



GRADUATE FACULTY

Bahoura, M. J., Professor of Engineering

- Renewable energy harvesting devices
- Energy storage devices
- Multifunctional thin films
- Nano-materials
- High-dielectric materials

Black, Suely, Professor of Chemistry

- Chemistry Education
- Materials Science and Engineering Graduate Education

Bonner, Carl E, Professor of Chemistry

- Nonlinear Optical Materials Characterization
- Electro-optic and thermo-optical Material

Noginov, Mikhail, Professor of Physics

- Optical Spectroscopy
- Non-linear optics
- Meta-materials
- Nano-plasmonics and lasers

Noginova, Natalia, Professor of Physics

- Magnetization dynamics at nanoscale
- Plasmonics and Spectroscopy
- Coupling of electric, magnetic and optical effects in nanostructured materials

Rakhimov, Rakhim, Professor of Chemistry

- Organic and organo-element free radicals
- Reduction/oxidation processes

Ramesh, Govindarajan, Professor of Biology

- Director (I), Center for Materials Research
- Nano/bio-materials
- Bio-toxicity
- Biosensors

Song, Kyo, Professor of Engineering

- Smart optical materials
- Wireless Power Transmission
- Microwave biomaterial interaction

Sun, Sam-Shajing, Professor of Chemistry

- Graduate Program Coordinator, Center for Materials Research
- Organic, polymeric, hybrid or soft materials synthesis and characterization
- Electronic, Optoelectronic, and thermoelectric soft materials and thin film devices

Temple, Doyle, Professor of Physics

- Ultrafast Laser Spectroscopy
- Single Crystal Growth
- Plasmonic Sensors

Yoon, Hargsoon, Associate Professor of Engineering

- Biomedical nano-materials
- Neural sensing
- Nano-electronic materials and devices

COURSES

MSE 530	Materials Science
MSE 533	Polymers & Polymer Based Composite Materials
MSE 535	Electronic and Photonic Materials
CHM 545	Mathematical Methods
MSE 575	Instrumentation for Materials Science
PHY 580	Quantum Mechanics for Materials Scientists
MSE 600	Materials Science Seminar I
MSE 600	Materials Science Seminar II
MSE 605	Ethics of Scientific Research and Professional Conduct
MSE 697	Research I
MSE 698	Research II (Ph.D. only)
MSE 699	Research III (Ph.D. only)
MSE 770	Doctoral Qualifying Examination
MSE 799	Master of Science Thesis Research
MSE 897	Doctoral Research I
MSE 899	Doctoral Research II
MSE 899	Doctoral Research III
MSE 900	Doctoral Thesis

ELECTIVE COURSES

MSE 607	Materials for Nanotechnology
MSE 609	Introduction to Computational Materials
MSE 635	Optical Materials
EEN 650	Microelectromechanical Devices
PHY 653	Solid State Physics
MSE 660	Organic Optoelectronic Materials and Devices
EEN 663	Solid State Devices
PHY 675	Electricity and Magnetism
MSE 703	Materials and Devices for Solar Energy Conversion
MSE 704	Thin Film Phenomena

MATERIALS SCIENCE AND ENGINEERING PROGRAM

Center for Materials Research

Norfolk State University | 700 Park Ave., Norfolk, Virginia 23504

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E-mail: cmr@nsu.edu

NORFOLK STATE UNIVERSITY

WE SEE THE
FUTURE
IN YOU.



**GRADUATE PROGRAMS
IN MATERIALS SCIENCE AND ENGINEERING**



"I have developed transferable skills that I apply every day in my current role as a Materials Process Engineer. I worked across institutions, and on interdisciplinary teams. The program has been instrumental in my sensitivity to team dynamics, through workshops centered around emotional intelligence and relationship management. I now use these experiences to effectively contribute to project deliverables, that require input from various departments and specialties."

Monique Farrell, 2016 Ph.D. Materials Science and Engineering, Norfolk State University. Currently a Materials Process Engineer III, Northrop Grumman



ACADEMIC PROGRAMS

Norfolk State University offers two graduate programs in the Interdisciplinary field of materials for advanced technologies. **The Ph.D. in Materials Science and Engineering** program prepares students for careers in industry, federal or private research laboratories, and academia. The program transitions students from physical sciences, engineering, and related fields into the discipline of materials science and engineering while broadening their professional opportunities.

The M.S. in Materials Science program provides students with analytical and technical skills and research experience necessary for doctoral programs. Graduates are also prepared for professional jobs involving materials science and engineering principles.

OPPORTUNITIES FOR STUDENTS

Graduate students have the opportunity to work on projects with external research organizations including national laboratories, industries and universities. Among our partners are **NASA Langley Research Center** and **Thomas Jefferson National Laboratories**. Students regularly attend national and international conferences where they present their research results.

RESEARCH LABORATORIES

- MiNaC Class 100/1000 Cleanroom
- NMR and ESR Labs
- Thin Film Lab
- Crystal Growth Lab
- Materials Characterization Lab
- Laser Spectroscopy Lab
- Polymer Synthesis and Characterization Lab
- Biomaterials and Toxicology Lab

DEGREE REQUIREMENTS

The M.S. degree requires 33 credit hours of graduate course work and the preparation and successful defense of a thesis. The Master of Science program is designed to be completed in 2 years.

The Ph.D. degree requires 12 credit hours of core courses, 18 credit hours of electives, and 45 credit hours of research courses, including doctoral research and thesis preparation. Students entering with the Master's degree may transfer up to 21 credit hours of graduate courses. Students must complete a minimum of 75 graduate credit hours that comprise at least 39 credit hours of coursework and 36 hours of research-based courses including 27 hours of Ph.D. research and 9 hours for a doctoral dissertation.

FINANCIAL ASSISTANCE

Teaching Assistantships – provides a stipend, tuition and fees for the academic year. Duties include teaching, grading, laboratory instruction, and educational responsibilities.

Research Assistantships – covers the full calendar year and includes a stipend, tuition, and fees. Recipients work directly with faculty on research projects. Candidates are selected based on academic qualifications, research potential, and recommendations.

ADMISSION REQUIREMENTS

Bachelor's or Master's degree in chemistry, physics, engineering, or related field from an accredited university.

English proficiency based on TOEFL scores or demonstrated working knowledge of the language.

GRE Scores (PhD program)

A completed application will include a statement of purpose, a resume, official transcripts from all schools attended, three or more letters of recommendation, and GRE scores (for Ph.D program applicants).

