Course Syllabus
TED 535 – Laboratory Instructional Environments in Technology Education
Fall 2009

Department of Technology
State University of New York College at Oswego

Instructor: Mark W. Hardy, Ph.D.  Class Time: Mondays 5:00 to 7:45
Office: 207 Park Hall
Email: mark.hardy@oswego.edu  Location: 204 Park Hall
Office Phone: 315-312-5760  Home Phone: 315-947-6048
Office Hours: 4:00 to 5:00 Mondays or by appt.  website: www.oswego.edu/~hardy

Course Description

This is a course enabling teachers to be more efficient and effective in a laboratory environment. Facility design, architectural standards, renovation concerns, organization, activity selection criteria, safety, legal issues, and professional standards will be addressed. Best practice models will be observed.

Technology Education is most often delivered in a hands-on environment utilizing performance-based learning activities. Technological literacy, and the curricula needed to instruct it, is directly tied to the almost daily evolution of new and existing technological knowledge. This produces immediate and long-range impacts on the facilities needed to deliver the learning experiences as required to support students in acquiring a foundational technological literacy. Included will be study of the criteria needed for selecting laboratory activities to fit the facilities capabilities, and any legal issues that could arise. Attention will be paid to the current and unique electronic requirements of classrooms and laboratories.

Instructional Methodology

Students will complete a combination of classroom exercises, and through an applied research development project. Students will complete a series of laboratory development activities that will culminate with a laboratory design and development project.

Student Objectives

A. Describe performance-based learning and its relationship to Technology Education in a laboratory setting
B. Articulate the ways to connect the New York State Learning Standards and the ITEA Standards for Technological Literacy into performance-based learning activities
C. Utilize and reference sources of the basic educational requirements for technology facility design
D. Synthesize and reference the sources for the safety and environmental requirements for technology facility design
E. Analyze current technology facilities and prepare a contextual proposal, a detailed facility proposal, and a plan of action for changing the facilities to meet current and emerging instructional needs including the ever-changing electronic requirements
F. Graphically illustrate a conceptual plan for the facility proposal
G. Describe the standards for equipment selection and prepare specifications for equipment and furniture, including complete specifications and cost
H. Articulate the process used to purchase new equipment and furniture in a public school district, including the feasibility and political context
I. Design/modify instructional laboratory space in order to accommodate students with diverse needs and characteristics
J. Analyze and synthesize legal concepts and issues effecting Technology Education laboratory instruction
K. Analyze current examples of advanced technology classrooms such as distance learning, smart podiums, projection, web-based instruction, and cable TV presentations

Textbooks and Resources

- Access to a computer and the Internet for information retrieval, word processing, and printing.
- Active SUNY Oswego computer account and email services.

Assignments and Grading

Evaluation will be through written research assignments and a major research study proposal. The following point values are assigned:

<table>
<thead>
<tr>
<th>Component</th>
<th>Assignments</th>
<th>Value</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini Papers</td>
<td>10</td>
<td>5 Points</td>
<td>50 Points</td>
</tr>
<tr>
<td>Applied Laboratory Development Project</td>
<td>1</td>
<td>40 Points</td>
<td>40 Points</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>1</td>
<td>10 Points</td>
<td>10 Points</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>100 Points</strong></td>
<td></td>
</tr>
</tbody>
</table>

Grade Calculation will be based on the percentage of points earned to the total points possible. The percent grade will then be converted into a letter grade with the following grade ranges:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93% - 100%</td>
</tr>
<tr>
<td>A-</td>
<td>90% - 92%</td>
</tr>
<tr>
<td>B+</td>
<td>87% - 89%</td>
</tr>
<tr>
<td>B</td>
<td>83% - 86%</td>
</tr>
<tr>
<td>B-</td>
<td>80% - 82%</td>
</tr>
<tr>
<td>C+</td>
<td>77% - 79%</td>
</tr>
<tr>
<td>C</td>
<td>73% - 76%</td>
</tr>
<tr>
<td>C-</td>
<td>70% - 72%</td>
</tr>
<tr>
<td>E</td>
<td>Below 70%</td>
</tr>
</tbody>
</table>

Due Dates & Paper Submissions

Every assignment has a due date marked on the daily calendar. Assignments may be turned in at any time prior to the due date. Work will only be accepted through campus email until 5:00 PM on the day that the assignment is due unless another time is specified by the instructor. Work submitted after the specified due date and time will not be graded.

Papers must be submitted electronically through your SUNY Oswego email account to the instructor’s email address (mark.hardy@oswego.edu). Papers will not be accepted for grading through external mail systems. Students must submit files in MS Word format. Please include your name and the correct assignment number in the file name. (Example: Smith_Assignment_1.doc) Papers may be submitted only once. Papers will be returned to the student with comments and a grade by email. Students may not resubmit graded papers in order to increase their grade.

APA Writing Style and References

All written assignments must utilize citations, references, and writing style as specified in the *Publication Manual of the American Psychological Association, 5th Edition*. Graduate students are encouraged to purchase a copy of the manual for their own reference. Several websites are available that include examples of the proper use of citations and references.

Graduate students are expected to exhibit writing proficiency. All written papers should be proofread and corrected prior to submission. Papers should be written in the third person, and not in the first. Use specific nouns instead of pronouns (i.e. “Students”, “Instructors” instead of “They”,
“Them”, or “This”). Avoid writing in a passive voice. Failure to adequately proofread a paper will significantly affect the grade, or risk having the paper returned with a grade of zero.

Research depends heavily on quality sources. Students will be required to utilize primarily peer-reviewed sources such as academic journals, texts, dissertations, and conference proceedings. Students should avoid web resources, trade publications, and other sources that are not peer reviewed or may be commercially oriented.

All written content included in papers needs to be properly referenced. Avoid using quotes unless absolutely warranted. Students are expected to read the information from their research and be able to synthesize, relate, and expand on the others’ work. Crediting others’ work is an essential component of graduate-level written work. Failing to correctly cite information sources is considered plagiarism, and will receive a zero for that assignment.

Formatting Papers

Papers will be formatted using 12-Point Times Roman type, double-spaced. Pages should be set up using 8.5 x 11 paper with 1” margin on the top, bottom, and right side, and a 1.5” margin on the left side. Assignment length requirements do not include the title page and the reference list page.

All papers should include a cover page with the course name, term, assignment name, student name, and submission date. Do not include headers or footers on the paper body pages with paper titles or names. A page titled “Reference List” with all references in APA format should be included at the end of the paper.

Academic Honesty

Students are expected to follow SUNY Oswego’s academic honesty guidelines as outlined in your student handbook. Students accept responsibility for academic honesty for every assignment turned in. Examples of academic dishonesty include, but are not limited to:

- Representing work completed by others as your own
- Modification of class materials for obtaining a higher grade
- Misrepresentation of materials obtained from published sources as your own

Students are required to complete all assignments independently. Students are encouraged to assist each other and interact in class. However, each student is to complete his or her own work independently. No portion of any assignment may be copied by any means in whole, or in part from another student or from written source and represented as your own. Violating the academic honesty code will result in a failing grade for the course and you will be reported to the Office of Academic Affairs.

Getting Extra Help

If you have questions, or need extra help, take advantage of the following resources:

- Office hours will be before class every day. Stop in to ask questions or discuss projects.
- Email: I frequently check email during the day. I will respond to questions the same day that the email is received.
- Phone: Call me at school – 315-312-5760. In an emergency, call me at home – 315-947-6048.
- Ask a librarian. They will be happy to assist you with technical questions on using library resources and finding references.
**Attendance**

Students are expected to be active participants at each and every class meeting. Attendance is mandatory and will be taken each class meeting. Students with excessive absences will be dropped from the class with a grade of E.

**Disabilities Policy**

Qualified students enrolled in this course are eligible for “reasonable accommodations” in compliance with the Americans with Disabilities Act (ADA). If you have a disabling condition that may interfere with your ability to successfully complete this course, please contact the Disability Services Office (315-312-3358, www.oswego.edu/dis_svc/). Please notify and provide documentation to the instructor during the first week of classes to make necessary arrangements.

### TED 535 – Laboratory Instructional Environments in Technology Education

**Fall 2009 Daily Plan**

<table>
<thead>
<tr>
<th>Day &amp; Date</th>
<th>Class Activity and Lecture Topics</th>
<th>Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 8/31</td>
<td>Course Introduction &amp; Student Profiles Review Course Materials and Syllabus Introduction to Research Sources &amp; APA Style</td>
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</tr>
<tr>
<td>Day 2 9/14</td>
<td>Performance Based Learning &amp; Curriculum Support through Facilities</td>
<td>Obtain copy of CTTE Monograph 13 – Planning Technology Teacher Education Learning Environments</td>
</tr>
<tr>
<td>Day 3 9/21</td>
<td>Needs Assessment</td>
<td>Assignment 1 Due</td>
</tr>
<tr>
<td>Day 4 9/29</td>
<td>CNYTEA Meeting – To be discussed in class.</td>
<td></td>
</tr>
<tr>
<td>Day 5 10/5</td>
<td>Space Allocation and Utilization Conceptual Planning</td>
<td>Assignment 2 Due</td>
</tr>
<tr>
<td>Day 6 10/12</td>
<td>Safety &amp; Hazardous Materials Material &amp; Waste Handling Systems</td>
<td>Assignment 3 Due</td>
</tr>
<tr>
<td>Day 7 10/19</td>
<td>Environmental Conditioning – Lighting, Sound, Air Quality Support Utilities &amp; Services</td>
<td>Assignment 4 Due</td>
</tr>
<tr>
<td>Day 8 10/26</td>
<td>Support for Special Populations and Diverse Needs</td>
<td>Assignment 5 Due</td>
</tr>
<tr>
<td>Day 9 11/2</td>
<td>Equipment Selection and Specifications Record Keeping</td>
<td>Assignment 6 Due</td>
</tr>
<tr>
<td>Day 10 11/9</td>
<td>Computer Based Laboratory Systems</td>
<td>Assignment 7 Due</td>
</tr>
<tr>
<td>Day 11 11/16</td>
<td>Furniture, Storage, and Casework</td>
<td>Assignment 8 Due</td>
</tr>
<tr>
<td>Day 12 11/23</td>
<td>Funding, Financing, Budgeting, Acquisition Processes Timelines and Long Range Planning</td>
<td>Assignment 9 Due</td>
</tr>
<tr>
<td>Day 13 11/30</td>
<td>Student Design Presentations</td>
<td>Assignment 10 Due</td>
</tr>
<tr>
<td>Day 14 12/7</td>
<td>Student Design Presentations</td>
<td></td>
</tr>
<tr>
<td>Day 15 12/14</td>
<td>Final Paper / Project submission and class wrap-up.</td>
<td>Applied Laboratory Development Project Due</td>
</tr>
</tbody>
</table>
Assignment Listing
TED 535 Laboratory Instructional Environments in Technology Education

This document outlines the instructional activities that you will be completing as part of this class. We will be discussing these assignments in class each week.

Assignment 1 – Facilities Planning Resources
This assignment will be ongoing throughout the Class. You will select four (4) different areas to research laboratory development resources for. Topics will be assigned during the first week of class. Include the following:
1. Identify the information source (address, URL, etc.)
2. Briefly describe the resource and how it can be applied for facilities development.
3. Submit this electronically to the instructor for inclusion on the website.

Assignment 2 – Needs Assessment
Complete a written needs assessment that will provide the foundation for the laboratory development project. Compile / Write the following information:
1. Curriculum(s) being supported (Course Descriptions)
2. Community / Environment / School Characteristics (Instructional Context)
3. Inventory of existing resources (Current State)
4. Characteristics / Demographics of the population being supported (User Analysis)
5. Processes, procedures, and activities to be supported (Task Analysis)

Assignment 3 – Conceptual Planning and Facilities Outlines
Develop a conceptual plan and facility outline functional diagram for the facility. Identify and describe the following general requirements:
1. Instructional area space needs
2. Laboratory space needs
3. Office & Storage needs
4. Course special areas / facilities (Finish areas, specialized fixed equipment, etc.)
5. Support areas & resources
6. Access

Assignment 4 – Safety and Hazardous Materials Planning
Develop a facilities safety plan. Address and identify needs for safety and management of hazardous materials. Include the following components:
1. General safety concerns and equipment
2. Specialized safety needs – curriculum specific
3. Hazardous materials storage, handling, safety, disposal
4. Safety documentation and signage

Assignment 5 – Utilities and Services Evaluation
Identify the general facilities requirements and specialized needs for your laboratory. Consider the following:
1. Electrical Needs
2. Plumbing Needs  
3. Pneumatics  
4. Computer / Networking  
5. Communications

**Assignment 6 – Support for Diverse Populations**  
Identify diverse populations that will need to be supported in the facility that you are developing. Consider special populations that may have visual, auditory, accessibility, limited motion, and learning specific needs. Consider physical characteristics such as size, age, mobility, etc. Are you supporting multiple populations or a heterogeneous population? Identify special devices or needs that will be required to support these populations.

**Assignment 7 – Equipment and Tool Specifications**  
Develop a list of tools and equipment that will be required to support the curriculum. Be comprehensive. Identify and organize resources based on necessity, application, and function. Develop a justification for one of the major pieces of equipment. Include the following:

1. Brief justification for the equipment and how it will be applied in the curriculum.  
2. Describe the specifications for the piece of equipment. Be specific.  
3. Identify specific service needs.  
4. Identify specific physical facility needs for installation and operation of the equipment. Include workspace, material access, and waste removal.  
5. Provide pricing for the equipment. Include required accessories, support, training, installation, and shipping, as required.

**Assignment 8 – Computing and Special Technology Specifications**  
Identify the computing and instructional technology resources that will be required for the facility. Consider the following when developing this section:

1. Computer workstation requirements  
2. Software requirements (Needs & Wants)  
3. Network access  
4. Presentation & communication technologies

**Assignment 9 – Furniture & Casework Specifications**  
Identify and describe the furniture and casework needs for the facility. Create an analysis and description of the requirements. Identify required resources based on function and relevance to the curriculum. Consider the following resources:

1. Student workspaces  
2. Student class space  
3. Instructor / Instructional delivery resources  
4. Materials storage and handling  
5. Student project storage  
6. Tool / Equipment / Supplies storage  
7. Seating
Assignment 10 – Budget and Timeline

Develop a comprehensive budget and timeline for implementing your facility development plan. Identify the purchasing and bid processes for your organization. Put together a budget in a tabular format. Organize the budget based on need, implementation phase, and function. Develop an implementation timeline from conception to instruction. Consider the following in developing your budget and plan.

1. Facilities construction / remodeling
2. Furniture / Casework integration
3. Information technology / Computer resources
4. Equipment & Tools
5. Materials stocking
6. Bidding, Acquisition, Installation
7. Training
8. Testing

Applied Laboratory Development Project

You will develop a complete facilities development plan for redeveloping an existing facility or developing a new facility. Many of the components of this project will be developed in the short assignments completed throughout the semester. The completed project will be comprehensive and of a quality that will be able to be presented for implementation. The following Sections will be included:

1. Needs Assessment
2. Conceptual Plan
4. Required Utilities and Services
5. Support for Diverse Populations
6. Equipment and Tools Specifications
7. Computing and Special Technologies Specifications
8. Furniture and Casework Specifications
9. Budget
10. Scale Model and/or Facilities Plan Drawings (Professional Quality, Computer Generated)

You will be presenting your plan and model to the class at the end of the semester for a critique and comments. Final submission will be at the end of the semester. Content from the assignments will be corrected and organized for the final submission. The final submission may be in a physical format (Binder) or in an electronic format (CD).

Final Presentation

Each Student will present their final laboratory design for to other students in the class. Each student will be allocated 15 minutes to present their design and answer questions. This is an excellent opportunity for a critique and to get feedback prior to the final project submission. Requirements and grading details will be provided at the 12th class.