

## 1 ☐ Integrated Sciences Program

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Earth & Space Sciences

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## 2 ☐ Time Line

- October 2005 - Lutz Committee appointed by A&S Divisional Dean Irving to explore concept of a possible new degree
- May 2006 - Committee report recommends new degree
- September 2006 - Acting Dean Irving appoints Director and gives charge to develop new degree
  
- January 2007 - Science department review and revision nearly complete
- January- May 2007: Initial development planning for new courses
- April 2007 - Degree plan to be submitted for approval process
- 2007-2008 - First students in Program!

## 3 ☐ Integrated Science Committee

- Faculty from UW departments
  - Astronomy (J. Lutz, Committee Chair)
  - Atmospheric Sciences (C. Mass)
  - Biology (H Buttemer, B. Wakimoto)
  - Chemistry (R. Gammon)
  - Earth & Space Sciences (J.M. Brown, E. Nesbitt)
  - Mathematics (Irving)
  - Physics (Shaffer)
  - Technical Communication (D. Illman)
  - Education (M. Windschitl)
- Science education specialists
  - Pacific Science Center (D. Schatz)
  - Renton Public Schools (J. Kent)
  - Everett Public Schools (J. McLeod)
  - Others

## 4 ☐ Committee Process

- Explored whether existing science degrees adequately meet “needs” in pre-service education
- Nine meetings between January and May
- Teachers queried by survey and interviews at meetings

## 5 ☐ Questions

- Are there existing models of Integrated Science degrees?
- For science majors entering the Masters degree program in the College of Education at UW
  - what were the strengths and weaknesses of their undergraduate preparation to become science teachers?
- For in-service teachers,
  - what were the strengths and weaknesses of their preparation to become science teachers?
- For in-service teachers,
  - when did they make the decision to become a science teacher?

## 6 ☐ Findings

- Washington state Grade Level Expectations include a large component of “science process”
  - what is a system, how to conduct an investigation, what constitutes valid evidence, ...
  - undergraduate courses do not provide “tools” to teach science process.
  - More consideration of the principles of science needed
- Teachers wished for more breadth.
  - chemistry teacher required to teach biology
  - biology teacher teaching the 10<sup>th</sup> grade general science course which encompasses earth and space science
  - middle school science facing a combinations of 3 science courses that change radically with grade level.
- Hardly any of the science teachers came to college wanting to be a teacher.
  - Some decided when they were upper division students.
  - Others decided after they graduated from college.
  - Many entered teaching as a second career.

7 ☐ Internal Committee Debate

- Why not just complete a standard science major?
- Students and employers may view this degree as being of “lesser quality” than a standard science major
- “Platte River Syndrome” ?

8 ☐ Conclusion:  
New degree is needed

9 ☐ Desired Outcomes for I.S. Degree Recipients:

- have a broad background in physical and biological sciences with an emphasis in one area
- understand connections between these various sciences
- be able to apply scientific concepts and principles to understand the properties, structure and changes in physical, earth, space and living systems.
- have exposure to pedagogies suitable for explaining and teaching science to others.
- better understand the nature of science
- have developed knowledge and skills necessary for scientific inquiry.

10 ☐ Career Paths

11 ☐ Draft Plan  
90 of 180 credits can be specified in a degree

12 ☐ Core Courses  
60 credit

- 10-15 credits each of freshman:
  - Mathematics
  - Chemistry
  - Physics
  - Biology
  - Earth and Space Sciences

13 ☐ New Integrated Science Courses  
10 Credits

- Nature and processes of science course
  - hands-on
- Integrated science course
  - cross-discipline, case studies
- Seminar course
  - build cohort group
  - “deconstruct” learning

14 ☐ Emphasis Courses  
20 credits

- Linked courses within departments at 300 and 400 level
- Provide more depth in a single discipline
- Can add astronomy, atmospheric science, oceanography ...
- Currently under review and revision in science departments