

Using Technology in Science Education

SYLLABUS

Instructor:	Davina Pruitt-Mentle
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Website:	http://www.edtechpolicy.org/AAASGW/
Office Hours:	By appointment
Credits:	3 credits
Time/Place:	Mon/Weds. 5:00-8:00 p.m. @AAAS Cabot Lab

Description of Course Experience:

Course Goals:

To introduce students to the strategies, resources, tools and organizational concepts for using technology to facilitate classroom learning and school administrative functions. Objectives include:

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1. Review research on technology effectiveness, rationales and concerns for using technology, and best practices in integrating technology in the educational setting.
2. Explore effective and efficient use of productivity tools (Word/Excel/PPT)
3. Explore the general categories of educational technology software resources: instructional software, software tool, multimedia, hypermedia, distance learning, and virtual reality environment.
4. Explore DCPS data in developing a framework for establishing curricular priorities.
5. Utilize AAAS, state and national content and technology standards in designing technology-enhanced instruction and school technology plans.
6. Utilize a backward design framework to design technology-enhanced instruction, which incorporate state and national content and technology standards.
7. Explore effective strategies for accessing and using technology resources (Web Quests, e-portfolios, Treasure Hunts, Scavenger hunts and various software) to facilitate inquiry-oriented activities in the classroom.
8. Evaluate software applications for enhancing instruction and school administration.
9. Evaluate the pedagogical potential of multimedia sources.
10. Review and discuss assistive technology options and resources for students with special needs.
11. Review and discuss technology-enhanced options and materials for culturally diverse populations.
12. Review and discuss equity, ethical and legal issues in using technology in schools. Explore cyberethics, cybersafety and Cybersecurity strategies and activities for classroom use
13. Share knowledge of important issues and trends related to technology-enhanced content utilizing a backward design framework through online collaborative group discussions and reflect upon student experiences in a Web enhanced/Web-based course.

Throughout the course, a hands-on, learner-centered approach will enhance student ability to explore and contribute to best practices in the use AND the infusion of technology to enhance student learning and motivation to learn.

Readings:

Texts:

Not Required to Purchase:

- Full Text Found Online
 - David H. Rose & Anne Meyer. Teaching Every Student in the Digital Age: Universal Design for Learning. ASCD, 2002. Full text online at: <http://www.cast.org/teachingeverystudent/ideas/tes/>
 - How People Learn: Brain, Mind, Experience and School. <http://www.nap.edu/books/0309070368/html/>

Readings can be downloaded from the course website as well as from other sources. These reading assignments will be periodically updated on the course website.

Additional Recommended Text:

Additional recommended readings are included in this syllabus. Others can be found at: <http://www.edtechpolicy.org/>

Methodology:

This course will utilize a combination of face to face and on-line lecture and reading materials, hands-on experiences, explorations of multimedia resources, guest speakers, virtual field trips, discussions and projects to help participants understand the strengths and limits of strategies for integrating information technology in the educational setting. Detailed information about topics for each class is included in this syllabus.

Student Expectations and Procedures:

1. Students are expected to obtain and actively use a computer account with access to the Internet and Blackboard discussion site (the University provides such accounts free to enrolled students.) Students are expected to use **anti-virus software and backup all work**. Since the course will sometimes meet on-line it is of importance that you assure that your computer access can easily support the Blackboard environment. We will cover face to face (F2F) in class before emerging in the online environment. This course will be a hybrid of F2F and online activity. Make photocopies or electronic backups of all work submitted.
2. Completion of assigned tasks and readings prior to each class is required in order to facilitate student learning.

3. It is expected that students will initiate, participate in and facilitate (both in class and on-line) discussions on course topics, issues and readings. Please see the on-line discussion grading rubric.
4. If you have a documented disability and wish to discuss academic accommodations please contact me as soon as possible.
5. Students missing the deadline for an assignment must make immediate arrangements with the instructor to fulfill that requirement before the next class session.
6. Please carefully edit all written assignments (All papers must be typed. It is recommended that materials be prepared on a personal computer (e.g., Word processor). Standard Paper size (8 1/2 X 11) should be used. Papers should be double spaced with 1 1/2 inch margins at top, bottom, and sides, using font size 12 and either Times New Roman or Arial font style.) . A lack of care in proofreading or composition can negatively affect your final grade.
7. The citation style employed should be accurate, acceptable, and recognizable (MLA, Chicago (15th ed.) or APA (5th ed.) practice. The [American Psychological Association](http://www.apa.org) (APA: <http://www.apa.org>) style of citation is preferred. For quick basics, visit:
 - o Columbia University Press - <http://www.univie.ac.at/frisch/isegov/aushaengUniWien/eResources&CitingStyles.pdf>
 - o Harvard Writing Center Resources - <http://isites.harvard.edu/icb/icb.do?keyword=k24101>
 - o Purdue's Online Writing Lab (OWL) - <http://owl.english.purdue.edu/>
 - o Rensselaer polytechnic Institute Writing Center - <http://rpi.edu/web/writingcenter/handouts.html>
 - o University of Wisconsin-Madison Writing Center - <http://www.wisc.edu/writing/>
8. No part of any lecture or course content may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or any informational storage and retrieval system, without permission in writing from the instructor.

Instructor Responsibilities

Just as we have high expectations for students, we also have high expectations for ourselves. Students should expect that the instructor for this course will:

1. Be prepared for class, read and return students' work in a timely manner, and be interested and engaged in students' work;
2. Remember that each student brings different background knowledge about both content and online experiences to this course, as well as help students develop their personal interests whenever possible;

3. Help students identify sources of additional substantive and methodological expertise, as needed;
4. Meet with students individually or in groups upon request and be available in person, by telephone, and by email to answer questions; and
5. Work hard, have fun and empower students to plan and engage in high quality discussions and experiences.
6. Email with students is not always a low threshold technology. Students sometimes feel that faculty/instructors should be available to answer questions 24/7 or whenever the student is online. This expectation of an immediate response can occasionally create a negative communication environment. Students' emails can also add significantly to faculty/instructor workload. While my past performance has indicated that I return emails promptly (sometimes to students surprise within minutes), in order to eliminate the possibility of problems due to assumptions, the following is the course minimal guideline: All emails will be answered within 24 hours of receipt except on weekends (begins after 4:00 on Friday)-which may take longer. I do however; **HIGHLY** recommend that you send emails whenever a question arises, while the above is only a statement of minimal expectations on my part.

Grading Policy:

Grades will be based on the content, clarity of writing and creativity of work in assignments completed for this course. The extent and quality of participation in course discussions (face to face and virtual) will also be evaluated in determining the final grade. The relative portion of the grade assigned to each course component will include:

Option 1

- Classwork/HW 30%
- Paper/Project 1 20%
- Paper/Project 2 20%
- Final Paper/project 30%

Option 2

- Classwork/HW 40%
- Paper/Project 1 20%
- Final Paper/project 40%

Tentative Course Outline/Schedule

- May 12/Session 1: Introduction & Productivity Tools: Word Basics
- May 14/Session 2: Productivity Tools: Word Basics cont., PPT Basics & Using IT in Teaching and Learning: 21st Skills/Digital Literacy
- May 19/Session 3: Standards: IT in the science classroom and 21st Century skills

Ideas for Project/Paper 1 Due- email ideas

- May 21/Session 4: Resources, Policies, Learning Theories and Integration Models
- May 28/Session 5: Cyberethics

Paper/Project 1 Due

- June 2/Session 6: Cybersecurity and Cybersafety **Not at AAAS. We will meet online in TappedIn**
- June 4/Session 7: Technology for Instruction and Learning
 - Productivity and creativity w/ Excel
- June 9/Session 8: Software Functions & Technology Applications Part I
 - Effective PPT and creating Interactive activities with PPT
 - Generators/ Probes/Graphic Calculators/PDA's

Ideas for Project 2/Paper 2 due-email ideas
- June 11/Session 9: Software Functions & Technology Applications Part II
 - Hyper & Multimedia
 - Internet Resources
- June 16/Session 10: Software Functions & Technology Applications Part III
 - Hyper & Multimedia
 - Internet Resources

Project/Paper 2 Due
- June 18/Session 11: Web 2.0 Tools

Brainstorming Final Paper/Project-email ideas
- June 23/Session 12: Last Class. Diversity and AT/Universal Design

Final project/paper due on or before June 30th