and consent procedures, security of data, protection of subject confidentiality, and provision of appropriate protections to subjects.

Additional information related to UNCG's policy on responsible conduct in research may be found at the following link: <http://www.uncg.edu/orc/responsible.html> .

Academic Good Standing and Termination at JSNN

Academic Good Standing: A student is considered to be in good continuing academic standing if that student:

- Maintains a GPA of 3.0 or above, with no more than two courses below B (3.0) and no failing grades;
- Passes the qualifying examination within two attempts;
- Maintaining continued progress in research.
- Having a research advisor by the end of the student's second semester in the program and thereafter.
- Follows the UNCG Academic Integrity Policy, Student Code of Conduct, Ethics and Professional Standards, and Responsible Conduct in Research policies; and
- Completes the degree program within UNCG's specified time limits for completion.

Termination: A student may be terminated from JSNN's program, if that student:

- Receives more than two courses below a grade of B or one failing grade,
- Doesn't pass the qualifying examination within two attempts;
- Does not secure a note from a potential dissertation advisor that documents that faculty member's willingness to accept that student as an advisee; or
- Violates UNCG's Academic Integrity, Student Code of Conduct, Ethics and Professional Standards, or Responsible Conduct in Research policies. Please note that an ethics violation may be reflected on a student's permanent record.

Failure to satisfy the service assignment requirements or working for pay outside of JSNN, while on a stipend, without prior authorization, places the student at risk of losing their assistantship.

Other Considerations:

Accommodations:

The Nanoscience Department will strive to satisfy all accommodations specified by the Office of Accessibility Services for students as appropriate. All students seeking accommodation should register with ODS prior to the beginning of the semester and communicate with the Department Head to ensure all accommodations can be met adequately. The Department Head will work with appropriate faculty to arrange for accommodation in specific classes. For more information, please see: <http://ods.uncg.edu/> .

Academic integrity:

In the JSNN classroom, academic integrity violations are unacceptable. These include (but are not limited to): Plagiarism, in which (1) the words or thoughts of others are presented as those of the student, or (2) adequate citation of relevant references are not included with presented text; Cheating, in which (1) a student's responses to any form of question (test, homework, etc.) are taken from any individual other than the principle student, (2) pre-prepared information (by the student or others) is used to provide answers to assigned questions, or (3) non-approved technologies are used for the completion of the assignment or test.

Academic advising during the first year and advising codes:

To determine academic advisors during the first year the lists of faculty and students will be matched in alphabetical order to ensure that each faculty member will advise no more than three students. Advising codes for each semester can be obtained from the faculty advisor. Prior to assignment of an advisor, this code can be obtained from the Department Head.

Class examination policy:

The Nanoscience department will strive to avoid scheduling two regular examinations on the same day. In the event that a faculty member suggests the scheduling of a make-up exam that would take place on the same day as another regularly scheduled examination, the student may arrange with faculty to reschedule the make-up examination for another day. In the event that an examination has a late start that would cause overlap with another class or JSNN commitment, the student(s) may request that the examination be rescheduled.

Issues with faculty advisors:

Students having trouble with their faculty advisor are first expected to make good-faith attempts to clear up any difficulties directly with the advisor. Upon an unsatisfactory outcome,

the student may then involve the Department Head in conversations in an attempt to repair the relationship. In the event that a student believes that the relationship cannot be fixed, the student can seek a new advisor. However, this is a drastic outcome and should be viewed as such. It is the student's responsibility to (1) inform their advisor of their intent to leave and (2) to initiate a conversation between the current and intended advisor to ensure mutual agreement.

Interpersonal Skills and Team Development:

Integral parts of the graduate student experience are the development of team building skills and the ability to understand and exercise the organization's chain of command. For example, JSNN's cross disciplinary culture encourages an interdependent approach to mastering the first year core curriculum. Students with expertise in a given area are encouraged serve as tutors for their peers. Additionally, in class or lab, students are expected to understand their roles as apprentices, and seek guidance from appropriate faculty mentors, as warranted.

Communication Skills:

UNCG's University Writing Center [<http://www.uncg.edu/eng/writingcenter/default.php>]

The mission of our Writing Center is to connect writers with readers. This helps to make good writers better writers. It also encourages writers to develop an awareness about themselves that will help them after they leave the Writing Center. To support this philosophy, our center practices a collaborative approach to sessions, where students and consultants engage in one-on-one conversations about writing - conversations that center on shared knowledge and expertise, as opposed to hierarchical instruction that treats writing center sessions as remediation.

Hours (in person & online):

Sun: 5 p.m. - 8 p.m.

Mon - Thur: 9 a.m. - 8 p.m.

Fri: 9 a.m. - 3 p.m.

Contact: The University Writing Center

The University of North Carolina at Greensboro

3211 MHRA Building

Greensboro, NC 27402-6170

VOICE: 336.334.3125 FREE 336.334.3125

FAX: 336.344.1111

EMAIL askthewc@uncg.edu

WEBMASTER wegum@uncg.edu

UNCG's University Speaking Center [<http://speakingcenter.uncg.edu/about/index.php>]

The University Speaking Center provides consultation support and instructional workshop services for UNCG students, faculty, employees, and members of the Greensboro community. Our support is designed to help speakers further develop their own oral communication

confidence and competence. We provide peer-to-peer feedback, guidance, and other support in the areas of public speaking preparation and delivery, interpersonal communication, and group or team communication.

The Speaking Center is located along with the Writing Center in 3211 MHRA. We are on the third floor. MHRA is on the corner of Forest and Spring Garden - across the street from the Mossman Building.

Fall Hours of Operation

Monday - Thursday

10am to 7pm

Friday

9am to Noon

Sunday

4pm to 8pm

Contact: The University Speaking Center

The University of North Carolina at Greensboro

3211 MHRA Building

Greensboro, NC 27402-6170

VOICE: 336.256.1346 **FREE:** 336.256.1346

WEBMASTER wegum@uncg.edu

Appendix I

EVALUATION RUBRIC: ORIGINAL RESEARCH PROPOSAL WRITTEN PROSPECTUS

Nanoscience Department (**August 15, 2017**)

Candidate Name: _____

Date: _____

Original Research Proposal Title: _____

ORP Evaluation Metrics	Rating [Pass/Fail]
1. Scientific Method	
2. Intellectual Merit/Impact of Proposed Research on the field	
3. Broader Impact	
4. Quality of Written and Oral Communication	
5. References	

Metric Definitions:

Scientific Method Definition: This multicomponent metric covers the following attributes -

- a. Problem Definition: States the research problem clearly and concisely, providing motivation for undertaking the research
- b. Literature and Previous Work: Clearly and concisely demonstrates sound knowledge of literature in the area, and of prior work on the specific research problem; including comprehensive knowledge of contradictory studies and limitations from previous research. Defines what the state of the art in the area is and what critical gaps need to be addressed.

- c. **Scientific Hypothesis:** Clearly and concisely defines a tentative, testable hypothesis to explain the observed phenomenon or to address the key question. A rationale for your hypothesis follows which explains why you hypothesis is valid and worthy of testing.
- d. **Specific Aims:** Clearly and concisely provides a sound plan-usually 3 to 4 one sentence Aims-for applying state-of-the-field research methods/tools to solving the defined problem and shows a good understanding of how to use methods/tools effectively
- e. **Expected Results and potential pitfalls:** Clearly and concisely provides a sound plan for analyzing and interpreting research results/data and alternatives I case the hypothesis is not proven.

Intellectual Merit/Impact of Proposed Research on the field: Clearly and concisely demonstrates the potential value of the proposed solution to the research problem in advancing foundational knowledge within the area of study,

Broader Impact: Clearly and concisely demonstrates awareness of broader implications of the proposed research. Broader implications may include social, economic, technical, ethical, business, etc. aspects.

Quality of Written Communication: Communicates research proposal clearly, concisely and professionally in written form, appropriate to the field

References: Provides a complete list of relevant references to support the introduction and is in the correct APA format.

Overall Assessment: The assessment of the overall performance of the candidate based on the evidence provided in items 1 – 5 above.

	Original Research Proposal (ORP) Performance Ratings	
Outcomes	Fail	Pass
Overall, my rating of the performance		

Name of the Examining Committee Member: _____

Signature of the Examining Committee Member: _____

EVALUATION RUBRIC: ORIGINAL RESEARCH PROPOSAL PRESENTATION
Nanoscience Department (August 15, 2017)

Candidate Name: _____

Date: _____

Original Research Proposal Title: _____

ORP Evaluation Metrics	Rating [Pass/Fail]
1. Scientific Method	
2. Intellectual Merit/Impact of Proposed Research on the field	
3. Broader Impact	
4. Quality of Written and Oral Communication	
5. Critical Thinking/Aptitude	

Metric Definitions:

Scientific Method Definition: This multicomponent metric covers the following attributes -

- a. **Problem Definition:** States the research problem clearly and concisely, providing motivation for undertaking the research
- b. **Literature and Previous Work:** Clearly and concisely demonstrates sound knowledge of literature in the area, and of prior work on the specific research problem; including comprehensive knowledge of contradictory studies and limitations from previous research.
- c. **Assumptions and limitations:** Completely and concisely summarize contradictory findings and limitations from previous research and the ways this paper will contribute to further knowledge about the research topic.

- d. Scientific Hypothesis: Clearly and concisely defines a tentative, testable and justifiable prediction to explain the observed phenomenon or to address the key question.
- e. Solution Plan: Clearly and concisely provides a sound plan for applying state-of-the-field research methods/tools to solving the defined problem and shows a good understanding of how to use methods/tools effectively
- f. Expected Results: Clearly and concisely provides a sound plan for analyzing and interpreting research results/data

Intellectual Merit/Impact of Proposed Research on the field: Clearly and concisely demonstrates the potential value of the proposed solution to the research problem in advancing foundational knowledge within the area of study

Broader Impact: Clearly and concisely demonstrates awareness of broader implications of the proposed research. Broader implications may include social, economic, technical, ethical, business, etc. aspects.

Quality of Written and Oral Communication: Communicates research proposal clearly, concisely and professionally in written and oral forms, appropriate to the field

Critical Thinking/Aptitude: Demonstrates: 1. Preparedness in the core disciplines; 2. a capability for original, independent research in an area aligned with the Department’s mission and platforms; and 3. A consistently strong work ethic and an ability to complete the proposed research in a timely manner.

Overall Assessment: The assessment of the overall performance of the candidate based on the evidence provided in items 1 – 5 above.

Outcomes	Original Research Proposal (ORP) Performance Ratings	
	Fail	Pass
Overall, my rating of the performance		

Name of the Examining Committee Member: _____

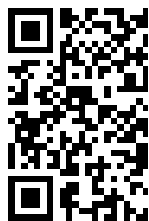
Signature of the Examining Committee Member: _____

Note: These rubrics represent a synthesis of Duke, Purdue and Kentucky University rubrics.

1. <https://www.google.com/search?q=oral+proposal+presentation+rubric&aq=chrome.1.69i59l2j69i57j69i60l2j0.2602j0j8&sourceid=chrome&ie=UTF-8> [Purdue]
2. <http://bme.duke.edu/sites/bme.duke.edu/files/EVALUATION%20RUBRIC%20FOR%20PRELIMINARY%20EXAM%20PROPOSAL%20PRESENTATION.pdf> [Duke]
3. www.uky.edu/~kdbrad2/EDP656/Rubrics/ProspectusRubric.doc

Feedback and Recommendations:

Your feedback and recommendations for this working document are always welcome. The goal of this handbook is to provide a simple and abridged reference tool that provides useful information for the JSNN’s Nanoscience students. Please let us know if you find any errors or omissions. All inputs will be considered for inclusion in future revisions of this Handbook, as part of our continuous improvement process. Please forward your comments to the Nanoscience department chair.



Joint School of Nanoscience and Nanoengineering

2907 E. Gate City Blvd.
Greensboro, NC 27401 U.S.A.

Phone: +1 (336) 285-2800

Web: <http://jsnn.ncat.uncg.edu>

Twitter: JSNN2907

Facebook page:

<https://www.facebook.com/JointSchoolOfNanoscienceAndNanoengineering>