

Teaching Science to Students with Special Needs ESCI 4030/6030

COURSE SYLLABUS

INSTRUCTOR: Dr. Bonita E. Flournoy
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TIME AND LOCATION: Monday, 4:40-7:40 PM.
University of Georgia, Athens
Aderhold Bldg. , ROOM 213

COURSE DESCRIPTION

This course includes the study of the definition of special needs and its implications to science teaching. Various exceptionalities will be discussed and strategies of instruction for specific exceptionalities will be demonstrated. Students will develop and implement lesson plans that are designed for inclusion in science teaching.

TEXTBOOK

Several online resources will be utilized as references for this course.
<http://www.nwrel.org/msec/images/resources/justgood/09.99.pdf>

RATIONALE

Teachers should be responsive to the pedagogical needs of all students. However, students with disabilities may have some unique educational needs. Disabilities covered by legislation include (but are not limited to) low-vision, blindness, hearing impairments, learning disabilities, mobility impairments, and health impairments. Special Needs is inclusive of English as a Second Language, and gifted. Although you may receive direction regarding academic adjustments and accommodations through IEP plans and Section 504 plans for specific students, it is crucial to think about the broad range of abilities, disabilities, and other characteristics of potential students as you plan to teach science.

INSTRUCTIONAL STRATEGIES

To realize the objectives of this course a variety of instructional strategies will be used to ensure understanding for all. These may include lecture, discussion, laboratory experiences, cooperative groups, use of multimedia, and other technological platforms.

COURSE OBJECTIVES

At the end of this course students will be able to:

1. Use assessment information in making instructional decisions and planning individual

programs that result in appropriate placement and intervention for all individuals with exceptional learning needs.

2. Understand legislation related to special education and the responsibilities of regular classroom teachers in implementing these laws.
3. Describe instructional methods/practices, techniques, and curriculum materials that assist all students to learn science.
4. Choose and use appropriate technologies to accomplish instructional objectives and to integrate them appropriately into the instructional process
5. Prepare and implement appropriate lesson plans with respect to special needs.
6. Select, adapt, and use instructional strategies and materials according to characteristics of the learner.

TOPICAL OUTLINE

I. THE DISABILITIES ACT OF 1997 and its amendments in 2004 (IDEA)

II. GEORGIA'S PERFORMANCE GUIDELINES for TEACHING CHILDREN WITH SPECIAL NEEDS

III. OVERVIEW OF ACCOMODATIONS AND ADAPTATIONS FOR SPECIAL NEEDS CHILDREN

IV. DEFINING SPECIAL NEEDS

A. Attention Deficit

Strategies

Organizations

Resources

Books and Videos

B. Learning Disabilities

Strategies

Organizations

Resources

Books and Videos

C. Behavioral Disorders

Strategies

Organizations

Resources
Books and Videos

D. Intellectual Disorders

Strategies
Organizations
Resources
Books and Videos

E. Communication Disorders

Strategies
Organizations
Resources
Books and Videos

F. Motor/Orthopedic

Strategies
Organizations
Resources
Books and Videos

G. Hearing Impairments

Strategies
Organizations
Resources
Books and Videos

H. Visual Impairments

Strategies
Organizations
Resources
Books and Videos

I. Multicultural Inclusion

J. Gifted

COURSE SCHEDULE AND ASSIGNMENTS

| DATE | TOPIC/READING ASSIGNMENT | ASSIGNMENT DUE |
|-------------------|---|--|
| January 9 | Disability: Bias and the law and Video Special Needs Children's Perspectives (http://www.washington.edu/doi/Video/wt_sci.html) | Group Oral Presentations |
| January 23 | Georgia Guidelines and Laws from the GA Department of Education http://membership.acs.org/C/CWD/TeachChem4.pdf http://public.doe.k12.ga.us/ci_exceptional.aspx Investigation of a Special Need/Exceptionality | Individual interpretations of Georgia Special Education Rules Typed Document/e-mailed |
| January 30 | Issues of Interest in Collaborative Teaching http://www.cec.sped.org/pdfs/IDEA_Flowchart.pdf http://iris.peabody.vanderbilt.edu/info_briefs/parrot_pub/collaborative_teaching.html | Guest Speaker Dr. Bonita Sims Gude, School Psychologist, Henry County School System |
| February 6 | Collaborative Teaching and Partnerships with Parent http://unr.edu/homepage/crowther/ejse/haskell.html http://www.coping.org/specialed/involve.htm http://iris.peabody.vanderbilt.edu/info_briefs/parrot_pub/collaborative_teaching.html IEP Individual Education Plan | Proposal for Service Learning Project and signed letter from supervisor |

| | | |
|--------------------|---|--|
| | http://www.ldonline.org/ld_indept_h/iep/iep_process.html | |
| February 13 | Accommodation Strategies http://www2.cac.washington.edu/doit/Stem/acc.html | |
| February 20 | Attention Deficit http://www.as.wvu.edu/~scidis/ | IEP Project |
| February 27 | Learning Disabilities http://www.as.wvu.edu/~scidis/ | |
| March 6 | Perfumes and Science Demonstrating Inclusion in Teaching Science | Lab write up |
| March 13 | Behavioral Disorders http://www.as.wvu.edu/~scidis/ You're in Charge; non Compliant Behaviors Part 2 http://iris.peabody.vanderbilt.edu/activities.html | Science Activity Profile Retooled for Students with Disabilities |
| March 20 | Intellectual Disorders http://www.as.wvu.edu/~scidis/ | Oral and written presentations |
| March 27 | Communication http://www.as.wvu.edu/~scidis/ | Oral and written presentations |
| April 3 | Hearing and Visual Impairments http://www.as.wvu.edu/~scidis/ | Oral and written presentations |
| April 10 | Motor Orthopedic disorders http://www.as.wvu.edu/~scidis/ | Oral and written presentations |
| April 17 | Management of Special Equipment and Adaptive Devices http://membership.acs.org/C/CWD/TeachChem4.pdf http://www.rit.edu/~easi/pubs/ezbib1.htm http://www.vesid.nysed.gov/lsn/lol2.htm | |
| April 24 | Multicultural and English as a Second Language Inclusion Multiple Intelligences (Howard Gardner) | |

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|--------------|-----------------|--|
| | | |
| May 1 | Gifted Students | Science Activity Using Multiple Intelligences Approach |
| May 8 | | <ul style="list-style-type: none"> • Service Learning Project/Final Due |

ASSESSMENT AND EVALUATION

Your performance in this course will be evaluated based on satisfactory completion of the following events according to the point distribution indicated.

| ASSIGNMENT | DUE DATE | TOTAL POSSIBLE POINTS |
|--|-------------|-----------------------|
| Brief group or individual oral presentations and written assignments | Varies | 200 |
| Class Participation/Attendance | N/A | 100 |
| IEP Project | February 20 | 150 |
| Lab Write up | March 6 | 50 |
| Retooled science Activity Profile | October 13 | 100 |
| Major Oral /Written Presentation | Varies | 150 |
| Multiple Intelligences Science Activity | May 1 | 100 |
| Service Learning Project/Final | May 8 | 150 |
| Total | | 1000 points |

DESCRIPTION OF MAJOR ASSIGNMENTS:

1. Individual or group oral /written presentations will be assigned throughout the semester related to reading from the on-line book or IRIS materials.
2. IEP Project The purpose of this project is to become familiar with the components of the Individualized Education Plan. The objective is for you to understand the process and responsibilities of the teacher and modifications that may be needed. You will access an IEP template and select a disorder/exceptionality that is of interest to you. Write a profile of a student that has the disorder and prescribe an IEP for science instruction. You will need to interview a practicing special education teacher and have them

review and evaluate your IEP with a rubric that will be given to you. They will need to sign it and provide an address and phone number for contact.

3. Retooled Science Activity Profile- Using a Students Abilities Profile, you will select a science lesson and retool it for a special needs student of your choice.
4. Major Oral Presentation - The purpose of the classroom presentation project is for you to build your own understanding of special needs. A chapter from the text should be selected and in a team you will be responsible for the following: 1) a teaching component in which you present material from the chapter in any format you desire. 2)A mini science activity that you have retooled, 3) a written mimeo that gives an overview of the lesson and 4) an assessment instrument for your classmates in order to evaluate their understanding of the concept(s) addressed.
5. Science Activity Using Multiple Intelligences- Referencing Howard Gardner's theory on Multiple Intelligences develop a mini lesson plan to write and implement in class with a group of 4-5 students.
6. Service Learning Project- Select a school or community setting and arrange to spend at least 15 hours of time there over the course of the semester. You may work in after school programs, volunteer in the classroom of a special Ed teacher, or work in any other situation where you have the opportunity to interact directly with special needs students. You may not work with your own family member. You must turn in a proposal for your project by the due date. A rubric will be provided. More detail will be provided when it is assigned.

GRADE DISTRIBUTION

Your final grade is a composite score of all of the events. Total all of your points; then total all possible points. Divide your total points by the total possible points; then multiply by 100. Your result is a percentage.

| Range | Grade |
|----------|-------|
| 90-100 % | A |
| 80%-89% | B |
| 70-79% | C |
| 60-69% | D |

SUGGESTED READINGS

We will use this website extensively as a resource for activities

<http://iris.peabody.vanderbilt.edu/activities.html>

Boudah, D. J., Lenz, B. K., Bulgren, J. A., Schumaker, J. B., & Deshler, D. D. (2000). Don't water down! Enhance content learning through the unit organizer routine. Teaching Exceptional Children, 32(3), 48-56.

Burke, M., Hagan, S., & Grossen, B. (1998). What curricular designs and strategies accommodate diverse learners? Teaching Exceptional Children, 31(1), 34-38.

De La Paz, S., Owen, B., Harris, K. R., & Graham, S. (2000). Riding Elvis's motorcycle: Using self-regulated strategy development to PLAN and WRITE for a state writing exam. Learning Disabilities Research & Practice, 15, 101-109.

Fuchs, L. S., Fuchs, D., & Kazdan, S. (1999). Effects of peer-assisted learning strategies on high school students with serious reading problems. Remedial and Special Education, 20, 309-318.

Guastello, E. F., Beasley, T. M., & Sinatra, R. C. (2000). Concept mapping effects on science content comprehension of low-achieving inner-city seventh graders. Remedial and Special Education, 21, 356-365.

Hardiman, M. M. (submitted for publication). Connecting brain research with Dimensions of Learning: Teaching students with learning disabilities in general education classrooms.

Jitendra, A. K., Hoff, K., & Beck, M. M. (1999). Teaching middle school students with learning disabilities to solve word problems using a schema-based approach. Remedial and Special Education, 20, 50-64.

King-Sears, M. E. (in press). Three steps to gain access to general education curriculum for learners with disabilities. Intervention in School and Clinic.

Maheady, L., Harper, G. F., & Mallette, B. (2001). Peer-mediated instruction and interventions and students with mild disabilities. Remedial and Special Education, 22, 4-14.

Polloway, E.A. and Patton, J.R. (2001) Strategies for teaching learners with special needs. (7th edition). New York, Merrill/Macmillan.

Recommended Reading

[Growing Up Gifted](#) Barbara Clark

[The Power of the Arts: Creative Strategies for Teaching Exceptional Learners](#) Sally L. Smith

[The Parallel Curriculum: A Design to Develop High Potential and Challenge High-Ability Learners](#) Carol Ann Tomlinson, Sandra N. Kaplan, Joseph S. Renzulli, Jeanne Purcell, Jann Leppien, and Deborah Burns

[Passport to Learn: Projects to Challenge High-Potential Learners](#) Jacque Melin

[U.S. Department of Education: Talent & Diversity: The Emerging World of Limited English Proficient Students in Gifted Education](#), U.S. Department of Education, Office of Research and educational improvement

WEBSITES

Foundation website: www.edexcellence.net/standards/best.html

[Teaching thinking skills in science to learners with special needs](http://www.internationalped.com/documents/(9)NillyLesley.doc)
[www.internationalped.com/documents/\(9\)NillyLesley.doc](http://www.internationalped.com/documents/(9)NillyLesley.doc)

<http://www.as.wvu.edu/~scidis/sitemap.html>

What is an IEP? http://www.ldonline.org/ld_indepth/iep/iep_process.html

Assistive Technologies <http://www.as.wvu.edu/~scidis/astech.html>

Scientists with disabilities <http://www.nsf.gov/statistics/nsf96311/tables/at5-42.xls>

ADDvance <http://www.addvance.com/>

All Kinds of Minds
<http://www.allkindsofminds.org/>

American Speech-Language-Hearing Association
<http://www.asha.org/>

Council for Children with Behavioral Disorders
<http://www.ccbd.net/>

Council for Exceptional Children
<http://www.cec.sped.org/>

Council for Learning Disabilities
<http://www.cldinternational.org/>

Council of Educators for Students with Disabilities

<http://www.504idea.org/>

Developmental Delay Resources

<http://www.devdelay.org/>

Equal Access to Software and Information (EASI)

<http://www.rit.edu:80/~easi/easisem.htm>

ERIC Clearinghouse on Disabilities and Gifted Education: Fact Sheets

<http://www.ericec.org/factmini.html>

IDEAPractices

<http://www.idea practices.org/>

Inclusion in Science Education for Students with Disabilities

<http://www.as.wvu.edu/~scidis/>

Inclusive Education

<http://www.uni.edu/coe/inclusion/>

Inclusive Science and Special Education Needs

<http://www.issen.org.uk/>

Inclusive Science and Special Education Needs Resources

<http://www.ase.org.uk/sen/>

Inclusive Science Education: A Forum of the Association for the Education of Teachers of Science

<http://www4.ncsu.edu/~ecparson/ISEFwebpage.htm>

Internet Resources for Special Children

<http://www.irsc.org/>

Intervention Techniques

<http://curry.edschool.virginia.edu/go/specialed/information/interventions.html>

LDO nLine

<http://ldonline.org/>

Learning Disabilities Association of America

<http://www.ldanatl.org/>

National Association for Multicultural Education

<http://www.nameorg.org/>

National Center for Learning Disabilities

<http://nclld.org/>

National Center on Accessing the General Curriculum

<http://www.cast.org/ncac/>

National Dissemination Center for Children with Disabilities

<http://www.nichcy.org/>

Power of 2

<http://www.powerof2.org/>

Schwab Learning

<http://www.schwablearning.org/>

Science for All: Inclusion Resources (by Marcia Fetters)

<http://homepages.wmich.edu/~mfetters/Inclusion.html>

Teaching science to Students with English as a Second Language

http://education.uncc.edu/more/StartResources/OnlineRes.htm#C_Science

ACADEMIC HONESTY NOTES: All academic work must meet the standards contained in “A Culture of Honesty, Each student is responsible to inform themselves about those standards before performing any academic work.

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- The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.
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NSTA Position Statement

Students with Disabilities

Introduction

Since the passage of the Individuals with Disabilities Education Act (IDEA) in 1997, schools have been committed to working toward inclusion of students with physical, mental, sensory, and emotional challenges in the classroom. Yet even with the best of intentions, barriers to learning science have emerged. These barriers include inadequate equipment, communication difficulties, insufficient numbers of instructional assistants and tools in the classroom, and lack of overall administrative support. In accordance with the National Science Education Standards, NSTA is strongly committed to developing strategies to overcome these barriers to ensure that all students have the benefit of a good science education and can achieve scientific

literacy. While NSTA is aware of the importance of these issues for practicing educators with disabilities, the declarations focus on the pre-K-12 classroom.

- **Declarations**

- **To overcome educational and physical barriers, NSTA recommends science teachers and administrators**

- Have appropriate assistance, such as instructional aides or sign language interpreters, available to students with disabilities so that they can master the science material.
 - Ensure that the instructional aides and tutors are competent to help students with disabilities learn science content.
 - Ensure that educational aids, such as computers and assistive technologies, are available to help students with disabilities learn the science material.
 - Provide literacy and mathematical tools to help students with disabilities access the science resources.
 - Ensure that the classroom and work stations are accessible to students with different kinds of disabilities, including physical, visual, and auditory.
 - Ensure that the classroom and the work stations are safe for all students by making necessary accommodations, such as modifying counter height, adjusting lab groups as appropriate, and bringing in instructional assistants on an as-needed basis.
 - Ensure that high-stakes assessment tests are not used in a punitive way for students with disabilities and that positive decisions are made as a result of these tests.
 - **In selecting science curriculum, NSTA recommends that science teachers, administrators, and community members**
 - Make every effort to select quality curriculum print materials and multimedia products that promote inclusiveness of people with disabilities through their text, illustrations, and graphics.
 - Make every effort to select quality curriculum materials that present culturally diverse people with disabilities as role models working in all disciplines and at all levels of science.
 - Work with curriculum developers and publishers to ensure that multimedia science materials, such as videos, CD-ROMs, and software, are accessible to students with disabilities through the use of closed captioning and other devices.
 - Ensure that the science materials meet the educational needs of students with a range of learning styles so that the quality and depth of science investigations are equivalent for all students in the classroom.
 - **To overcome barriers in the way assessment tools are developed and used with students with disabilities, NSTA recommends that science teachers, administrators, and evaluators**
 - Design and implement varied kinds of assessment tools or models so that all students, regardless of their disability, can be tested fairly and can communicate fully what they know and are able to do in science.

- Provide administrative support for the development and use of a range of assessment tools that evaluate students with disabilities fairly.
- Work with individuals and agencies that administer high-stakes assessments to ensure that assessment scores are interpreted and used in ways that respect unique differences.
- **To help overcome attitudinal barriers and educate science teachers about what is involved in teaching students with disabilities, NSTA recommends that administrators**
- Help students understand the importance of using a variety of teaching aids and assistive technologies so that they can be integrated into the classroom.
- Make professional development programs available to teachers and instructional assistants so they can learn about the unique needs of students with disabilities and how to meet those needs in the science classroom.
- Work with the school staff to ensure that everyone has an open mind toward students with disabilities and is prepared to help them master the science content.
- Ensure that adequate funding is available to meet the unique needs of students with disabilities in the science classroom.
- **In helping students prepare for careers, NSTA recommends that guidance counselors and science teachers**
- Encourage students with disabilities to consider science and science-related careers by exposing them to a range of school and community activities.
- Provide students with disabilities with the most recent information about the kinds of opportunities available in the sciences.
- --Approved by the NSTA Board of Directors, February 2004

Teaching Science to Students with Special Needs
ESCI 4030/6030

Assignment Due January 23, 2006

Part 1

Visit the Georgia Department of Education's website listed on your syllabus, and select a specific rule to interpret. You will give a brief oral presentation.

Part 2

Investigate a special need/disability of your choice. Type a one page overview of the disability. It should include possible causes (scientific basis), symptoms (areas affected), possible treatment and cite references used according to APA-style of referencing.