Course Description: This course features hands-on engineering design challenges to be implemented in the classroom using resources found in the classroom and at home. We will incorporate literature, fairy tales, nursery rhymes, interactive journals, and thematic concepts. Topics include ways to include engineering design challenges throughout the curriculum and how to host a Family STEM (Science, Technology, Engineering, and Math) Night.

Course Role in the Program/Major: This course is being offered as Professional Development for those interested in promoting literacy.

Course Prerequisite: No prerequisites for this course.

Course Objectives: Upon successful completion of this course, students will be able to:

- Explore the internet for valid websites that can assist in developing engineering lessons
- Navigate the Next Generation Science Standards website and know where to get information for your grade level
- Explore ideas about communicating with parents how engineering is taught in your classroom and how you incorporate Next Gen Standards
- Develop a long-range plan for implementing monthly Design Challenges
- Develop an engineering lesson plan that incorporates a piece of literature
- Create a parent/community “Things To Collect” letter.

Classification for this course is Rigor.
Course Materials:

Handouts provided by instructor for additional fee.

Instructor Bio:

Nancy Smith is a first grade National Board Certified teacher with the Olathe Public Schools and she has worked with teacher candidates at OUKC for 21 years. Her prior experiences include providing home daycare for 16 years and 3 years as an Instructional Resource Teacher with the Olathe Schools. She has a BA in Elementary Education and Special Education and a MS in Curriculum Development with an emphasis on Reading and Language Arts. Outside of the classroom, she and her husband, Cliff, are busy raising five boys.

Overview of the Course

Participation and Course Format

During the 2 days of in-class meetings, students will be expected to fully participate in class discussions, group work, individual work, and all activities.

Students will also be expected to complete course projects after the 2 days of instruction. These projects will be completed on own time and turned in following the syllabus schedule.

Competency Assessment

<table>
<thead>
<tr>
<th>In Class:</th>
<th>40 pts</th>
<th>20 pts. per day</th>
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</thead>
<tbody>
<tr>
<td>1. Attendance/Participation</td>
<td>40 pts</td>
<td>20 pts. per day</td>
</tr>
<tr>
<td>2. Pre and Post Papers</td>
<td>20 pts</td>
<td>10 pts per paper</td>
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<tr>
<td>Projects:</td>
<td></td>
<td></td>
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<tr>
<td>1. Website Bibliography</td>
<td>20 pts</td>
<td></td>
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<tr>
<td>2. Parent Newsletter</td>
<td>20 pts</td>
<td></td>
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<tr>
<td>3. Long Range Yearly Plan</td>
<td>100 pts</td>
<td></td>
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<tr>
<td>4. Family STEM Night</td>
<td>100 pts</td>
<td></td>
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<tr>
<td>5. “Things To Collect” letter</td>
<td>25 pts</td>
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<tr>
<td>TOTAL POINTS</td>
<td>325 pts</td>
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Course Schedule At-A-Glance

Day One Topics:
- Introduction
- Computer Research
- Next Gen Science Standards
- Parent Communication
- Engineering Design Process
- Design Challenges
- Pre-Paper completed in class
- Family STEM Night

Day Two Topics:
- Interactive Journals
- Design Challenges
- Computer Research
- Lesson Planning

Grading Scale:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>80-89%</td>
<td>B</td>
</tr>
<tr>
<td>70-79%</td>
<td>C</td>
</tr>
<tr>
<td>60-69%</td>
<td>D</td>
</tr>
<tr>
<td>Below 60%</td>
<td>F</td>
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</table>
IMPORTANT POLICIES

All course-specific policies for this course are spelled out here in this syllabus. However, additional university policies are located in the Ottawa University Student Handbook. You are responsible for reading and understanding all of these policies. All of them are important. Failure to understand or abide by them could have negative consequences for your experience in this course.

Late Assignments

Due to the timeline of this course, late assignments ARE NOT accepted.

Academic Integrity

Plagiarism and cheating will not be tolerated at any level on any assignment. The reality of cyberspace has made academic dishonesty even more tempting for some, but be advised that technology can and will be used to help uncover those engaging in deception. If you ever have a question about the legitimacy of a source or a procedure you are considering using, ask your instructor. As the University Academic Council approved on May 29, 2003, “the penalty for plagiarism or any other form of academic dishonesty will be failure in the course in which the academic dishonesty occurred. Students who commit academic dishonesty can be dismissed from the university by the provost/director.” Please refer to Academic Honesty in the handbook for important information about Ottawa University’s policies regarding plagiarism and cheating, including examples and explanations of these issues. Academic dishonesty also includes turning in work submitted for a grade in another course.

The mission of Ottawa University is to provide the highest quality liberal arts and professional education in a caring, Christ-centered community of grace which integrates faith, learning and life. The University serves students of traditional age, adult learners and organizations through undergraduate and graduate programs.
ASSIGNMENTS

Pre and Post Papers

Each paper is worth 10 pts.

The Pre-Paper will be completed in class.

The Post Paper will be submitted through Blackboard by the end of the course. This paper (1 page, double-spaced) should reflect your learning from the course and what changes it inspired in your future teaching. Reflect on the content of the course and give feedback as to its usefulness for your position.

Engineering Website Bibliography

Worth 20 pts.

This is submitted through Blackboard by the end of the course.

This bibliography should include 20 sources:

Website address and name
What kind of information is found on this website
How will you use this info. in your classroom

Parent Newsletter

Worth 20 pts.

This should be submitted through Blackboard by the end of the course.

- Be professional looking (include clipart, graphics, borders, etc.)
- Not be a page full of print! Use a newsletter format.
- Include: Websites that parents can go to for information

What is engineering?
Why is engineering important?
What is a “Design Challenge” and how are they presented in your classroom?
Information about the NGSS and the Engineering Practices
Long Range Yearly Plan  Worth 100 pts.

This should be submitted through Blackboard by the end of the course.

Submit a year-long plan for implementing one Design Challenge per month (Aug-May). Each Design Challenge should include how it fits in your curriculum, literature or video used, materials needed, instruction for the challenge, how students will record data, assessment and anything else you need to replicate the idea in your classroom.

Family STEM Night  Worth 100 pts.

This should be submitted through Blackboard by the end of the course.

Design a Family STEM Night with 10 activities. List the activities along with the materials needed and the directions. Really think it through if you think the activity will work at your school or not.

Things To Collect Letter  Worth 25 pts.

This should be submitted through Blackboard by the end of the course.

Submit a “Things To Collect” letter that can be sent home to parents, business partners and the community listing supplies and recyclables that you’d like to start collecting for your classroom/school. Use bullet points, clip art and an easy to read font. If you find a sample on the internet, feel free to use it...just add to it and make it yours!