Materials Science and Engineering (Certificate)

The Graduate Certificate Program (GCP) in Materials Science and Engineering (MSE) is designed for working professionals who do not have formal training in MSE, but wish to acquire a basic understanding of materials science to improve their on-the-job experience and knowledge. Most people will enroll in this program as distance education students through the Engineering Online (EOL) office at NC State University. Students can customize their particular certificate programs to focus on specific areas of materials science that interest them.

Program of Study

The MSE GCP requires a total of 12 credit hours, including MSE 500 (3 credit hours) and three MSE elective courses (9 credit hours) selected by the student. MSE 500 is a fast-paced overview of the field of materials science and engineering and is designed for students who do not have a formal background in MSE, such as those with BS degrees in chemistry, physics and other fields of engineering. MSE 500 also provides the foundation for more specialized MSE graduate courses.

Each course is 3 credit hours and most courses are offered at least once per year through the EOL office. By judicious selection of elective courses, students can customize their GCP to focus on areas of interest to them.

Admissions Requirements

To be admitted to the MSE Graduate Certificate Program, a student must have a BS degree in the sciences or engineering from a regionally accredited four-year college or university, and have an overall (or major) GPA of at least 3.0 on a 4-point scale.

All new students must complete the NCSU Graduate School application for admission to the MSE GCP. The GRE exam is NOT required for admission to the GCP. Application deadlines are March 1 for summer and fall admission, and October 1 for spring admission. Students can begin study in the fall, spring or summer semester immediately following their acceptance into the program.

Academic success in the MSE GCP might have a strong bearing on admission to a graduate degree program. However, completion of a graduate certificate program IN NO WAY guarantees entry into a graduate degree program, which must be done through a separate application process.

Plan Requirements

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
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<tbody>
<tr>
<td>MSE 500</td>
<td>Modern Concepts in Materials Science</td>
<td>12</td>
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<tr>
<td>Course Code</td>
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<tr>
<td>MSE 708</td>
<td>Thermodynamics Of Materials</td>
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<td>MSE 709</td>
<td>Metastable Materials: Processing, Structure, and Properties</td>
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<tr>
<td>MSE 710</td>
<td>Elements Of Crystallography and Diffraction</td>
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<td>MSE 712</td>
<td>Scanning Electron Microscopy</td>
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<td>MSE 715</td>
<td>Fundamentals Of Transmission Electron Microscopy</td>
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<td>MSE 718</td>
<td>Advanced Transmission Electron Microscopy</td>
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<td>MSE 721</td>
<td>Nanoscale Simulations and Modeling</td>
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<td>MSE 723</td>
<td>Materials Informatics</td>
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<td>MSE 731</td>
<td>Materials Processing by Deformation</td>
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<td>MSE 741</td>
<td>Principles of Corrosion</td>
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<tr>
<td>MSE 751</td>
<td>Thin Film and Coating Science and Technology I</td>
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<td>MSE 752</td>
<td>Thin Film and Coating Science and Technology II</td>
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<td>MSE/NE 757</td>
<td>Radiation Effects on Materials</td>
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<td>MSE 760</td>
<td>Materials Science in Processing of Semiconductor Devices</td>
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<td>MSE 761</td>
<td>Polymer Blends and Alloys</td>
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<td>MSE 763</td>
<td>Characterization Of Structure Of Fiber Forming Polymers</td>
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<td>MSE 770</td>
<td>Defects, Diffusion and Ion Implantation In Semiconductors</td>
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<td>MSE 771</td>
<td>Materials Science of Nanoelectronics</td>
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<td>MSE 775</td>
<td>Structure of Semicrystalline Polymers</td>
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<td>MSE 791</td>
<td>Advanced Materials Experiments</td>
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Total Hours 9

**Faculty**

**Full Professors**

Harald Ade
David E. Aspnes
Charles M. Balik
Salah M. A. Bedair
Donald Wayne Brenner
Jerome J. Cuomo
Michael David Dickey
Jan Genzer
Russell E. Gorga
Carol K. Hall
Ola Lars Anders Harrysson
Ayman I. Hawari
Douglas Lee Irving
Albena Ivanisevic
Jacob L. Jones
Jesse Jur
Carl C. Koch
Thomas H. LaBean
Harold Henry Lamb
Frances Smith Ligler
James D. Martin
Veena Misra
Korukonda Linga Murty
Jagdish Narayan
Roger Jagdish Narayan
Gregory N. Parsons
Melissa Anne Pasquillini
Zlatko Sitar
Franky So
Richard J. Spontak
Joseph B. Tracy
Daryoosh Vashaee
Orlin Dimitrov Velev
Yaroslava G Yingling
Xiangwu Zhang
Yong Zhu

Associate Professors
Aram Amassian
Ashley Carson Brown
Ramon R. Collazo
Rajeev Kumar Gupta
Djamel Kaoumi
Jagannadham Kasichainula
Divine Philip Kumah
Nina Wisinger

Assistant Professors
Kaveh Ahadi
Veronica Augustyn
Wenpei Gao
Timothy Joseph Horn
Srikanth Patala
Ge Yang

Practice/Research/Teaching Professors
Reza A Ghiladi
Claude Lewis Reynolds Jr.
John F Muth

Emeritus Faculty
Hans Conrad
Robert F. Davis
Elizabeth Carol Dickey
Nadia El-Masry
John Joseph Hren
Jacqueline Krim
Gerald Lucovsky
Jon-Paul Maria
Khosrow L. Moazed
Ronald O. Scattergood
John S. Strenkowski
Yuntian T. Zhu

Adjunct Professors
Cheryl Cass
Barry Farmer
Charles Richard Guarnieri
James Michael LeBeau
Tania MIlkova Paskova
John T. Prater
Justin Schwartz
Victor Zhirnov