

TED 558/758 Teaching Creative Problem Solving

R.E. Peterson, 502 C Poe Hall

919 515-1741, richard_peterson@ncsu.edu

<http://www4.ncsu.edu/~repeters/index.html>

I. **Course Description:** the development of creative problem-solving abilities are among the most important abilities to develop in students today. The rate of change that is expected to occur in present and future societies will require citizens who are flexible, adaptable, and have the capacity to think creatively. To be able to effectively teach creative problem solving concepts in their classes, this course provides teachers with the opportunity to study the research associated with creativity and apply these theories to implement a creative problem solving program.

II. **Course Objectives**

1. Instructional Expertise: Applies the theoretical, philosophical, and research bases for educational practice in middle, and secondary school classrooms to improve student learning. Plans, implements, and evaluates instruction that is rigorous, coherent, and consistent with a well-developed theoretical and philosophical stance and with best practices emerging from educational research.

- Reads educational literature critically, including theoretical, philosophical, and research materials;
- Analyzes and articulates relationships between and among theory, philosophy, research findings, and current practice ;
- Designs and modifies instruction based on well articulated theory, philosophy, educational research and best practice; and
- Incorporates findings from educational literature into school and classroom strategies to improve student learning.

2. Knowledge of Learners: Incorporates knowledge of the nature of the learner, learning processes, variations in learning abilities and learning styles, and strategies for evaluating learning. Plans, implements, and evaluates instruction that is responsive to wide variations in students' learning needs and learning styles.

- Designs and modifies instruction that is responsive to differences among learners that are influenced by development, exceptionalities, and diversity;
- Seeks actively to increase understanding of and respect for differences in students' development, exceptionalities, and diversity;
- Creates a classroom environment in which all learners feel welcome and can be successful; and
- Reflects on, diagnoses, and prescribes instruction that fosters student learning.

3. Research Expertise: Understands and employs methods of research to examine and improve instructional effectiveness and student achievement.

- Investigates and solves educational problems through data-gathering, action research, and evaluation of student learning, classroom processes, and school practices;
- Modifies instruction and learning environments based on assessment of student learning problems and successes; and
- Monitors the effects of instructional actions, selection of materials, and other instructional decisions on students' learning and behavior.

4. Connecting Subject Matter and Learners: Understands and links subject matter and students' developmental and diverse needs in the context of school settings. Plans, implements, and evaluates instruction that reflects intellectual rigor and depth of knowledge in both subject matter disciplines and students' diverse needs.

- Demonstrates appropriate depth and breadth of knowledge in the subject matter defined in the North Carolina course of study;
- Uses technology to create learning environments that support students' learning;
- Seeks, implements, and evaluates the best pedagogical practices for the subjects taught within the context of a specific school setting; and

- Understands and respects differences between the learning behaviors and outcomes expected in diverse communities.

5. Professional Development and Leadership: Demonstrates self-directed, self-reflective professional behavior and the importance of providing leadership to colleagues and communities through collaboration.

- Initiates professional inquiry through reading, dialogue, professional development, and action research;
- Seeks, evaluates, and applies well-grounded suggestions for improvement provided by educators, parents, students, and community leaders; and
- Participates in collaborative leadership and mentorship activities to solve educational problems at the levels of classroom, school building, school system, and community.

III. Syllabus

	<u>Hours</u>
A. Creativity--Definitions/Concepts	3
a. Cropley	
b. SOI--Guilford	
c. Four P's--Rhodes	
d. Phases of Creativity	
B. Creative Problem Solving Processes	6
a. Polya	
b. Koberg and Bagnall	
c. Wallas	
d. Osborn-Parnes	
C. Characteristics of Creative Products	6
a. Sternberg	
b. Simonton	
c. CPAM--Bessemer and O'Quin	
D. Characteristics of Creative People	6
a. Myers-Briggs/McCaulley	
b. Maslow	
c. Gardner	
d. Darcy and Lennon	
E. Creative Environments	3
1. Physical Characteristics	
a. Miller	
b. Doyle	
2. Affective/Emotional Environment	
a. Russ	
b. Amabile	
c. Ekvall	
F. Creative Problem Solving Programs	9
a. Odyssey of the Mind	
b. Torrance	
c. Parnes	
d. TSA	
e. TECA	
f. Science Olympiad	
G. Designing Problems for Instruction	3
a. Micklus	
b. Papanek	
H. Evaluation	3
a. Starko	
b. Runco	
I. Researchable Questions in CPS/TED	6
a. Lewis	

IV. **Assignments:** assignments must be thoroughly documented and of sufficiently high quality to be representative of graduate work. The assignments should be meaningful to yourself. If they are of good quality and of personal value they will be worthwhile and have lasting impact.

Improve your personal creativity.

1. Read a book about creativity. Use something from the book that will enable you to become more creative. Write a one page summary of your insights and share it with the class.
2. Individual Problem--application
 - A. Observe your environment and identify a product in need of improvement. Use a creative problem solving process to improve an existing product/process or invent a new product. Document your process with a portfolio of appropriate sketches, drawings, and/or photo's. Include a written narrative and appropriate research.
 - B. Present your invention and insights about your creative process to the class.

Analyze Creative Environments/Activities.

3. Observe a creative problem solving event (such as Odyssey of the Mind, Science Olympiad, Technology Student Association Competitive Events, TECA, etc.) and document/record your insights.

Synthesize and apply theoretical information related to creative problem solving.

4. Term Paper/Project
 - A. Theory/literature review: Synthesize information that is applicable in your area of interest.
 - B. Application/Methodology: Implement/plan/test a problem solving activity based upon the theoretical information you have identified.
 - a. If you are a teacher, implement a problem solving activity.
 - b. If you are working in business or industry, develop a plan or activity that will contribute to the creativity of your organization.
 - C. Analysis/Conclusions: The following assignment is required of all TED 758 students.* Add a qualitative and/or quantitative research component to 4A & 4B. Analysis your data and provide conclusions.
 - D. Present your insights to the class in a creative way.

V. Grades	TED 558	TED 758
Assignment 1	10	10
Assignment 2a	20	20
b	10	10
Assignment 3	10	10
Assignment 4a	20	20
b	20	20
c		20*
d	10	10
Exam	<u>20</u>	<u>20</u>
	120	140

A+ 97.5-100%	A 92.5-97.49%	A- 90-92.49%
B+ 87.5-89.99%	B 82.5-87.49%	B- 80-82.49%
C+ 77.5-79.99%	C 72.5-77.49%	C- 70-72.49%
D+ 67.5-69.99%	D 62.5-67.49%	D- 60-62.49%
NC 00-59.99%		

*Late assignments will result in a reduction of a letter grade for each assignment.

VI. Attendance Policy

All students are expected to adhere to the current University Policy regarding attendance. Students are responsible for providing written documentation for excused absences. In TED 558/758, the class meets one time per week, one unexcused absence is permitted without a reduction in grade. After one unexcused absence, each unexcused absence will result in a letter grade reduction. For example:

<u># Unexcused Absences</u>	<u>Reduction in Grade</u>
2	1
3	2
4	3

VII. Academic Integrity

It is the understanding and expectation that the student's signature on any test or assignment means that the student neither gave nor received unauthorized aid.

VIII. Students with Disabilities

If you have disabilities that may affect your participation in this class, please notify the instructor so any necessary adjustments may be made.

IX. Text

Readings are on e-reserve. NCSU/Libraries/Course and E-reserves/Search by Course/EOE758

http://catalog.lib.ncsu.edu/web2/tramp2.exe/rbr_search/A1v0j61v.000?browse_type=course_id&rbr_browse_item=0&rbr_view_item=0&rbr_list_screen=RBRList.html&item_source=rbr&server=1home

X. College Conceptual Framework

This course is derived from the College Conceptual Framework. There is a strong link between theory and practice. Class assignments require students to apply what they are learning to their particular job responsibilities and evaluate the result.

Conceptual Framework for Developing Professional Educators

