Interactive Astronomy in the Elementary School

Geared towards elementary educators

Course Instructor: Coggin Heeringa

Location: Collins Learning Center, Crossroads at Big Creek Environmental Center, Sturgeon Bay, Wisconsin

Schedule: Friday, November 5 (4:00-8:00 p.m.); Saturday, November 6 (9:00 a.m.-3:00 p.m.); and Friday, November 19, 2010 (4:00-8:00 p.m.)

ENROLLMENT OPTIONS

One (1) Graduate Credit
ED & HUD 795-9, 745 (#0745C)
Prerequisite: Graduate Standing (Must have earned a bachelor’s degree)

Noncredit
Program Number #0745C
Prerequisite: None

Emphasis:
The purpose of this course is to provide teachers with a variety of hands-on models and demonstrations which will help them present astronomical concepts through manipulative and kinesthetic experiences in the classroom. Teachers will be given content information for background, but the emphasis will be labs in which teachers participate in and discuss the activities.

Rationale:
Children are inherently interested in astronomy. Research indicates that misconceptions developed during the elementary school years are frustratingly persistent. Many of the misconceptions are the result of distorted and misleading diagrams and illustrations in traditional science books. Using model/demonstrations and kinesthetic activities (many of which were developed by the Astronomical Society of the Pacific), teachers will be better able to help students visualize the scale and movement in space. Using astronomy as a starting point, teachers can introduce many of the basic principles of physics, while at the same time stimulating imagination and creative thinking.

Description:
Teachers in this course will increase their content knowledge of astronomy through multi-media presentations and by participating in and evaluating a wide variety of classroom-ready activities.
Course Objectives:

1. Teachers will increase their knowledge of astronomy so they will be more confident in providing instruction.

2. Teachers will participate in a number of hands-on activities which they can incorporate into their science units or infuse into other curriculum areas.

3. Teachers will create lessons that are aligned to Wisconsin State Standards for astronomy.

4. Teachers will become familiar with the Leif Everson Observatory and the www.doorastronomy.org website.

Required Readings/Resources:

- A binder with handouts will be provided.
- Teachers should bring their district standards/benchmark binders to class.

Suggested Readings:

- Wisconsin StarWatch by Mike Lynch
- Science & Children, September 2008, NSTA (focus on Astronomy)

Course Requirements:

1. Each teacher will attend all sessions and actively participate in activities.

2. Each teacher will select and model-teach at least two activities from the class binder.

3-A. Each teacher (independently or in a group of two or three) will create two grade appropriate lessons specific to his/her district curriculum. Each lesson must be aligned to the Wisconsin State Standards and their local curriculum, and include how learning will be evaluated.

   ~ OR ~

3-B. Each teacher will create an idea journal with at least seven astronomy-related lesson ideas. Each journal entry must include content areas, interactive components, standard/benchmarks/equipment needed, and evaluation methods.

4. Each teacher will bring a handout of a lesson to the final session.
Evaluation and Assessment:

- Participation in class activities 40%
- Model teaching of activities 20%
- Lesson plans or idea journal or evaluation of activities 30%
- Handout(s) to share with other participants 10%

Schedule:

**Day One—Getting to Know Our Solar System**
1. Introduction Video: “Why Teach Astronomy?”
2. Review syllabus and expectations.
4. Lab: Demonstrations and Activities pertaining to our Solar System
5. Discuss assignments.

**Day Two -- The Stars and Galaxies**
1. Introduction-plan the day- Assignments for Demo set-ups
2. Labs—Kinesthetic and Hands on Activities about stars and galaxies.
3. Planetarium show at the Stonecipher Astronomy Center
4. Lunch with Video
5. Family Program: Hands-On Astronomy for All Ages
   (a public program to be presented by the participants in the class).

**Day Three -- Websites and Activities**
1. Demonstrations and Model Teaching
2. Visit to the Observatory (if sky is clear)
3. Wrap up, evaluations

**Wisconsin Standards for Teacher Development and Licensure**

**#1. Teachers know the subjects they are teaching.** The teacher understands the central concepts, tools of inquiry, and structures of the disciplines she or he teaches and can create learning experiences that make these aspects of subject matter meaningful for pupils.

**#4. Teachers know how to teach.** The teacher understands and uses a variety of instructional strategies, including the use of technology, to encourage children's development of critical thinking, problem solving, and performance skills.

**#7. Teachers are able to plan different kinds of lessons.** The teacher organizes and plans systematic instruction based upon knowledge of subject matter, pupils, the community, and curriculum goals.

August 13, 2010 --CLL