Demonstrations and Technology in Science Teaching  
05:300:462:01  
Spring 2021  
3 Credits

Instructor: 
Matthew Blackman

Phone number: 
973-943-9016

Location: Virtual  
Wednesdays 4:50 – 7:30 PM

Office Hours: 
By appointment

Prerequisites or other limitations: 
N/A

Mode of Instruction:  
___ Lecture  
___ Seminar  
___ Hybrid  
X Online  
___ Other

Permission required:  
X No  
___ Yes

Learning goals
Inservice and preservice physics teachers will use a variety of technologies to increase innovation, efficiency, and collaboration in their instruction. Your lessons will have more engaging and creative physics content, your assessments will be more valuable, and you will be able to build helpful connections with colleagues, students and communities.

Course catalog description:
Coursework consists of hands-on activities in which you will practice the skills required to be an adept adopter of new technologies. Each class session will focus on a different application of technology in science education.

Grading policy:
Each assignment will earn full credit when complete. Deliverables may be revisited and improved with instructor input until the activity is deemed complete. Assignments submitted late will be eligible for a maximum of 80% credit when complete.

Attendance:
Attendance is expected at every session. In the event of inclement weather, please check your email. If you miss one class, you can submit the work from that week, on time, for full credit. Work from additional missed weeks will be eligible for maximum 80% credit.

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1 Check 1:  
2 These can be TEAC claims or objectives from other sources.
Required Materials:
Access to a computer with internet access is required to complete homework assignments. The various libraries and computer labs throughout the Rutgers campus are more than sufficient for the purposes of the course. If you have a personal laptop computer, please bring it to class meetings as often as possible.

Assignments³:
The assignments in the schedule below will enable you to continue to build upon the skills you have developed in the course, as well as customize them to fit your particular style. Each assignment will serve as a helpful resource for you to use in your classroom. By the end of the course, you will have several weeks worth of lessons to use with your students!

Academic integrity:
Make sure that you provide proper citations for all materials that you use in all written work. Any violation of academic honesty is a serious offense and is therefore subject to an appropriate penalty. Refer to [http://academicintegrity.rutgers.edu/integrity.shtml](http://academicintegrity.rutgers.edu/integrity.shtml) for a full explanation of policies.

Website: www.universeandmore.com

Course Schedule:

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<thead>
<tr>
<th>Date</th>
<th>Tech Focus</th>
<th>Physics Focus</th>
<th>Assignment due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/20</td>
<td>Sensor Data I</td>
<td>Gas Laws and Thermodynamics</td>
<td></td>
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<tr>
<td>1/27</td>
<td>Simulations I</td>
<td>Gas Laws and Thermodynamics</td>
<td></td>
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<tr>
<td>2/3</td>
<td>Sensor Data II</td>
<td>Magnetism and Electromagnetism</td>
<td></td>
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<tr>
<td>2/10</td>
<td>Simulations II</td>
<td>Magnetism and Electromagnetism</td>
<td>Sensor Data Lesson</td>
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<tr>
<td>2/17</td>
<td>Games</td>
<td>Various topics</td>
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<tr>
<td>2/24</td>
<td>DIY Experiments</td>
<td>Wave Optics</td>
<td></td>
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<tr>
<td>3/3</td>
<td>Web Resources</td>
<td>Atomic Physics</td>
<td>Simulation Lesson</td>
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<tr>
<td>3/10</td>
<td>Whiteboards and Low-tech</td>
<td>Atomic Physics</td>
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<td>3/24</td>
<td>Video Analysis</td>
<td>Newtonian Mechanics</td>
<td>Video Analysis Lesson</td>
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<td>3/31</td>
<td>Physics Sandboxes</td>
<td>Newtonian Mechanics</td>
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<tr>
<td>4/7</td>
<td>Mobile Devices</td>
<td>Newtonian Mechanics</td>
<td>Final Project Deadline 1</td>
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<td>4/14</td>
<td>Final lessons</td>
<td>Various topics</td>
<td>Final Project Deadline 2</td>
</tr>
<tr>
<td>4/21</td>
<td>Final lessons</td>
<td>Various topics</td>
<td></td>
</tr>
<tr>
<td>4/28</td>
<td>Final lessons</td>
<td>Various topics</td>
<td></td>
</tr>
</tbody>
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³ Including exams, papers etc.