**Applied Science**

The Graduate Certificate in Applied Science (APSC) is a program representing many of NJIT's academic departments and colleges. The multitude concentrations within the program are brought together by Dr. Andrew Klobucar from the NJIT Department of Humanities into one cohesive unit of learning, with his expertise in technical writing and instructional design. The primary objective of the program is to 'educate the educators' in a concentrated science field at a high level, and apply current instructional design tools in that science field, to bring back to the classroom on their own. By no means is the program exclusive to educators - anyone qualified may take it! Click here to download the program brochure (http://www.njit.edu/graduatemobile/file/cert-applied-science-teachers-flyer-draftpdf).

Who would be suited to take this program?

This graduate certificate is primarily for secondary school teachers who want to strengthen their background in science, business, computing, engineering, architecture and/or technical communication. Students may choose from ten tracks. Those teaching AP (Advanced Placement) courses in secondary schools will benefit substantially from the certificate courses.

What are the Required Courses?

<table>
<thead>
<tr>
<th>Code</th>
<th>Core Courses (choose 2 courses)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC 681</td>
<td>Tech in Class &amp; Learning Envir</td>
<td></td>
</tr>
<tr>
<td>PTC 698</td>
<td>Selected Topics in Professional and Technical Communication</td>
<td></td>
</tr>
</tbody>
</table>

Tracks(choose 1 track; take 9 credits)

Professional and Technical Communication

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC 603</td>
<td>Identity, Technology, and Communication</td>
</tr>
<tr>
<td>PTC 629</td>
<td>Theory and Practice of Social Media</td>
</tr>
<tr>
<td>PTC 601</td>
<td>Advanced Professional and Technical Communication</td>
</tr>
<tr>
<td>PTC 605</td>
<td>Elements of Visual Design</td>
</tr>
</tbody>
</table>

Business

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 620</td>
<td>Management of Technology</td>
</tr>
<tr>
<td>ECON 610</td>
<td>Managerial Economics</td>
</tr>
<tr>
<td>FIN 600</td>
<td>Corporate Finance I</td>
</tr>
<tr>
<td>FIN 624</td>
<td>Corporate Finance II</td>
</tr>
<tr>
<td>MGMT 635</td>
<td>Data Mining and Analysis</td>
</tr>
<tr>
<td>MGMT 640</td>
<td>New Venture Management</td>
</tr>
<tr>
<td>MGMT 650</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>MGMT 691</td>
<td>Legal and Ethical Issues</td>
</tr>
<tr>
<td>MGMT 692</td>
<td>Strategic Management</td>
</tr>
</tbody>
</table>

Computer Science

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 505</td>
<td>Programming, Data Structures, and Algorithms</td>
</tr>
<tr>
<td>CS 506</td>
<td>Foundations of Computer Science</td>
</tr>
<tr>
<td>CS 610</td>
<td>Data Structures and Algorithms</td>
</tr>
<tr>
<td>CS 630</td>
<td>Operating System Design</td>
</tr>
<tr>
<td>CS 631</td>
<td>Data Management System Design</td>
</tr>
<tr>
<td>CS 656</td>
<td>Internet and Higher-Layer Protocols</td>
</tr>
</tbody>
</table>

Engineering Management

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM 636</td>
<td>Project Management</td>
</tr>
<tr>
<td>HRM 601</td>
<td>Organizational Behavior</td>
</tr>
<tr>
<td>ACCT 615</td>
<td>Management Accounting</td>
</tr>
<tr>
<td>IE 673</td>
<td>Total Quality Management</td>
</tr>
<tr>
<td>MIS 645</td>
<td>Information Systems Principles</td>
</tr>
<tr>
<td>EM 634</td>
<td>Legal, Ethical and Intellectual Property Issues for Engineering Managers</td>
</tr>
</tbody>
</table>
### Applied Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM 637</td>
<td>Project Control</td>
</tr>
<tr>
<td>EM 691</td>
<td>Cost Estimating for Capital Projects</td>
</tr>
<tr>
<td>EM 632</td>
<td>Legal Aspects in Construction</td>
</tr>
</tbody>
</table>

#### Information Systems

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS 601</td>
<td>Web Systems Development</td>
</tr>
<tr>
<td>IS 663</td>
<td>System Analysis and Design</td>
</tr>
<tr>
<td>IS 631</td>
<td>Enterprise Database Management</td>
</tr>
<tr>
<td>IS 665</td>
<td>Data Analytics for Info System</td>
</tr>
<tr>
<td>IS 676</td>
<td>Requirements Engineering</td>
</tr>
<tr>
<td>IS 678</td>
<td>IT Service Management</td>
</tr>
<tr>
<td>IS 680</td>
<td>Information Systems Auditing</td>
</tr>
<tr>
<td>IS 681</td>
<td>Computer Security Auditing</td>
</tr>
<tr>
<td>IS 684</td>
<td>Business Process Innovation</td>
</tr>
<tr>
<td>IS 688</td>
<td>Web Mining</td>
</tr>
</tbody>
</table>

#### Engineering

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 604</td>
<td>Advanced Engineering Statistics</td>
</tr>
<tr>
<td>IE 621</td>
<td>Systems Analysis and Simulation</td>
</tr>
<tr>
<td>ECE 601</td>
<td>Linear Systems</td>
</tr>
<tr>
<td>ECE 605</td>
<td>Discrete Event Dynamic Systems</td>
</tr>
<tr>
<td>ECE 673</td>
<td>Random Signal Analysis I</td>
</tr>
<tr>
<td>IE 618</td>
<td>Engineering Cost and Production Economics</td>
</tr>
<tr>
<td>IE 672</td>
<td>Industrial Quality Control</td>
</tr>
<tr>
<td>IE 673</td>
<td>Total Quality Management</td>
</tr>
<tr>
<td>ME 616</td>
<td>Matrix Methods in Mechanical Engineering</td>
</tr>
<tr>
<td>ME 632</td>
<td>Mechanical Engineering Measurements</td>
</tr>
<tr>
<td>BME 669</td>
<td>Engineering Physiology</td>
</tr>
<tr>
<td>BME 670</td>
<td>Introduction to Biomechanical Engineering</td>
</tr>
<tr>
<td>BME 675</td>
<td>Computer Methods in Biomedical Engineering</td>
</tr>
</tbody>
</table>

#### Architecture

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 545G</td>
<td>Structures I</td>
</tr>
<tr>
<td>ARCH 548G</td>
<td>Structures II</td>
</tr>
<tr>
<td>ARCH 555G</td>
<td>Architectural Graphics</td>
</tr>
<tr>
<td>ARCH 500G</td>
<td>Advanced Architectural Graphics</td>
</tr>
<tr>
<td>ARCH 528G</td>
<td>History of Architecture I</td>
</tr>
<tr>
<td>ARCH 529G</td>
<td>History of Architecture II</td>
</tr>
<tr>
<td>ARCH 541G</td>
<td>Construction I</td>
</tr>
<tr>
<td>ARCH 542G</td>
<td>Construction II</td>
</tr>
<tr>
<td>ARCH 543G</td>
<td>Environmental Control Systems I</td>
</tr>
<tr>
<td>ARCH 544G</td>
<td>Environmental Control Systems II</td>
</tr>
<tr>
<td>ARCH 569G</td>
<td>Building and Development</td>
</tr>
</tbody>
</table>

#### Chemistry

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 605</td>
<td>Advanced Organic Chemistry I: Structure</td>
</tr>
<tr>
<td>CHEM 661</td>
<td>Instrumental Analysis Laboratory</td>
</tr>
<tr>
<td>CHEM 673</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>CHEM 777</td>
<td>Principles Pharm Chemistry</td>
</tr>
<tr>
<td>EVSC 616</td>
<td>Toxicology</td>
</tr>
<tr>
<td>EVSC 610</td>
<td>Environmental Chemical Science</td>
</tr>
</tbody>
</table>

#### Mathematics
Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 545</td>
<td>Introductory Mathematical Analysis</td>
</tr>
<tr>
<td>MATH 546</td>
<td>Advanced Calculus</td>
</tr>
<tr>
<td>MATH 611</td>
<td>Numerical Methods for Computation</td>
</tr>
<tr>
<td>MATH 630</td>
<td>Linear Algebra and Applications</td>
</tr>
<tr>
<td>MATH 660</td>
<td>Introduction to Statistical Computing with SAS and R</td>
</tr>
<tr>
<td>MATH 661</td>
<td>Applied Statistics</td>
</tr>
</tbody>
</table>

Physics

Choose 3 Courses (9 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 611</td>
<td>Adv Classical Mechanics</td>
</tr>
<tr>
<td>PHYS 621</td>
<td>Classical Electrodynamic</td>
</tr>
<tr>
<td>PHYS 641</td>
<td>Statistical Mechanics</td>
</tr>
<tr>
<td>PHYS 661</td>
<td>Solid-State Physics</td>
</tr>
<tr>
<td>PHYS 607</td>
<td>Topics in Astronomy and Cosmology</td>
</tr>
</tbody>
</table>

Total Credits 15

* indicates as available online

What will I learn?

Technology in the classroom and learning environments, digital instructional design, and a track of your choice:

- **Technology in Class and Learning** - Various types of technology necessary to develop, use, and process the results of assessments as well as facilitate and augment instructional design. The integration of present and likely future technology into instruction to foster community, collaboration, conceptual development, and exceptional academic performance as well as a more effective and well-understood assessment system.

- **Digital Instruction Essentials** - The digital era has placed teaching and learning in flux, creating instructional opportunities at every turn. In this course students will examine the fundamentals of instructional design, working through a cycle of continuous improvement including idea generation, curriculum development, course production, and assessment. Students will explore and discuss scholarly research about the impact of mobile technology, big data, gamification, MOOCs, and universal design on today’s learning environments. This course will borrow some ideas from agile methodology in hopes that it drives us to be better designers; we want to incorporate simplicity, feedback, communication, and courage into everything we do. That doesn’t have to be limited to what we design, but it can be part of how this course runs for you.


Why study Applied Science at NJIT?

The graduate certificate allows you to choose the area of speciality that you would like to enhance, in your career. Whether you are a Chemistry middle school teacher, or a corporate instructional designer, this program will help improve your everyday methodology.

Prerequisites and Competition Requirements

Applicants are expected to be practicing secondary school teachers who have a bachelor’s degree. Students who lack an appropriate background for their chosen track, or prerequisites for a particular course that they plan to take, may be asked to take one or more bridge/undergraduate courses that will not count toward the degree requirements. Students must choose one of the ten tracks (that represent specific disciplines) and successfully complete 15 credits.

Related Degree Programs

All credits for the Applied Science Graduate Certificate relates in its entirety to NJIT MS in Applied Science (http://www.njit.edu/online/ms-applied-science).

NJIT K-12 Teacher Scholarship

This is an NJIT award available to any K-12 teachers who are residents of New Jersey, New York, Pennsylvania, and Delaware enrolled in the Applied Science Master Degree or Graduate Certificate in Applied Science Programs (On-campus or Online). The recipient will receive up to 35% of his/her tuition charge in scholarship. The award is renewable for the duration of the program. You must provide a copy of your teaching license or submit a letter of employment as a teacher from your school district prior to enrollment to be considered for the scholarship. You must be a U.S. citizen or a permanent resident to be eligible. You must maintain a cumulative GPA of 3.0/4.0. Please complete this form to submit your information for consideration for the scholarship (https://docs.google.com/forms/d/e/1FAIpQLSczruWuu3X_FnUUtW9k69uVh2Ce0YHDFN2A4CqEaxIs8CNA/viewform?usp=sf_link).
Faculty Advisor: Andrew Klobucar (http://directory.njit.edu/PersDetails.aspx?persid=klobucar)