SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE:	Teaching Science and Math
CODE NO.:	ED 267-2 SEMESTER: Four
PROGRAM:	Early Childhood Education
AUTHOR:	Jaye Bennett
DATE:	January 1995

NEW: __X__ REVISED: ____

APPROVED: K. DeRosario Jan '95

K. DeRosario, Dean
School of Human Sciences and
Teacher Education

Date

NOTE: **Do not discard this outline. It will be required by other educational institutions if you are attempting to obtain credit for this course.

COURSE DESCRIPTION

This course will provide students with a working knowledge of science and with a knowledge of a process and an open-ended approach to teaching science and math to preschoolers.

COURSE PHILOSOPHY

Most teaching in the preschool is spontaneous and process-oriented. An open-ended, discovery-through-experience approach is used with the children. This is particularly so in the science area of the curriculum. This course is designed to provide the student with the maximum opportunity to integrate this teaching strategy into his/her teaching practice by balancing process and content.

COURSE GOALS

1. To help individuals become self-directed learners (preschoolers, student-teachers).
2. To help the students acquire a working knowledge of science and math.
3. To provide the students with experience in presenting science and math learning opportunities to colleagues and preschoolers by using a process-oriented, open-ended approach.

TERMINAL OBJECTIVES

The student will demonstrate ability through course development, project construction and implementation:

1. to recognize needs and interest of the preschool child relating to science and math;
2. to understand the science materials and information which will be used in the program (general background knowledge);
3. to identify, locate and utilize available resources for a science and math program;
4. to organize chosen science and math learning environments for nursery school children;
5. to select appropriate methods of presentation of science and math experiences using process-oriented, open-ended teaching methods;
6. to apply knowledge, understanding and skill in designing a sequence of science and math learning experiences;
7. to evaluate one's teaching, the learning of the children and the science and math programs;
8. to communicate and interact effectively with colleagues by micro-teaching the science and math programs designed;
9. to research and organize materials which demonstrate understanding of fundamental math concepts.

ASSIGNMENTS

1. **Readings from Text and Tests**
Tests are based on text readings and material discussed or assigned in class.

Section I – pp 3–74 due January 20.

Test #1 January 27

Section II – pp 89–144 – due February 3

Test #2 February 10

Section III – pp 159–216 – due February 17

Test #3 February 24

Section IV – pp 231–258 – due March 3

Test #4 March 10

2. **Math Activity Resource Book**
Each student will prepare a "Math Activity Resource Book" to include examples that are specifically related to the following fundamental concepts. The book will be handed in 3 times during the semester for evaluation and will include 2 activities for each "fundamental concept". Each activity must be described in detail using the attached form. (Example forms are also attached).

Fundamental Concepts	Due Date
1. One to One Correspondence; Number & Counting; Sets & Classifying; Ordering & Patterning	March 24 (8 Activities – 15%)
2. Shape; Space; Parts & Whole; Comparing	April 7 (8 Activities – 15%)
3. Measurement: Time; Volume; Weight; Length; Temperature (choose 4 of 5 measurement concepts for use in Resource Book)	April 21 (8 Activities – 15%)

3. **In Class Science Presentation & accompanying Information packet**
(schedule to be arranged in class)

Each student will choose a topic from the following: Any animal native to Canada, weather, recycling, solar system, trees, rocks and minerals, light, electricity, magnets, water or heat (or other topic as approved by instructor).

The student will research the chosen topic and prepare an information packet for use in the preschool setting including: title page; research material; bibliography, 2 art ideas (including recipes if necessary), 2 circle ideas, 2 science activities (be specific), 2 related children's books & a one page "basic outline" of basic research and preschool ideas to be duplicated one week in advance of presentation for distribution to the class. "In-Class" portion of presentation should include not only verbal presentation of material but also include visual aids and/or pertinent experiments or demonstrations. Presentation must be approximately 10 minutes in length.

Information packet must be handed in on the scheduled presentation date.

NOTE: Failure to present on the scheduled date will result in a mark of "0" for the project.

EVALUATION

1.	4 Tests - 10 % each	40%
2.	Math Activity Resource Book (15% each)	45%
3.	In-class Presentation & accompanying information packet (including "basic information sheet")	15%
	TOTAL	100%

TEXT

Exploring Science in Early Childhood: A Developmental Approach - Lind

RESOURCE

Early Childhood Curriculum - Wortham

The student will read the material prior to class discussion in order to fully participate in class discussions and presentations.

COLLEGE GRADING POLICY

90 - 100% = A+
80 - 89% = A
70 - 79% = B
60 - 69% = C
BELOW 60% = R

SPECIAL NOTE

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

MATH ACTIVITY FORM

Activity Title:

Age Group: **Developmental Stage:**

Fundamental Concept:

Objective:

Materials:

Activity:

Follow-Up:

Assessment

Method:

Skill:

Procedure:

Evaluation:

ACTIVITY TITLE: Matching – Dogs and People

FUNDAMENTAL CONCEPT: One-to-One Correspondence

OBJECTIVE: To make joined groups of three objects

MATERIALS: Two sets of three objects which normally would go together, for example, doll people holding dogs on leashes.

ACTIVITY: "Here are some people and some dogs. The dogs are on leashes. Does each person have a dog? Show me how you can tell." Note if the children can show or explain that the leashes connect the dogs and people.

FOLLOW UP: Use other groups of objects such as cats and kittens; cups and saucers; houses and roofs; etc. Increase number of items in each group as the 3 to 3 task becomes easy.

ASSESSMENT

METHOD: Demonstration/Interview

SKILL: Child can match joined groups of 3 objects.

PROCEDURE: Present activity to child as outlined above. If the child cannot do the task try it with 2 or 1 joined object.

EVALUATION: The child can explain or demonstrate that the leashes connect the dogs and people to demonstrate understanding of one-to-one correspondence.

EXAMPLE #2 MATH ACTIVITY FORM ED267

ACTIVITY TITLE: Discrimination of Geometric Shapes

AGE GROUP: 5 - 6 **DEVELOPMENTAL STAGE:** Pre-operational

FUNDAMENTAL CONCEPT: Shape Recognition

OBJECTIVE: To see that geometric shapes may be the same or different from each other.

MATERIALS: Any or all of the following may be used:

- magnet board with various shapes of different sizes and colours
- Flannel Board with shapes of various types, sizes and colours
- Cards with pictures of various geometric shapes in different sizes (they can be outlines and/or solids of different colours)

ACTIVITIES: Possible activities are: Matching, Classifying, and Labelling
Matching: Put out many shapes. Show one shape to child, "Find all the shapes like this one."
Classifying: Put out many different shapes, "Put all the shapes that are alike together."
Labelling: Put out several kinds of shapes, "Find all the squares (or triangles or circles) or "Tell me the name of this shape" (POINT)

FOLLOW UP: Do with individual, progress to small group. Do same basic activity with different materials.

ASSESSMENT

METHOD: Interview/Demonstration

SKILL: When given an assortment of SHAPES (size, colour, shape), the child will be able to recognize that shapes may be the same or different from each other.

PROCEDURE: Present activity as outlined above, If the child cannot complete the task, simplify by focusing on one area of difference, eg. size or colour, etc.

EVALUATION: Note and record if the child can discriminate between different shapes, sizes, and colours. Specifically, make note of success in matching, classifying and labelling.