Unit Planning for Instruction, Student Services & CEWD
Division: Science

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 1

Initiative Title: Science Part-time Instructional Support for Technology

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**
   The initiative keeps existing instructional technological teaching methods functioning by providing necessary funds to meet the demands associated with rapid technological changes in science instruction. Program level outcomes are dependant on functional technologies related to instruction in all science disciplines.

2. **Describe the initiative**
   - *How does this initiative align with the college priorities?*
     This initiative transforms students' lives by providing student support services and it keeps the commitment to a culture of services and learning.

     It transforms the learning environment by developing institutional capacity to respond effectively and respectfully to students, staff, and community members of all cultures, languages, classes, races, genders, ethnic backgrounds, religions, sexual orientations, and abilities. Support staff respond to the needs of differently abled people who need technological accommodations, which are required by the ADA. The support also enhances, and maintains facilities that are accessible, functional, well-equipped, and aesthetically appealing.

     This initiative also transforms the college organization by building organizational capacity and systems to support student success and effective operations, which then promotes professional growth. It ultimately provides increased development opportunities for staff both within and outside the College.

   - *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*
     The initiative would fund two part-time Information Technology Technician positions in the Science Division.

     - The need is to maintain the support of student computers and other forms of technology (too many to list here) used in science teaching by all science disciplines. This initiative is needed to provide personnel to maintain student computers in science laboratories and the Science Resource Center, which offers computer testing and computer use for science classes. These services are needed to support science classes and to retain students.

     - The need is assessed by the standard practice of using human resources to maintain student computer workstations and by the needs student have for technical help with existing and new instructional technologies.

     - Evidence of the need includes the list of initiatives approved and implement, which require support. LCC standards require meeting Lane's strategy to build organizational capacity and systems to support student success and effective operations. Planned expansion of course offerings adds additional evidence.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*
  The project is feasible and necessary to meet science program outcomes and is an efficient use of college resources. The Science Division has been teaching up to 90 more sections a year, for the last 3 years and our need for student support has also gone up. Without these positions, the Science Resource Center could not continue to offer the range of hours we do, science laboratories would be compromised, and student retention would be lowered.

- *What would be the campus location of this request/project?*
  The project will be located within the Science and Math Divisions, Building #16, main campus.

- *How many students (per year) will benefit? How will students benefit?*
  We now serve approximately 8000 students in all Science classes. There are approximately 340 sections per year.

3. Describe the resources needed

Two 0.5 FTE Information Technology Specialists

.500 x 30,634 [CH 08 4] = $15,317 Salary, x .311 = $4,764 OPE, Total = $20,081
.500 x 41,818 [CC A 16] = $20,909 Salary, x .311 = $6,503 OPE, Total = $27,412
Total Requested = $47,493

4. List the possible funding sources

The project may be funded by the general fund.

- *Can this project be partially funded?*
  No.

- *If so, what portion could be funded at what minimum cost?*

If the funding source is Carl Perkins:

- How does the request meet one or two of the Carl Perkins act goals? N/A

5. Provide ORG & PROG codes

ORG = 691002, PROG = 111000

6. Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year? N/A

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 2

Initiative Title: Science Division Technology Maintenance Initiative

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**
   The initiative keeps existing instructional technological teaching methods functioning by providing necessary funds to maintain existing technology for science instruction.

2. **Describe the initiative**
   - *How does this initiative align with the college priorities?*

     This initiative transforms students' lives by providing student computers. It keeps the commitment to a culture of services and learning.

     It transforms the learning environment by developing institutional capacity to respond effectively and respectfully to students, staff, and community members of all cultures, languages, classes, races, genders, ethnic backgrounds, religions, sexual orientations, and abilities. Computers meet the needs of differently abled people who need technological accommodations, which are required by the ADA. The support also enhances and maintains facilities that are accessible, functional, well-equipped, and aesthetically appealing.

     This initiative also transforms the college organization by building systems to support student success and effective operations, which then promotes professional growth. It ultimately provides increased development opportunities for staff both within and outside the College.

   - *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*

     The product will be replacement hardware, software upgrades, and renewal of software licenses.

   - *Given college resources, is it feasible? Is it an efficient use of college resources?*

     The project is feasible because of fund availability through the student technology fee. This initiative is especially an efficient use of the resources because it meets the first priority of the principal fund objective, which is to **adequately maintain existing technology**.

   - *What would be the campus location of this request/project?*

     Building #16

   - *How many students (per year) will benefit? How will students benefit?*

     Approximately 8,000

3. Describe the resources needed

Student Workstations Maintenance

Software:

Operating System (Windows Vista) Upgrades	$6,246
Operating System (Mac OS 10.5 – Leopard) upgrades	1,656
OrCad (PSpice) License renewal (10 @$100each)	1,000
Stella Modeling Software upgrade	776
Spartan Molecular Modeling (Mac)	4,500
Spartan Molecular Modeling (PC) upgrade	900
Text Book Media Software licenses	999
Science Dissection Software (BioLab Pig) licenses	750
Adobe Professional (3)	120
Astronomy Software	588
Total Software	**$17,535**

Workstation hardware replacement components:

Keyboards, hard drives, monitors, cables, RAM, mice power supplies, drives, batteries, media, Blue Tooth USB Adapters, other components sound cards, NICs	1,500

Total Workstation Maintenance	**$19,035**

Infrastructure Maintenance

Hardware replacement components:

Projector maintenance (lamps and components)	3,500
Printer supplies (toner, fusers, drum kits, transfer kits)	6,000
Printer replacement (2) Room 193 (SRC) and 130	3,000
Backup Software Upgrade	1,744
Security Software (DeepFreeze, Fortres) upgrade	2,077
Server hardware replacement components:	
Memory	1,603
Ultra 960 internal tape drive (replacement) (2)	5,848
Tape Cartridges (20-pack)	1,600
Warranty extensions	1,447
Total Infrastructure	**$26,819**

Total Resource Cost for Maintenance Initiative	**$45,854**

4. List the possible funding sources

- *Can this project be partially funded?*
  Yes

- *If so, what portion could be funded at what minimum cost?*

  Hardware components (with the exception of the replacement printer for 130) will be necessary during the 2007-08 academic year; however, OS software and some discipline-specific software needs may be funded by other sources. This would bring the total initiative cost down to approximately **$26,819**.

If the funding source is Carl Perkins:

- How does the request meet one or two of the Carl Perkins act goals? N/A

5. **Provide ORG & PROG codes**
   ORG = 691800, PROG = 111000

6. **Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year?** N/A

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 3

Initiative Title: Revision of ASTR 107, Astronomy Telecourse

The video portion of our current ASTR 107, Astronomy telecourse has been updated and is replacing the old programs after fall term 2007. Therefore, revision of our quizzes, tests and packets is necessary.

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**
   This initiative meets the challenge of supporting quality instruction and continued efforts to maintain an up to date curriculum. We believe that this revision will enable our discipline to continue to offer a very popular course by a distance learning method that has proven itself over the last fifteen years.

2. **Describe the initiative**
   - *How does this initiative align with the college priorities?*

     This initiative meets numerous elements of the college's vision, mission and goals as well as contributing to the college's strategic plan. Notably, this initiative continues the momentum that the Science Division has in Transforming the Learning Environment. Our ability to respond creatively to the demands of our curriculum is one of our strengths. This initiative will:
     - develop and expand the learning experiences available to students
     - create scheduling flexibility for working students and single mothers
     - provide a response to a demand that is already known
     - create a learning environment that makes full use of existing technology
     - support creativity, experimentation and institutional transformation
     - allow us to foster personal, professional and intellectual growth of learners
     - create a diverse and inclusive learning college
     - create, expand and enhance our facilities
     - promote professional growth and development opportunities for our faculty
     - make significant progress in meeting the goals of a learning-centered college

   - *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*

     The product will be essentially the same Astronomy, ASTR 107, telecourse course that we have now. The new videos are produced by the same media consortium that created our present programs. This initiative will enable us to revise quizzes, tests, websites and packets to fit the new material.

     The updates are mainly changes in the arrangement of content and new discoveries in our solar system and in the areas of extra-solar planets, galaxy formation and cosmology. Since the old telelessons will not be available after fall term of 2007, work would begin on the project this winter and be finished in the spring of 2007.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*

  This course has maintained a high enrollment for several years. It typically has two or three times the enrollment of most traditional classes. We currently have all the resources in the Science Division and in Distance Learning to insure its ongoing availability and maintenance.

- *What would be the campus location of this request/project?*

  Physics discipline, Science Division, main campus.

- *How many students (per year) will benefit? How will students benefit?*

  Based on past enrollments 60-100 students will benefit. This data is from two offerings. One scheduled fall term and the other in the spring. The course could be offered every term.

  Students will benefit by:
  - More options in the curriculum
  - Having a flexible schedule alternative
  - The use of commonly owned existing technologies
  - Having a variable credit alternative (4 credits with lab and 3 without lab)
  - Its accessibility throughout the county. It is available on cable television, at the Outreach Centers in Cottage Grove and Florence, at the LCC main library for viewing and check-out and for viewing in the Science Resource Center. The telessons are also available by broadband free on the internet at http://www.learner.org.

3. **Describe the resources needed**
   Fifty (50) hours of curriculum development funds are needed to complete this project.
   50 x $27.97 = $1399 x .311% = $693 TOTAL REQUEST: $1833

4. **List the possible funding sources**
   - *Can this project be partially funded?*
   - *If so, what portion could be funded at what minimum cost?*

   If the funding source is Carl Perkins: **N/A**
   - How does the request meet one or two of the Carl Perkins act goals?

5. **Provide ORG & PROG codes**
   ORG = 691600 and PROG = 111000

6. **Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year?**
   N/A

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: __4__

Initiative Title: Curriculum Development Request for Bi 212 Principles of Biology

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**

   The Science Division Unit Plan identified the need to improve articulation with OUS schools. Development of this course and its content accomplishes this.

   A. **Division:** Bi 212 incorporates all Science Division Learning Outcomes. See last page.

   B. **Biology Majors sequence of courses (Program):** Bi 212 is the second course in a sequence that has the following over all goals
      1. **provide** a basic biological background that will prepare students for future study in biology and to complete a 4-year life science degree.
      2. **increase** comprehension of comparative anatomy and physiology topics.
      3. **prepare** biologically literate citizens to make informed decisions about why and how organisms respond to their environment.
      4. **broaden** awareness and enjoyment of all life on earth.
      5. **deepen** understanding of the difference between scientific patterns of thought and other patterns of thought.
      6. **prepare** students to **learn independently** so that they become comfortable with learning material without a "lecture".

2. **Describe the initiative**

   Request for 1 class reassignment (release) time for each of the Bi 212 instructors, Stacey Kiser and Gail Baker, during Winter quarter 2008. Bi 212 Principles of Biology is a new course that integrates BOTH the zoology and botany disciplines in to one course. Offerings in the 200–level biology sequence have always offered separate courses in zoology and botany taught by instructors with 2 different areas of expertise, Gail Baker in botany and Stacey Kiser in zoology. **The integration of Zoo202 and Bot 202 into one course presents a significant change for both instructors and requires additional education, preparation and course design for each instructor.** To acquire this education and assure consistency between all sections of this course we will need to co-teach the course the first time it is offered.

   Co-teaching includes: *guest lecturing in and attending each others sections of the course, co-writing all assessment tools and co-grading, leading study sessions and evaluation of integration success.*

   At least 4 sections of this course must be offered at the same time, which requires 2 instructors. Each will teach 2 sections.

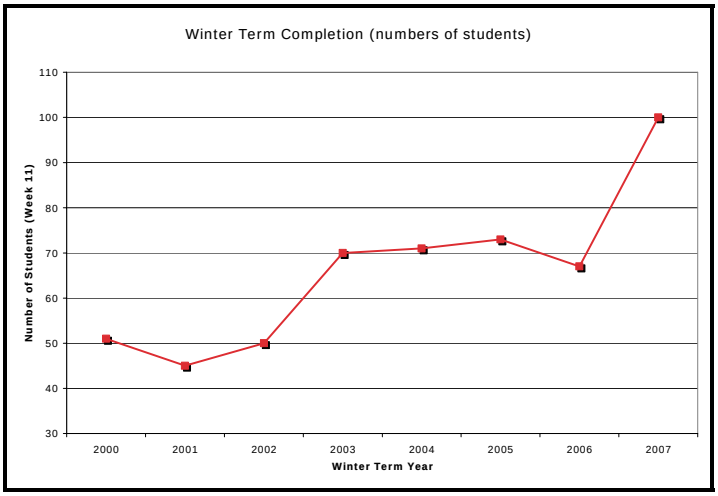
Stacey and Gail agree that for each of us to teach in the other's expertise we need to work with each other as we implement the course and experience it in the classroom.

- *How does this initiative align with the college priorities?*
  The Bi 212 course will accomplish each of the following priorities:

  College Priorities: LCC College Mission, Core Values, Assessment and LCC Budget

  - **Support student enrollment, retention, success and learning.**
    Gail Baker and Stacey Kiser have investigated course content at University of Oregon and Oregon State University, and are basing their course on a combination of the two. More students will be able to smoothly articulate with either school. LCC counselors will be able to advise more students to take the Biology majors sequence at Lane.

    Our previous articulation work with UofO lead to increased enrollment from UofO students desiring smaller classes.



  - **Make investments in systems development that will save resources and streamline work processes that results in saving in the long run.**
    By combining two different courses into one, we are reducing the workload on the Life Science Stockroom staff. We are streamlining faculty, print shop, and bookstore workload by creating one packet that will be used for multiple sections. Advisors are already thanking us for reducing their workload.

  - **Maintain high quality instruction and services.**
    We will be able to maintain high quality instruction if we get the release time to work together the first year. Both instructors feel it is crucial to attend each other's class and in the process learn an area of expertise at a depth that is beyond our current scope. In many ways we are going to be experiencing the course from the students' point of view as we learn along with them, not only content, but presentation style.

  - **Respond to community needs.**

We consider transfer students our community. We have collected stories from students transferring to U of O and OSU, discussed changes with biology faculty at both universities, and investigated content and sequence in the Biology Majors Sequence via on-line materials. We do not make these changes either lightly or blindly.

- **Maximize revenue generation balanced with accessibility and affordability.**

  We anticipate increased enrollment with improved articulation. This will generate more revenue (given that we can maintain our current balance of biology course offerings and not simply cut non-majors sections). Our courses are competitively priced with the two universities. By offering multiple sections and different times of the day, we have increased accessibility when compared to single-section, large-lecture formats at the major universities. A smaller student-to-instructor ratio means greater access for students, and hopefully translates into increased success.

Bi 212 also integrates LCC Core Abilities, which align closely with Science Division Outcomes, and LCC Core Values. (PLEASE SEE ATTACHMENT OF LIST OF Science Division Outcomes, Course Description, Course Outcomes and Assessment)

- *What will the **product, innovation, or change** of this initiative be? Please be as specific as possible.*

  BI 212 was accepted by the Curriculum Committee in December 2006 and will be the second course in the Bi 200 level sequence, it will be offered for the first time winter quarter 2008. **This is a significant CHANGE from previously offered classes in the BI 200 level sequence**. Currently BI 201 (Fall quarter, now BI 211) is always followed by a ZOO 202 (Stacey Kiser teaching in her expertise of zoology) or BOT 202 (Gail Baker teaching in her expertise of plant sciences).

  The INNOVATION of transforming course offerings from BOT or ZOO 202 to a single course BI 212 was done after the assessment of biology majors sequences at 4-year institutions that lead us to understand that articulation, and possibly enrollment, would drastically improve and smooth the way for our many transfer students.

  The PRODUCT or RESULTS of co-teaching we will be
  - **Learning the topic outside the area of their expertise for each instructor.**
  - Choosing clear comparative examples from botany and zoology that illustrate the overall concepts that frame the curriculum.
  - **Increase efficiency.** All sections will have identical curriculum. This will increase efficiency of all supporting class materials and labs AND streamline demands on biology support personal, especially instructional support.
  - Enhance the course curriculum and set the stage for ongoing revisions and development.
  - **Develop the most effective delivery and presentations techniques for the new area of expertise.**
  - **Create** course content, learning outcomes, joint laboratories, exams, alternate assessments, and eventually a course packet. These items can be used by future instructors (if different than current).

  Stacey and Gail agree that for each of us to teach in the others expertise we need to work with each other as we implement the course and experience it in the classroom.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*

  This proposal is both feasible with in the limitations of college resources and is a very efficient use of those resources. Explanation and reasoning in text elsewhere in this document.

- *What would be the campus location of this request/project?*

  Lane Community College main campus, Bldg. 16, Science Division

- *How many students (per year) will benefit?*

  Currently 100 students per quarter are enrolled in this sequence and we anticipate increasing numbers of students from UO and OSU will enroll in this course because the course prefix and content is now identical to those 4 year institutions AND we offer smaller classes with more instructor contact.

  While students are here we also predict that they would enroll in other biology major requirement courses such as chemistry, math and physics and foundational courses like writing.

- *How will students benefit?*

  Smooth and easy transfer of courses to 4-year institutions. The change from BOT or ZOO 202 to BI 212 was done after the assessment of biology majors sequences at 4-year institutions lead us to understand that a course in comparative physiology would drastically improve transfer for our students.

  Strong course content that corresponds with and is well regarded by institutions that our students transfer to. Our ability to co-teach the course (4 sections with a total of approximately 100 students) together would greatly enhance the course curriculum and set the stage for strong integration, future revisions and development.

3. Describe the resources needed

Request for Reassignment Time:

1. Stacey Kiser: one course release time for curriculum development
2. Gail Baker: one course release time for curriculum development

One 1 section release would equal the following in PT backfill:

Salary	= 0.336 x $14,205	= $4773
OPE = Salary x .311	= $1484	
	Total = $6257	

Total Request: $12,514

4. List the possible funding sources

- *Can this project be partially funded*?

NO, both instructors will need to be fully engaged to develop the curriculum

- *If so, what portion could be funded at what minimum cost?*

If the funding source is Carl Perkins:

- How does the request meet one or two of the Carl Perkins act goals? N/A

5. Provide ORG and PROG codes

ORG = 691120 and PROG = 111000

6. Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year? N/A

****

Science Learning Outcomes

1. Understand the difference between scientific patterns of thought and other patterns of thought as ways to understand the world; be able to recognize a question or problem as being scientific in nature, and confront and correct invalid intuitions about the way things work.
2. Understand the principles underlying a classification system (e.g. organisms, earth materials, chemicals) and be able to describe distinguishing features of major categories within the system.
3. Understand hierarchical levels of structural organization of matter, and recognize the macroscopic consequences of microscopic properties and behaviors.
4. Demonstrate an understanding of natural processes that govern the interactions between organisms and environment, and have an increased awareness and appreciation of the interconnected character of nature.
5. Be able to relate scientific knowledge to current issues in order to make informed decisions.
6. Understand and be able to demonstrate the application of the scientific method (inquiry) to solve a specific scientific problem: make observations and gather data in a laboratory or field environment; develop and test hypotheses about natural phenomena; have basic understanding of and experience with modern laboratory skills and up to date safety knowledge; make reasonable inferences based on observations or experimental results.
7. Ability to describe natural phenomena, and interpret and express scientific information, in symbolic format (e.g. equations, graphs, tables, mathematical notation, maps).
8. Be able to use appropriate software and hardware tools to model and/or assess a scientific problem; and to manipulate numbers and estimate answers to calculations involving scientific information.
9. Work collaboratively in groups.
10. Communicate scientific ideas effectively, and explain the development of theories resulting from scientific endeavors using appropriate terminology, clear and unambiguous language, and correctly formulated concepts regarding natural phenomena.

Course Description: Bi 212 PRINCIPLES OF BIOLOGY is designed for biology majors as an introduction to the study of organism form and how they function. The emphasis will be on comparisons of 2 major groups of organism-Plants and Animals. Study of tissue and organ evolution, diversity, structure, and physiology of representative groups of organisms in each major Kingdom will be the foundation for comparing the anatomy and physiology of organisms from each phyla or clades and between kingdoms. The course will include considerable lab work, including microscopic study of cells, tissues and organs and may include some field trips.

Course Outcomes and Proficiencies What will the student *know* or *be able to do* at the end of the course? What *attitudes* related to the subject will the student hold? Upon successful completion of this course, the student will:	**Assessments Planned** What evidence will you have that students have achieved course outcomes? (assessment tools may include departmental tests, written products, portfolios, juried performances, quizzes and exams, or alternative assessments such as qualitative studies, capstone projects, external reviewers, etc.) How each outcome will be assessed:
1. Understand physiological concepts and processes as related to homeostasis.	Group modeling, experiments, data collection and analysis, laboratory completion, quizzes and exams.
2. Compare and contrast among organisms and their solutions to various homeostasis problems.	Group modeling, experiments, data collection and analysis, laboratory completion, quizzes and exams.
3. Pose problems, solve problems, and persuade peers of results.	Experiments, data collection and analysis, and presentations.
4. Locate, evaluate, and utilize appropriate scientific research when designing experiments.	Evaluation of experimental reports, posters, and/or presentations.

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 5

Initiative Title: Curriculum Development for a Sustainability Emphasis Track in Science and a Sustainability Major

1. **How is the initiative linked to your 2006-2007 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**
   The Sustainability curriculum was identified and endorsed by the Science Division task force for curriculum ideas that would enhance revenues and create efficiencies. The initiative will result in clearer academic paths for students interested in sustainability issues, and will also create new courses that meet student and community interests, bringing in more FTE to the Division.
   Program level outcomes are:
   - Meeting the community interest in sustainability issues
   - Increasing FTE in Science courses
   - Strengthening interdisciplinary, general education courses with Sustainability concepts
   - Science students will gain conceptual understandings and analytical skills related to sustainability concepts.
   - Use of GIS in science classes. The presence and expansion of the GIS program in Science and of the GIS NSF grant allows ready incorporation of GIS curriculum in the new sustainability program.

   We expect that a new program in sustainability in the Science Division will improve enrollments in courses with a sustainability theme.
   The proposed new program will strengthen ties among all the Science Disciplines, including the Energy Management Program and its sustainability courses.

2. **Describe the initiative**
   This initiative is for short- and long-range planning for new sustainability curriculum in Science, with the intent to coordinate this planning with college-wide sustainability planning and programs. This initiative seeks to do this in the Science Division at two levels outlined below, the first being quicker to implement and the second taking more planning and thought.
   Success of this initiative depends on integrating part-time faculty into planning and teaching.

Part 1: Details of the Sustainability Emphasis track:

Because many of the faculty members involved in teaching courses with sustainability content are part-time faculty we are requesting 40 hours of Curriculum Development funds in this first part of the initiative for part-time faculty to meet, plan and coordinate with full-time faculty to design a Sustainability Emphasis track.

The products of this part of the initiative will be:

- A list of desired sustainability concepts, learning outcomes, and competencies for students taking the Sustainability Emphasis track

- Curriculum mapping between existing courses and these outcomes. Examples of possible courses might include the current Environmental Science sequence ENVS 181, 182, 183 Terrestrial/Atmospheric/Aquatic Environments, Energy Management courses including NRG 160 Water and Society and 199 Introduction to Sustainability, Biology courses such as BI 102 Ethnobotany, 103 Global Ecology, 103 Forest Ecology, 103 Field Biology, General Science courses such as GS 110 and 210 Science Modeling Lab, 147 Oceanography, and others.
- A brochure advertising courses and options for a Sustainability Emphasis track
- Advertisement: sharing the brochure with student advisors, promotion of the track at career days and high school orientations, and broader advertisement
- Possible Employment Skills Training certificate or mini-certificate (for example, in cooperation with the Energy Management program)
- Implementation of the new track in 2007-2008

The initiative in Science is a logical extension and expansion of the ground work already done by the Energy Management program in introducing new classes such as Water and Society and Introduction to Sustainability. The initiative will include and coordinate with but not be limited to Energy Management and will involve all areas of science as they relate to sustainability.

Part 2: Details of the Plan for a Sustainability Program/Major:

Any plan for a new major or program will necessarily involve part-time faculty. We will need 60 hours of Curriculum Development funds to plan a new program/major in sustainability in the Science Division. Planning should include meeting and coordinating among part-time faculty, full-time faculty, the Sustainability in Learning Committee, as well as the Sustainability Group to harmonize with plans for sustainability curriculum developing throughout the college. Sustainability is by nature a multi-disciplinary and inclusive curriculum.

The products of this part of the initiative will be:

- A design for a new sustainability program in the Science Division
- A plan for future development of a Sustainability Science Major
- Answers to the following questions:
  - What are the student learning outcomes that a sustainability program should address?
  - How extensive should this program be? Should we offer a major in sustainability science?
  - How would the program meet community goals in Eugene and mesh with the Governor's sustainability plan?
  - How will courses in the program or major articulate with other schools, especially University of Oregon and Oregon State University?
  - What components of the program could become a professional-technical certificate?
  - What existing courses will fit into the program?
  - What is the feasibility of writing an NSF proposal for funding related to the program?
  - How could learning communities and service learning be built into the program?
  - How should the plan/program/major in Science coordinate with sustainability efforts college-wide?

- In what way might GIS improve, be incorporated into, and become part of the program?
- Could Employment Skills Training and coop internships become part of the program? How should these be implemented?
- What are employment and transfer opportunities for students in such a program? How can we design the program to enhance employment and transfer opportunities for students?
- Could the City of Eugene provide employment opportunities for internships or longer term positions for students of the program?
- What new courses should be developed as part of the new curriculum? Possible new courses might include but not be limited to ENVS 101 the Science of Sustainability, ENVS xxx Energy and Sustainability, G xxx Geological Resources and Sustainability or ENVS xxx Sustaining Our Natural Resources, G xxx Hydrology and Water Resources, BI xxx Sustainable Harvests, BI 103: Biological Components of Sustainability, ENVS xxx Climate Change and Global Warming, ENVS xxx Sustaining the Oceans, ENVS xxx Water Resources and Sustainability, ENVS xxx Sustaining Aquatic Environments or Sustaining rivers, wetlands and oceans, ENVS xxx Atmosphere and Sustainability, and ENVS xxx Green Construction.

- *How does this initiative align with the college priorities?*
  The initiative aligns with the following college priorities:
  - The new sustainability core value
  - Improved enrollment in existing courses
  - Expanded and diversified learning opportunities
  - Positioning Lane as a vital community partner by empowering a learning workforce in a changing economy that is increasingly recognizing sustainability as an important concept
  - Fostering personal, professional, and intellectual growth for faculty and students

  Lane Community College, the City of Eugene and the Governor recognize the need to work toward sustainability in our society. Indeed, Lane has just adopted sustainability as a new core value. The timing is right to offer educational options in sustainability curriculum especially in the sciences. Although attitudes, economics, and philosophy of sustainability may be explored in English, History, Economics, and Social Sciences, scientific knowledge of the processes and principles of sustainability is an essential foundation.

- *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*
  This initiative will have three concrete deliverables:
  1. A Sustainability Emphasis track and corresponding brochure that identify existing courses in science with a sustainability theme and/or substantial content in sustainability.
  2. A road map for the development of sustainability programs in science to be produced as follows:
     - Address broad goals of the program.
     - Establish desired student outcomes.

- Determine what degrees, certificates, professional/technical programs, transfer programs, classes, courses of study, major, and alternative learning and community education opportunities should be developed.
- Determine what new courses will be needed.

3. A new course in sustainability appropriate to the program and at a beginning level to compliment the goals of the program.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*
  Yes, it's feasible. Because of the considerable expertise among present faculty, both full time and part time, many of the new courses can be taught by existing faculty. By funding this initiative, part-time faculty will be able to contribute their time and expertise to this important curricular direction. Another efficiency is the plan to coordinate with other sustainability programs/groups/planning on campus to integrate into a cohesive campus-wide endeavor.

- *What would be the campus location of this request/project?*
  The location of this program would be in the Science Building on LCC's Main Campus, Eugene.

- *How many students (per year) will benefit? How will students benefit?*
  We estimate that 103 of courses in Science currently contain sustainability themes, with a total enrollment of about 2350 per year. Students will benefit from the clear identification of sustainability courses, and ultimately, the opportunity to complete a sustainability program at Lane.

3. Describe the resources needed

We are requesting 100 hours of curriculum development time to be distributed among interested part-time faculty.

100 x $27.97 = $2797 Salary x .311% $870 OPE Total Request: $3667

4. List the possible funding sources

Funding source is curriculum development funds.

- *Can this project be partially funded?*
  Yes
- *If so, what portion could be funded at what minimum cost?*
  Funding any amount of hours for this project will help the Division make progress on this goal.

If the funding source is Carl Perkins:

- How does the request meet one or two of the Carl Perkins act goals? N/A

5. Provide ORG & PROG codes

ORG = 691001 & PROG = 111000

6. Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year? No, not applicable.

Unit Planning for Instruction, Student Services & CEWD
Division: Science

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: _6__

Initiative Title: Coordinated realignment of content, credits, and student/instructor workload for BioBonds A&P prerequisites, BI 112 and CH 112

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**
   Last year Science requested Curriculum Development funds to develop effective program assessment and to development activities shared by both the biology and chemistry components of the learning community. Assessment, curriculum development and anecdotal assessment suggest that the workload of students and instructors may limit the success of students and the program.

2. **Describe the initiative**
   - *How does this initiative align with the college priorities?*
   - *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*
   - *Given college resources, is it feasible? Is it an efficient use of college resources?*
   - *What would be the campus location of this request/project?*
   - *How many students (per year) will benefit? How will students benefit?*

   This learning community is a beginning prerequisite for all the allied health programs at Lane. It provides a foundation for the success of all these students. It has been a region-wide model in the current reorganization of allied health education in the Pacific Northwest. The product of this initiative will be a greatly improved preparation for these programs. This learning community currently consists of two 3-credit science courses, but with a workload equivalent of two 4-credit science courses. Our curriculum development last year left participating instructors unsure whether to reduce the topics covered or to request an increase in course credits. This initiative will allow biology and chemistry biobonds faculty to examine the range of topics specifically needed for anatomy and physiology courses and the allied health programs, to assure that those topics are well aligned between biology and chemistry, and to decide whether to request an increase in credit load.

   We are requesting 60 hours of Curriculum Development for approximately $2224 (at last year's rate.) Given the value of the outcome and the large number of students affected, this sum seems feasible and a very effective use of resources. This work would be done within the Science Division and would benefit approximately 375 students per year (5 biobonds sections Fall and Winter, 4 sections Spring, 1section Summer, with approximately 25 students per section.)

3. **Describe the resources needed**
   We request 60 hours of Curriculum Development
   60 x $27.97 = $1678 Salary x .311% $522 OPE Total Request: $2200

4. **List the possible funding sources**
   - *Can this project be partially funded?*
   - *If so, what portion could be funded at what minimum cost?*

   Given that we are requesting only 60 hours of curriculum development, anything more than about a 15% reduction in amount requested would probably not be effective.

   If the funding source is Carl Perkins:
   - How does the request meet one or two of the Carl Perkins act goals? N/A

5. **Provide ORG & PROG codes**
   ORG = 691120 & PROG = 111000

6. **Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year?**

N/A
Biobonds faculty and selected A&P faculty meet approximately once per term and during a one-day retreat in the summer. We are in constant contact via email.

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 7

Initiative Title: Enhance electronic data acquisition infrastructure to directly serve existing curriculum

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**

   This initiative is informed by continued need expressed in the 2005-06 unit plan, and new needs identified since then. The general aim of this initiative is to update and significantly enhance the courses we now offer as part of our physics curriculum. The multiple parts of this initiative express the real needs of the program, and are consistent with and are informed by the college mission, goals, and values; division goals; the college strategic plan. In particular, the Vernier software is common software used in chemistry and is increasingly being used in biology. The fact that such software was originally developed for physics is reflected in the fact that the original and no longer available hardware is what is in use in Physics Lab #3 (Room 119).

2. **Describe the initiative**

   The initiative is described in the chart below of data acquisition hardware and software.

	Course #/Room	**Hardware & Software**	**$**
1	PH 101,2,3 Room 119	Vernier LabPro Physics lab station packages to replace out of date interfaces and sensors to collect and display data. [Note: This is computer connected electronic sensors and interfaces, not lab material or systems that are studied.] Sale price is obtained for the number (6 lab stations plus instructor set-up station) of packages proposed.	$5985
2	PH 201,2,3 Room 144	Completion of Vernier LabPro Physics lab station packages. [The room has some current Vernier equipment already. [Note: This is computer connected electronic sensors, not lab material or systems that are studied.]	$4445
3	PH 101,2,3 PH 201,2,3 PH 211,2,3	Video-capture interface and software	$500
		Total	$10930

- *How does this initiative align with the college priorities?*

  Building of this infrastructure allows the courses to be taught in the most effective ways. Physics education has the potential to be transformative and to expand in enrollment, which will better serve students, the community, and enhance the financial security of the college.

- *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*

  The initiative replaces relatively obsolete and out-of-stock data acquisition hardware and software in one of our physics labs with current equipment and software by Vernier. The same kind of software and hardware in another physics lab will be completed to an

adequate level. This will allow the integration and enhancement of proven curriculum elements currently limited in the courses, particularly Interactive Lecture Demonstrations, Computer-Based Laboratories, as well as the more traditional labs. This equipment is the same kind used in chemistry and beginning in biology. The exposure to it in physics, then, reinforces understanding of its use in other disciplines, and vice versa. An element of the data acquisition hardware, which is supported by the Vernier software, involves video-capture equipment. This is now widely used in physics, and will likely find its use in biology in the future. Please note that the hardware and software is for data acquisition, and thus its use in physics will eventually expand to other disciplines. Other laboratory equipment which is observed by this data acquisition hardware and software, and which has been perceived as outside of information technology, is not included in this request.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*

  The purchase is feasible and efficient for reasons listed above. The division-wide usefulness of this request gave it the highest priority for class-room based hardware and software.

- *What would be the campus location of this request/project?*

  Physics Labs/Main campus

- *How many students (per year) will benefit? How will students benefit?*

  Approximately 300 students will immediately benefit, but this number will grow as 200-level physics is scaled up after the curriculum and infrastructure is established. Greater numbers will benefit as the Vernier hardware and software (probably the most student friendly and budget friendly product on the market) becomes more of the common currency in the Science division.

3. Describe the resources needed

Vernier LabPro Physics Lab Station Packages, Rm 119	$ 5,985
Complete Vernier LabPro Physics Lab Station Packages, Rm 144	$ 4,445
Video-capture Interface and Software	$ 500
Total	$10,930

4. List the possible funding sources

- *Can this project be partially funded?*

  Yes. But full funding is need to complete the equipment needs

- *If so, what portion could be funded at what minimum cost?*

  Best use of funding will be achieved at whatever amount. However, physics will be hurt until full establishment of this hardware and software is achieved. And lack of funding will create more competition for inadequate funds for other physics needs.

5. Provide ORG & PROG codes

ORG = 691600 and PROG = 111000

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 8

Initiative Title: Purchase of StarBoard touch-screen system

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**

The initiative is linked to two aspects of the program level outcomes discussed in last year's unit plan. In addition, it addresses concerns not identified in last year's unit plan.

We are moving forward with the integration of GIS modules into several science classes. The pedagogical interface between the GIS software and the student is the computer screen. Instruction associated with this interaction is enhanced by classroom projection of GIS generated images, and a touch-screen system allows the instructor to annotate, diagram and otherwise clarify the GIS assignment for the students.

Last year's unit plan also committed the division to continuing to improve and expand the use of technology in the classroom. Every instructor that has used the StarBoard system has enthusiastically endorsed it as a valuable pedagogical tool.

Another important reason for moving toward touch-screen technology is its ergonomic value. Several faculty members observed that when they discontinued use of white- or black-boards, chronic shoulder pain went away.

Unlike boards mounted at one end of the room, touch-screen systems can be placed in convenient locations that help the instructor maintain face-to-face contact with the students. Students in classes that currently have StarBoards report liking the system and instructors report greater student participation in these classes.

Touch-screen technology also enhances learning for students with disabilities. Learning disabilities are more readily overcome with interactive, face-to-face pedagogies. In addition, captured images can be transformed into tactile resources by the tactile graphics machine in Disability Services. These resources can be accessed by blind students.

2. **Describe the initiative**

- *How does this initiative align with the college priorities?*

Providing students with the opportunity to engage in hands-on, innovative, technologically oriented exercises will improve student learning and help students become more self-reliant while at the same time enhancing inter-personal communication. The ability to manipulate projections of computer generated images with the innovative technology of touch-screen systems greatly enhances the instructor's ability to guide students through computer oriented, hands-on exercises. In addition, student presentations to the class can include the use of this technology, enabling the students to improve the quality of their presentations while learning to use new, cutting-edge technology.

Rarely does the activity that takes place in a classroom exactly mirror the lesson plan made in advance. In the past, the only way to capture what transpires in the class was by means of video recording, a cumbersome and intrusive method. The ability to capture and store notes made during a class, integrated with background information and imagery, and to make those available to the students for review, represents an entirely new capability that significantly improves learning.

StarBoards are now installed in three science classrooms. It is clear that they have made positive transformations in those learning environments and in the lives of the students attending classes in those rooms.

Students will benefit from this technology in the following ways:

a. Improved interaction with instructors because instructors don't have to turn their backs to write on the board.
b. Improved understanding of material because the instructor can directly manipulate projected computer images and text.
c. Improved ability to review classroom activities.
d. Improved learning for students with disabilities.

- *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*
  Projecting computer imagery, making hand-written and/or typed notes on those images, diagramming, outlining and otherwise enhancing projected material, significantly improves student involvement and interest. The additional capacity to save the products of this work means that actual, in-class work can be reviewed at a later date. This is the cutting-edge of presentation technology and our experience has shown that it is of great value to the students.
  Before the innovation of touch-screen technology, projected material and real-time notes, diagrams, etc. had to be presented through different media. This does not allow for successful integration of these different sources of information. For example, adding detail to a projected image requires first making a crude copy of the image on an overhead acetate or on a whiteboard. Adding to a projected list of bullet points is not possible, and additional bullets have to be written on the board or on a separate projection, so that their proper place is unclear to students.
  The full value of this technology has become clear now that it is in use in several rooms. Both students and teachers find it of great value in enhancing learning.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*
  There is no other technology that provides the sort of capabilities that touch-screen systems offer. The pedagogical value of these systems is high and amply demonstrated. It is difficult to imagine better use for college resources than to improve the learning environment as significantly as the StarBoard system does.

- *What would be the campus location of this request/project?*
  One Star board would be installed in each of the following classrooms in the Science Building: 105, 107, and 109.

- *How many students (per year) will benefit? How will students benefit?*
  The potential is very great. The number of students using these classrooms in a year is approximately 1200.

3. Describe the resources needed

Three StarBoard systems will cost $5031.00
In addition, installation and maintenance of these systems will require an increase in technology support staff.

4. List the possible funding sources

This technology and its support is appropriately funded by the student tech fee.

- *Can this project be partially funded?*
  Although we feel strongly that all of our classrooms would benefit significantly from the addition of touch-screen technology, a smaller number would be better than none. Specifically, at least those instructors experiencing chronic shoulder pain as a result of white- or black-board use should be provided with these systems.

- *If so, what portion could be funded at what minimum cost?*
  Each unit is an improvement. There are three rooms that do not have this technology and instructors that teach in these rooms have requested them, in part to alleviate chronic shoulder pain.

  If the funding source is Carl Perkins:
  - How does the request meet one or two of the Carl Perkins act goals? N/A

5. **Provide ORG & PROG codes**
   ORG = 691120 & PROG = 111000

6. **Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year?**
   N/A

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 9

Initiative Title: Enhance the Physics Program to Better Directly Serve Current and Potential New Professional-Technical Student Populations

1. How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?

This initiative is informed by continued need expressed in the 2005-06 unit plan, and new needs identified since then. The general aim of this initiative is to update and significantly enhance the courses we now offer as part of our physics offerings for professional technical students and community professionals. The multiple parts of this initiative express the real needs of the program, and are consistent with and are informed by the college mission, goals, and values; division goals; the college strategic plan. Given the complexity of the initiative and the variety of connections with the strategic indices and the large effort required to prepare and evaluate the initiatives with little gain expected, only aspects considered exceptional will be listed. In particular, in the time of an assumed budgetary crisis, initiatives that are expected to enhance revenue, beyond the results simply of an excellent curriculum and its positive financial benefits, will be noted.

2. Describe the initiative

	Course # (tentative)	Curriculum development project	Hours needed
1	PH 091,2	Identify and integrate specific calculations and areas of understanding needing integration into Principles of Technology – a collaborative effort by Physics and programs currently served and potentially served by PH 091,2.	50
2	PH 161,2,3	Transducers (measuring instrumentation) in Healthcare (161), Manufacturing (162), and Environmental Monitoring (163). These three courses, in intense schedules, would be aimed a professionals in the community, and to serve as capstone courses for professional-technical students. How the transducers work would be the subject matter of the course. Curriculum development work would include identifying transducers used and soliciting donations from area enterprises and suppliers.	300
3	PH 165	Develop a Medical Imaging course.	100
		Total hours	450
			M&S
4	PH 161,2,3	Selection of transducers and purchasing or fabrication of interfaces with existing physics equipment. (Note: the curriculum development part of the fund request does not require funding of the M&S component.)	$5000
		Total M&S	$5000

- *How does this initiative align with the college priorities?*

  Very well. In addition it meets Carl Perkins priorities.
  In particular, it serves goals of Carl Perkins funding: (1)

- *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*

  This curriculum will result in the establishment of new courses, and an enhanced relationship between Physics and Professional-Technical programs, and between Physics and Mathematics.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*

  This funding does not impact college resources, but is an appropriate and needed use of Carl Perkins funds.

- *What would be the campus location of this request/project?*

  Main campus

- *How many students (per year) will benefit? How will students benefit?*

  200 student-terms

3. Describe the resources needed

450 hours curriculum development

450 x $27.97 = $12,587 Salary x .311 = $3914 OPE; Total Curr Dev = $16,501

Materials & Supplies

Transducers and interfaces for existing physics equipment; Total M/S = $5,000

Note that this is $83/student-terms affected for curriculum development and $25/per student term counting only the first year.

4. List the possible funding sources

- *Can this project be partially funded?*
  Yes.

- *If so, what portion could be funded at what minimum cost?*

  Elements of the request can be funded independently. In particular, note that #2 comes in three equal parts, and the M&S for transducers and curriculum development for #2 can be funded independently of the other.

  - *How does the request meet one or two of the Carl Perkins act goals? The following are several goals met by the request:*

    Goal 1: Provision of vocational and technical education, especially work-based learning, to all people and groups equally and without discrimination. By providing instruction though Lane Community College, this is accomplished.

    Goal 2: Development of vocational and technical education that continually and systematically respond to the trends and demands of the marketplace. #1 responds to the need for students to move through their programs as quickly as possible by making use of the synergy between physics and mathematics courses. #2 and #3 respond to real needs of people in our community and student body. In particular #2 can serve as a capstone-type course for people studying manufacturing, health professions, and environmental monitoring. Offering the courses to current professional-technical students as well as professionals in the community, meets the

demand in the community for more technical education and builds bonds between current professional-technical people and students. #3 would establish a course currently taken by graduating Lane students elsewhere, and establish a course that could encourage joining courses for health professionals. #4 supports the establishment of courses in #2.

Goal 3: Amplification and expansion of the "whole person" concept of education within vocational and technical education. #2 and #4, by focusing on the physics underlying transducers, provides people with significantly more understanding than the more common “how to work the machine” understanding. And each course encourages an attitude that people need and desire to understand the basis of the electronic measuring instruments in their current and future workplaces, providing more connection between the mental and manual aspects of one’s life on the job.

Goal 4: Provision of leadership and cultivation of strong partnerships in the total educational system and with business, industry and labor. In particular, #2 and #4 build strong links between professional-technical students and current professionals and major employers who will be consulted. #1 enhances links between mathematics and physics, and provides more opportunities for bringing, through the physics intermediary, a smoother interface between mathematics and professional-technical programs.

5. **Provide ORG & PROG codes**
   ORG = 691600 and PROG = 111000

6. **Do you have an active advisory committee that meets 2-3 times per year? What are your advisory committee plans for the coming year?**
   Physics does not currently have an advisory committee, because it is largely a service course for professional technical programs and a provider of transfer credit courses. We are, never the less, planning upon establishing an advisory committee.

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 10

Initiative Title: **Physics Curriculum Development A: Provide students with an updated, significant enhancement of current curriculum.**

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**
   This initiative is informed by continued need expressed in the 2005-06 unit plan, and new needs identified since then. The general aim of this initiative is to update and significantly enhance the courses we now offer as part of our physics curriculum. The multiple parts of this initiative express the real needs of the program, and are consistent with and are informed by the college mission, goals, and values; division goals; the college strategic plan. Given the complexity of the initiative and the variety of connections with the strategic indices and the large effort required to prepare and evaluate the initiatives with little gain expected, only aspects considered exceptional will be listed. In particular, in the time of an assumed budgetary crisis, initiatives that are expected to enhance revenue, beyond the results simply of an excellent curriculum and its positive financial benefits, will be noted.

2. **Describe the initiative**
   The elements of the initiative are numbered and given in the table below.

	Courses affected	**Curriculum Development Project**	**Hours needed**
1	PH 101,2,3	Create special versions of this series for teachers in the evenings, with activities built around labs, classroom demonstrations, and current benchmarks for science literacy teachers deal with.	300
2	ASTR 107	Update the ASTR 107 telecourse to accommodate the latest version from the publisher	60
3	ASTR 107, ASTR 121,2,3	Develop extensive web-based resources for use in the all astronomy classes.	80
4	PH 091,2 PH 101,2,3 ASTR 107 ASTR 121,2,3	Identify and integrate specific calculations, concepts, and problems for enhancing Math prerequisites to better serve physics students – a collaborative effort by Physics and Mathematics	40
5	PH 201,2,3 PH 211,2,3	Fully integrate elements of successful physics education reforms, including ILDs, RealTime Physics, Workshop Physics, Interactive Physics, Peer Instruction, Just in Time Physics, Ranking Tasks, Context Rich Calculations, Next Generation Online Homework System, Tutorials, etc .	200
6	GS 110,210	Create the curriculum infrastructure (initial models, links to databases, more trained instructors) for the Science Modeling Labs to expand and become an integral part of a student's study of sustainability	140
7	ENGR 221	Create, modify, collect, and integrate activities involving Pspice, lab experiments, and design projects	80
		Total hours	900

- *How does this initiative align with the college priorities?*
  See previous unit planning documents.

- *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*

  New curriculum elements which are scalable to increased sections, and which integrate proven curriculum enhancements, demonstrated by nation-wide assessments.

- *Given college resources, is it feasible? Is it an efficient use of college resources?*

  All will provide enhanced revenue over the long-run since enrollments are correlated to the quality and ability to provide a good learning experience. Beyond this, #1 and #6 respond to an untapped demand. #5 allows us to expand our offerings to meet an untapped documented demand of several hundred science majors who don't take physics at LCC. It is likely that when they leave they also take other classes at the UO or OSU which they would have taken at LCC if they were taking a year of physics here instead. Not having this curriculum development financed directly means it will take place over a longer time, and it will be longer until we can scale up our offerings. #7 involves needed improvements to make the course fully operational, much as #2, which was independently proposed by the adjunct instructor and given top priority by our Science Advisory Committee. #4 creates the conditions to make significant improvements in the coordination of mathematics courses and the physics courses that they are prerequisites for. This will increase the effectiveness of the programs and enhance our reputation mainly because students will have a better experience here, but the effect is mainly long-term. Same is true for the web-based resources for Astronomy. Our physics long-term plan involves Astronomy courses changing significantly, but the permanent faculty leadership is currently focused on higher priorities.

- *What would be the campus location of this request/project?*

  Main campus

- *How many students (per year) will benefit? How will students benefit?*

  For the overall project, approximately 1230 student-terms

3. Describe the resources needed

900 hours curriculum development
900 x 27.97 = $25,173 Salary x .311 $7,829 OPE; Total Request = $33,002

Note that this is $27/student-terms affected in the first year (but the effect will be longer).

4. List the possible funding sources

- *Can this project be partially funded?*
  Sure, we will make good use of whatever is provided.

- *If so, what portion could be funded at what minimum cost?*
  Any amount

5. Provide ORG & PROG codes

ORG = 691600 and PROG = 111000

INITIATIVE NARRATIVE
FOR 2007-08 Implementation (pending funding approval)

Division Priority: 11

Initiative Title: **Physics Curriculum Development B: Provide students with new kinds of courses to meet needs beyond the current curriculum**

1. **How is the initiative linked to your 2005-2006 unit plans or Plans for Budget Development? What program level outcomes do you expect to achieve?**

   This initiative is informed by continued need expressed in the 2005-06 unit plan, and new needs identified since then. The general aim of this initiative is to expand the offerings in physics curriculum and expand provide increased support for the connections students make between physics and other courses. The multiple parts of this initiative express the real needs of the program, and are consistent with and are informed by the college mission, goals, and values; division goals; the college strategic plan. Given the complexity of the initiative and the variety of connections with the strategic indices and the large effort required to prepare and evaluate the initiatives with little gain expected, only aspects considered exceptional will be listed. In particular, in the time of an assumed budgetary crisis, initiatives that are expected to enhance revenue, beyond the results simply of an excellent curriculum and its positive financial benefits, will be noted.

2. **Describe the initiative**

   The elements of the initiative are numbered and given in the table below.

	Course # (tentative)	Curriculum development project	Hours needed
1	PH 111	Applied Physics Calculations (developed with key Math faculty members and Math chair), a two-credit course to be taken along with PH 091,2; GS 104; PH101,2 that will provide science credit and if completed with an A or B will provide the student with an alternate pathway into Math 95.	100
2	PH 141	Meteorology, a course to be developed in concert with Robert Thompson, who explored such a course during his sabbatical – a collaborative Physics-Mathematics effort.	100
3	GS 151	Origins, a multidisciplinary science course organized around the theme of descriptions and explanations of origins, offering a sampling of science topics, led by a selection of science faculty members.	100
4	GS 152	Motion, a multidisciplinary science course organized around the theme of descriptions and explanations of motion, offering a sampling of science topics, led by a selection of science faculty members.	100
5	GS 153	Endings, a multidisciplinary science course organized around the theme of descriptions and explanations of endings, offering a sampling of science topics, led by a selection of science faculty members.	100
6	PH 100	Reading Physics, a non-credit reading group of popular lay physics literature. Would require a physics course prerequisite or permission of instructor.	20
7	PH 104	Establish a stand-alone course dealing with space and time:	100

	Course # (tentative)	Curriculum development project	Hours needed
		Classical and Pre-classical space and time, an in depth conceptual introduction to special and general relativity and related topics (black holes, worm holes), and speculations and experiments involving new dimensions, the fine structure of space-time (like quantum foam, different topologies), etc.	
8	GS 241	Establish a one-term interdisciplinary course for science majors at the sophomore level, Thermodynamics of Physics, Chemistry and Biology. This would be a unified introduction to thermodynamics that is largely missing from our curriculum, and because it takes advantage of the physics-chemistry-biology order of development, students could end up during the biology section being introduced to evolutionary pathways and other fundamental topics they would not otherwise see as undergraduates.	180
9	PH *** ENG 123 learning community	Establish a learning community between fall term physics courses and technical writing. This would be a physics-English collaboration; discussions have already begun.	50
10	PH *** Dance learning community	Establish a learning community between fall term physics and improvisation dance course. This would be a physics-dance collaboration: discussions have already begun.	50
11	PH 281,2,3	Create and establish three terms of one-credit (lab) Physics Excell supplementary instruction classes for 200-level physics students. PH 281,2,3 would correspond to PH 201,2,3 and PH 211,2,3.	300
12	ENGR 222	Develop the second term of Electrical Fundamentals, a standard course which students take elsewhere, and as a result spend less time at Lane than they would otherwise do.	100
		Total	1300

- *How does this initiative align with the college priorities?*
  See previous unit planning documents.

- *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*
  New courses, for which demand is expected; new connections between physics and other science fields and between Physics and English, and between Physics and Dance

- *Given college resources, is it feasible? Is it an efficient use of college resources?*
  Generally, these courses meet student needs, and will not lose money. They take advantage of synergy between courses, and create partnership among disciplines that is stimulating and invigorating for students and faculty members.

- *What would be the campus location of this request/project?*
  Main campus

- *How many students (per year) will benefit? How will students benefit?*
  For the overall project, approximately 420 student-terms

3. Describe the resources needed

1300 hours of curriculum development

1300 x 27.97 = $36,361 salary x .311 = $11,308 OPE Total Request = $47,669

Note that this is $113/student-terms affected in the first year (but the effect will be longer)

4. List the possible funding sources

- *Can this project be partially funded?*
  Sure, we will make good use of whatever is provided.

- *If so, what portion could be funded at what minimum cost?*
  Any amount

5. Provide ORG & PROG codes

ORG = 691600 and PROG = 111000