Science Division, Unit Planning 2004-05
Chapter Zero
How is the Science Division aligned with the College's Goals?

To meet the challenge of articulating how the Science Division is aligned with the college's goals, division members met in discipline groups and as a whole. We listed activities representative of each core value and strategic direction, then, after further analysis and discussion, created the following.

Core Value 1: Learning

The Science Division has established learning outcomes that apply generally throughout the Division and specifically for each course, and demonstrates strong support for learning. Staff have created, maintained and expanded our learning environment by providing a variety of student opportunities, a wide breadth of curriculum choices and rigorous standards for which the division is recognized in the community and by other academic institutions. We also have a staff with diverse expertise and a new and remodeled facility with modern design and, in some instances, state of the art equipment. The following provides more details about the learning environment offered by the Science Division.

Student Opportunities

- Science Resource Center (SRC)
- Peer Tutors
- Stipends and scholarships

Curriculum Breadth

- Multiple sections of classes each term in a diversity of subjects
- nonmajors biology emphasis courses, general science courses, and the new Chemistry for Everyday Life course offer a very wide range of sciences for the nonmajor.
- Diversified instructional delivery
- Technologies that provide multiple media for different types of learners, interactive lab activities that give student experience in DOING science
- Collaborative projects that give students group work skills

Curriculum Standards

- Developed a strong foundation of appropriate required pre-requisites
- Rigorous use of math in many courses
- Generic outcomes for all science courses developed by the Division
- Activities that encourage and develop critical thinking abilities

Staff

- High level of professional interactions among Science staff
- Faculty mentoring system is in place
- Science Division Informational Guidelines Booklet
- Biology staff are developing generic course lab packets to be easily adopted by new faculty
- Staff attend professional conferences on a yearly basis and often give presentations.
- Involvement in committees, groups, and taskforces on campus is high and include the Strategic Learning Initiative leadership team and sub teams, Faculty Council, Faculty Professional Development, Degree Requirements Review Committee, and others
- Flexibility of course assignments and times allows for faculty to maximize their professional interests and endeavors
- Science Office maintains an open door policy for everyone

Facilities

- Recent addition to the Science Building and remodeled older classrooms have expanded and updated all our facilities, e.g., wet lab for aquatic organism study, computer labs
- Classrooms and the SRC provide students with computers and Internet connections

- New microscopes, and physics and chemistry data collection devices have elevated the abilities for students to explore
- The SRC has provided much-in-demand space for group and individual study and is a testing center for telecourse students
- LCC Herbarium is in partnership with the Oregon Flora Project and the Herbarium at Oregon State University
- There are two lab preparation areas, two computer labs, and a greenhouse

Core Values 2- Diversity
The Science Division is aligned with this core value in three major categories.

The Division attracts and makes welcome diverse faculty and students by:
- Hiring practices that include diversity components, value cultural competence, and advertising sources that specifically target people of color
- Involving faculty in the reading together event
- Welcoming students and staff of color

The Division helps students understand issues of privilege, power and differences by:
- Integrating themes of privilege, power and differences into course work
- Discussing issues of diversity, and power in science
- Offering BI 103G Global Ecology, a course that meets Ethnic/Gender/Cultural Diversity requirement for the AAOT
- Seeking examples and experiences from students from various backgrounds
- Providing multicultural examples in class

The Division maintains an accessible, inclusive, and respectful environment for students by:
- Using inclusive language and multicultural examples in class activities
- Providing non-English texts in Science Resource Center
- Actively participating in the Young Women in Science mentoring program
- Encouraging participation from all students
- Many instructors provide a statement on syllabi describing how we maintain a respectful environment
- Applying Student Conduct Code to class activities
- Working closely with Disability Services office
- Offering classes that meet at various times

Core Value 3 Innovation
The Science Division engages in many innovative activities. The following categories list existing and potential projects that enhance the effectiveness of our academic community:

Students
- On-line courses and Web-based curriculum materials
- Learning communities – BioBonds; Petal, Pen, Peck, and Paw; Ecotrails
- Service Learning projects for students – Environmental Science
- Varying class formats in time, place, and instructional mode
- Stakeholder-based decision making process
- Student-designed lab projects
- Ongoing exploration of evolving needs of students for new classes/programs, and development of new courses/programs in response, e.g., BioBonds, additional sections, online and telecourses, Green Chemistry curriculum
- Acquiring and implementing the use of new lab equipment
- Student clubs: Chemistry, Physics, Ecology
- Student poster projects
- Offering technical program Continuing Education Units (potential)
- Student-centered learning activities

- Making connections outside the campus for students, e.g., co-operative and internship education programs
- Creative field trips
- Wet Lab and aquaria for research-, problem-, and case-based learning projects
- Virtual models on the web for Anatomy and Physiology

College Wide

- Web site development provides a window into the college and the division
- Eldon Schafer nature trail and student-designed brochure describing the trail and plants
- Strategic Learning Initiative projects
- Participating in the Reading Together project
- Sustainable landscape project
- Learning communities
- External program resources
- Grant writing - NSF, FIPSE, Perkins

Shared Governance

- Stakeholder decision making process
- Faculty council
- Science Advisory Committee exemplifies representative governance

Faculty and Staff

- Encourage professional development for all staff
- Strong advocacy through college-wide committee participation
- Support for curriculum development
- Collaboration with counseling staff on articulation agreements
- Development of faculty technology room
- Grant writing
- Development of Green Chemistry curriculum

Core Value 4 Collaboration and Partnership

The Science Division establishes and maintains relationships that expand our effectiveness and learning opportunities for students and the community. The Division is guided by a charter and administrative procedures manual that specify the collaborative nature of governance in the division. The following list highlights our current collaborative projects that most enhance our academic community:

Outside partnerships

- Northwest Biology faculty organization
- Oregon Science Education Council
- College Now Program
- Northwest Energy Education Institute (NEEI) regional training model
- Partnerships with community Allied Health facilities
- Collaboration with high schools on preparatory college classes
- Obtain equipment from community sources
- Mt. Pisgah arboretum
- Field trips to community industrial sites
- Collaborate with Northwest Christian College in curriculum development
- Mentor Florence campus A & P and chemistry program
- Articulation with Oregon University System science departments
- Women in Science Program (middle-school mentoring)
- Service learning opportunities
- Co-operative Education experiences
- Resource and Facility Sharing
- The Energy Management discipline is partnered with and is supported by the Eugene Water and Electric Board and the Bonneville Power Administration

- Native Plant Society / Mycological Society Meetings and events

Across Campus Learning
- Established Learning Community courses; new communities are also under development.
- Collaboration with American Indian Language Program

Clubs
- Green Chemistry Club (affiliated with the American Chemical Society)
- Ecology Club
- Physics Club

Meetings and Committees
- Faculty council
- Science Advisory council
- Technology Advisory team
- Discipline meetings
- Science Advisory Committee

Core values 5 *Integrity
Faculty in the Science Division are active and effective advocates for several areas of interest. This advocacy frequently results in the creation of classroom activities and student projects, new campus initiatives, and review and modification of Science Division practice.

Resources
- Information Technology is an integral and critically examined part of curricula
- Energy use reminders
- Building and equipment safety, security
- Sustainability Committee
- Energy conservation team
- Chemical hygiene officer
- Discuss resources and conservation in biology, geology, chemistry, and environmental science classes

Public Trust
- Advocate for wetlands and energy efficiency demonstration building
- Represents college and division in public meetings, boards, etc.
- Argue for greater transparency in college processes and budgets
- Native landscape project
- Include concepts of sustainability in curricula
- Recycling in faculty /staff offices, public spaces, and classrooms
- Green chemistry
- Advocate for preservation of the Marston forest and nature trails
- Improving the image of chemistry as a major and the availability of organic chemistry over the next several years

Student/staff/faculty integrity
- Friendly, knowledgeable office staff helping students add classes
- Inclusive division meetings
- Syllabus explaining policies is distributed to students on the first day of classes
- Classroom policies (i.e., grading standards that hold students to the Student Code of Conduct)
- Accessible/ approachable instructors
- Encourage questions and equal participation from all students in class
- Include examples of women, nonwestern contribution
- Good meeting plan followed during division and SAC meetings
- Charter holds the division and its members to a high performance standard

Core value 6 * Accessibility

The Science Division has identified and implemented four areas involved in achieving accessibility: increasing the number of places and times for offering courses; accommodating a wide range of abilities; broadening student experiences within and beyond the classroom; and removing some financial burdens. Listed below each area heading are specific examples.

Increasing the number of places and times for offering courses

- Night and weekend classes
- Telecourses
- Online classes
- Web CT online course delivery system
- Community learning centers
- Outreach centers
- "Hybrid" distance education (courses with on-line and on-campus components)
- Use of Science Resource Center for limited content delivery and/or make-up work
- Additional sections added after classes have filled

Accommodating a wide range of abilities

- Floor layout accessible to persons of differing physical abilities
- Multi-cultural class discussions
- Collaboration with Rites of Passage
- Diversity focus
- Independent study
- Non-discriminatory classroom environments
- Alternative assignments for students who cannot participate in activities/field trips, etc.
- Work closely with disability services office to meet needs of students.

Broadening student experiences within and beyond the classroom

- Learning communities
- Modular courses
- Independent research opportunities
- Science Resource Center tutoring
- Student access to network resources
- Continuous mentoring for new full time faculty and support staff
- Collaboration with Rites of Passage
- Cooperative Work Experience (CWE)

Remove some financial burdens

- Work study
- Learn and earn
- Connecting students with internships
- Texts for borrowing/use in SRC and library
- Science scholarships
- Order books from UK
- Offering tuition-based classes can help to decrease time-to-completion of degree by increasing opportunities to take high-demand courses.

Strategic Direction 1: Transforming Students' Lives

a. Fostering the personal, professional, and intellectual growth of learners by providing exemplary and innovative teaching and learning experiences and student support services

The Science Division support Strategic Direction 1 by:

- Improving and increasing student opportunities and retention through student clubs (e.g., Ecology, Green Chemistry, and Physics Clubs),

- Engaging in program assessment projects that better student preparation through pre-requisite courses
    - The learning community Biobonds is an innovative course that prepares the student to succeed in the Anatomy and Physiology sequence. The course has generated positive regional attention as a prerequisite to the A&P sequence
- Offering multiple sections of courses throughout the year, strengthening ties and articulation agreements with UO and OSU for majors
- Encouraging and supporting peer tutoring and study groups, and by participating in learning communities among divisions.
- Increasing the use of technology in the classroom and by increasing student-learning opportunities through on-line and other distance education classes.
- The division actively builds stronger relationships among and between divisions by being enthusiastic and cheerful, maintaining open door policies, by modeling collaborative decision-making, and through social functions.
- Staffing and maintaining a science resource room that provides:
    - Tutors
    - Extensive laboratory models
    - Class materials
        - Lecture outlines
        - Power point lectures on server
        - Answer keys
    - References
    - Computers

b. Commit to a culture of assessment of programs, services and learning
    - Regular Discipline meetings addressing program curricula and outcomes
    - Peer evaluation of classroom instruction
    - Student evaluation of classroom instruction
    - Formative classroom assessment

c. Position Lane as a vital community partner by empowering a learning workforce in a changing economy
    - Energy management partners with private and public organizations to stay informed of workforce trends, issues and technologies. Energy management trains students to meet local and regional workforce demand.
    - Energy management is overseen by an industry advisory committee in order to keep curriculum innovative and relevant to future trends.

Strategic Direction 2: Transforming the Learning Environment

a. Create a diverse and inclusive learning college: develop 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.

The Science Division contributes to Strategic Direction 2 by setting aside department meetings times to focus on issues of diversity and inclusion. The science division has aided in sponsoring a campus wide workshop on transgender issues. The Science Division held a meeting addressing incorporating diversity in the classroom which delved into issues such as race, ethnicity, ethnic, culture, social justice, gender, class and stereotype. The Science Division has had training from disability services and works closely with TRIO. The Science Department Chair consistently sends email notification to division members of diversity trainings and workshops opportunities

b. Create, enhance, and maintain inviting and welcoming facilities that are safe, accessible, functional, well-equipped, aesthetically appealing and environmentally sound

The Science Division Student Resource room consistently receives positive feedback from the students we serve in regards to the:

Open and aesthetically appealing atmosphere

Features two large open study rooms

A large quiet study room

Two private testing rooms

Welcoming and safe environment

Peer tutors are available to offer help for a wide range of subjects

Accessible times

The resource room is open evenings and weekends through the term

Well-equipped facilities

The resource room offers:

High quality microscopes
An excellent assortment of anatomical models
Student computers with Internet access
A library of reference textbooks
A complete set of equipment for viewing DVD, videos and laser discs
A wide variety of study aids

Strategic Direction 3: Transforming the College Organization

a. Achieve and sustain fiscal stability

- The Science Division contributes to Strategic Direction 1 through
- Increased efficiencies e.g.
  - Energy conservation
  - Increasing number of course offerings that afford financial gain and that reduce enrollment bottlenecks for students
  - Upgrading computers with inexpensive parts to extend useful life
- Seeking outside funding, and by seeking to streamline our budgeting processes.
- Provide a meeting place for public seminars, partner with community organizations such as the Native Plant Society, Cascade Mycological Society, and the Mount Pisgah Arboretum.
- BWEL could be a site to support home school efforts (especially computers). It could develop certification programs and offer CEU credits through professional associations, and could explore contract training opportunities in summer academies. Growth of BWEL could follow the example set by the Northwest Energy Efficiency Institute.

b. Build organizational capacity and systems to support student success and effective operations

c. Promote professional growth and provide increased development opportunities for staff both within and outside the College

The Science Division contributes through its efforts to:

- Empower staff to redesign their work
- Bring non-contracted faculty more fully into the division community
- Hire more contracted faculty and support staff.

Learning Centered Principles *

a. Lane provides opportunities for transforming through learning

b. Lane engages learners as active partners in the learning process

c. Lane creates a learning environment that motivates and inspires students to recognize their responsibility for their own learning

d. Lane offers multiple options for learning based on proven and innovative theories and methods that address the needs of diverse learners

e. Lane commits to a culture of assessment of programs, services and learning, honoring the values of intellectual freedom, community responsibility and student need

f. Lane fosters knowledge and appreciation of diversity among staff and students and encourages pluralism and intercultural competence. Lane engages learners from diverse cultural and social contexts.

g. Lane is committed to both individual and organizational learning

h. Lane students and staff are a community of learners, all of whom contribute to learning.

i. Lane promotes open communication among staff, students and the community within and across organizational and physical boundaries

***Examples of the above Learning Centered Principles can be found throughout Chapters 2-5 of the unit plan**

Science Division, Unit Planning 2004-05
Chapter One
Who are we?

1. UNIT MISSION / VISION

   The mission of the Science Division is to assist individuals to achieve their science education needs and goals.

2. CATALOG DESCRIPTION

   All faculty review and revise the catalog description of their courses annually.

3. HISTORY/SIGNIFICANT EVENTS

   Evolution and Growth of the Science Unit, contributed by Mike Mitchell

In the beginning, LCC science classes were taught in make-shift buildings located in various parts of Eugene and Springfield. High school facilities were used for chemistry laboratories. The completion of the main campus certainly played a major role in the growth of the then Math-Science Department.

The Science Department/Division has gone from being combined with the Math Department under one chair and roof, to separate units in different places on campus, to being housed together again under different managers. A new Science-Math Building plus a renovated, expanded original science structure was made possible by a bond measure in the 90's. The additional classrooms and laboratory facilities allowed for an expansion of classes during hours most desired by students. A growth spurt in the early 1990's was in part due to a conscious effort to increase the variety and number of physical science offerings. Growth, an increasing diversity in course offerings, and financial realities put pressure on the department to increase the number of adjunct faculty. In turn part-time instructors have allowed for flexibility in responding to the demands of students' needs. One example is the Science Division's response to Health Occupation's need for specialized chemistry, biology and anatomy-physiology classes where adjunct faculty has carried a significant part of the load. Finally, the ability to offer classes on a self-support basis has also encouraged a robust enrollment and demonstrated a continued high demand for science courses.

An important innovation took place on a very personal level during the retrenchment scare of the 1980's. Members of the science faculty voluntarily changed their teaching contracts from the traditional fall, winter, spring terms, to combinations of fall, winter, spring and summer. By spreading out the teaching assignments, it allowed all faculty to remain fully employed. This kind of sacrifice certainly built morale, mutual respect and cooperation. Thus laying a solid foundation for departmental problem solving and growth-type issues in the years following.

Evidence of this cooperation has continued by all staff contributing to a Science Charter that guides intradivision processes and a Science Administrative Procedures Manual (SAP) that spells out how and what procedures are to be followed. In addition, a Science Advisory Committee (SAC) consisting of representative members of the science disciplines and support staff meet weekly to advise and help direct the Division

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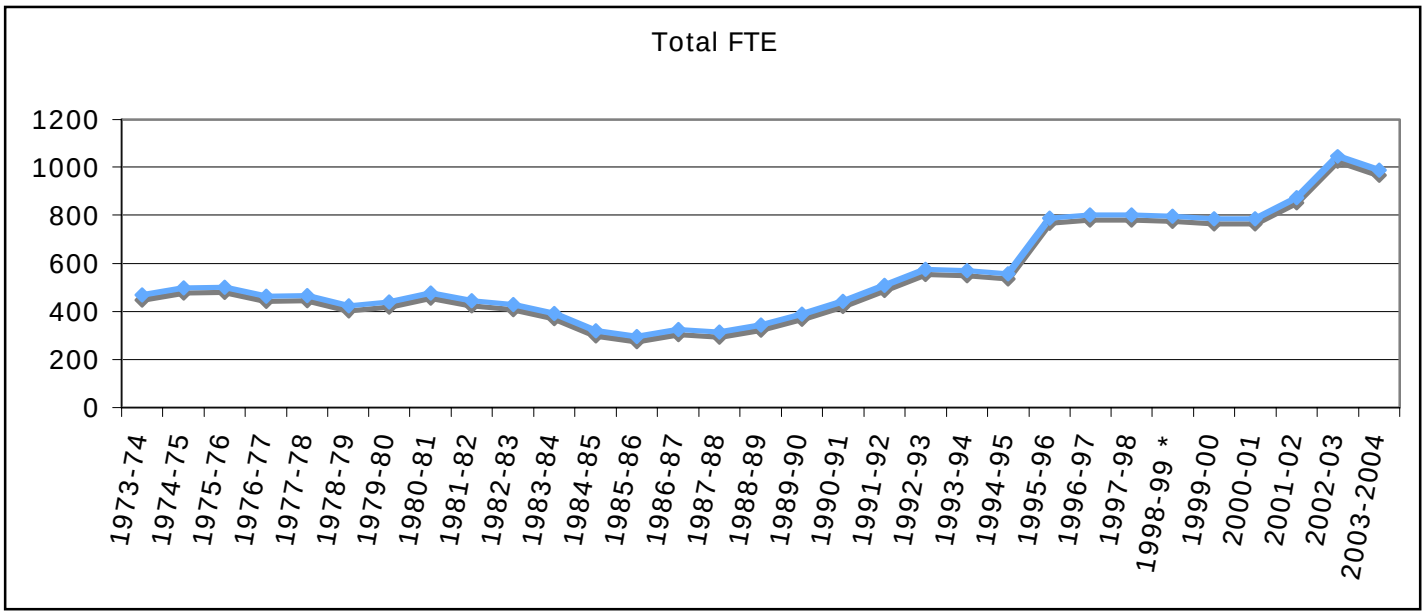
Science FTE Report (Dept. 9)

Year	Summer FTE	Fall FTE	Winter FTE	Spring FTE	Total FTE
1973-74	61.3	132.2	139.7	135.2	468.3
1974-75	67.4	141.4	148.1	141.4	498.3
1975-76	56.7	151.2	146.3	147.1	501.2
1976-77	53.0	138.8	138.6	132.0	462.5
1977-78	61.3	141.1	134.0	129.8	466.1
1978-79	56.3	124.7	122.9	118.6	422.4
1979-80	72.4	122.6	123.3	120.2	438.4
1980-81	65.1	142.8	133.6	133.6	475.1
1981-82	49.1	128.4	131.4	135.2	444.1
1982-83	37.4	138.6	121.4	132.2	429.5
1983-84	38.1	124.2	116.7	112.6	391.5
1984-85	39.0	98.9	85.3	97.1	320.2
1985-86	31.3	83.3	92.3	88.2	295.1
1986-87	30.9	100.9	102.9	90.7	325.3
1987-88	32.3	98.0	96.3	88.3	314.9
1988-89	30.3	108.9	107.8	95.2	342.2
1989-90	34.9	129.6	120.5	104.3	389.3
1990-91	29.6	134.8	143.1	134.6	442.1
1991-92	34.4	157.6	154.1	163.4	509.5
1992-93	67.6	172.6	171.4	162.9	574.5
1993-94	56.0	182.3	168.3	162.5	569.1
1994-95	53.0	171.8	162.0	170.6	557.4
1995-96	62.6	256.9	239.6	228.6	787.7
1996-97	74.0	244.4	242.6	239.1	800.1
1997-98	72.2	254.3	246.3	228.6	801.4
1998-99 *	77.5	262.3	236.2	219.4	795.4
1999-00	74.6	250.6	234.3	224.6	784.2
2000-01	66.5	256.0	240.2	223.0	785.7
2001-02	82.5	272.6	266.1	252.4	873.7
2002-03	109.1	311.6	313.2	310.7	1,044.6
2003-2004	116.02	287.74	296.26	286.34	986.36
2004-2005	94.39	*263.95			

Note: Oregon community colleges adopted a new FTE formula in 1995-96. The formula uses 510 clock hours as the basis for calculating FTE.

* An adjustment was made to the method used to calculate FTE for most credit classes for Winter and Spring terms 1999.

* 4th week
data



Source: Student Enrollment Characteristics Reports (1987-88); Reimbursement Reports IRZ2204 (1988-89 to present).

4. DEGREES AND CERTIFICATES

Students take science courses numbered 100-199 to satisfy science requirements for direct transfer and AAOT, AAS, AS, and AGS degrees, and for general interest. Courses numbered 200 and above are generally taken by science majors. Science courses are filled by over 6000 students per year. The Division also serves as a co-op education job site.

TRANSFER COURSES

Anatomy and Physiology

These courses are pre-requisite to, and are supportive of Family and Health Careers degree programs and certificates. Students take A&P courses to meet degree requirements for Emergency Medical Technician, Practical Nursing, Associate Degree Nursing, Dental Hygiene, and Respiratory Care.

Biology

This discipline has developed a number of "emphasis" courses for nonmajors. These are designed around core concepts in biology so that a student may learn about, for example, molecular and cellular biology in a marine, botanical, or zoological context. Opportunities for biology majors include a 200-level course sequence that includes both zoology or botany.

Chemistry

All courses numbered 100-199 in this discipline are taken by students to meet requirements of either LCC or other health occupation degree-granting institutions. Chemistry plays a central role for science majors, as it is required by all programs of study. Science majors take general and organic chemistry.

Engineering

Through agreement with the University of Oregon, the Engineering program for this geographical area was established at LCC. The program at LCC is a joint effort of the Math and Science divisions and includes courses with the physics and engineering labels taught by math and physics faculty.

Earth and Environmental Sciences

Courses in this discipline include majors and nonmajors geology, and a very popular three-term sequence in environmental science for nonmajors.

Physics
Physics has six subdivisions: calculus-based General Physics for physics, engineering, and mathematically advanced science majors; algebra-based General Physics for other science majors; conceptual introduction to physics; astronomy; engineering; and technical introduction to physics for professional-technical programs.

CERTIFICATE/ DEGREE PROGRAMS
Energy Management
Purpose: To prepare students for careers in the Energy Management field, and optionally, as Renewable Energy Systems Installers.

Learning Outcomes
The graduate will:

- evaluate the energy use patterns for residential and commercial buildings and recommend energy efficiency and alternative energy solutions for high-energy consuming buildings.
- understand the interaction between energy consuming building systems and make recommendations based on that understanding.
- construct energy evaluation technical reports and make presentations for potential project implementation.

The graduate of the Renewable Energy Technician Option also will:

- appropriately size and recommend renewable energy system types for particular situations.
- understand and put into practice the installation protocol for Photovoltaic and Solar Domestic Hot Water Systems.

5. ORGANIZATIONAL STRUCTURE
This division reports to the interim Associate Vice President for Instruction, Patrick Lanning.

Within the division, faculty in each discipline and support staff are represented by one of their members on the Science Advisory Committee (SAC), a body that meets weekly through the fall, winter, and spring terms. Terms of service are one academic year and rotate among all members of the Division. The SAC is the primary policy and decision-making body in the Division. Other than administrative and supervisory decisions specifically reserved for the Division Chair, Division meetings are the highest decision-making body of the Division.
The Division presently has 17 contracted faculty, 24 part time faculty (with a range of 24-35), 6 full time support staff, and 5 part time support staff.

6. STAFF/FACULTY

ANATOMY & PHYSIOLOGY

Last Name	First Name	Degree	University	FTE
Morrison-Graham	Katie	PhD	University of California at Los Angeles, Neuro-Science	1.017
Nelson	Julie	B.S.	Iowa State University, Chemistry	.111
Nichols	Brian	MS	University of Oregon, Exercise and Movement	1.037
Nurre	Stuart	MS	University of Oregon, Exercise Physiology	.444
O'Donnell	Laura	M.P.T.	Hahnemann University	.333
Ross	Rich	D.C.	Western States Chiropractic College	1.0
Swank	Stan	PhD	University of Oregon, Biology. Education	1.0
Teiser	Mark	Ph.D.	University of Oregon	.777
Wilkins	Bradley	Ph.D.	University of Oregon	.111

Young-Cheney	Joan	D.C.	Los Angeles College of Chiropractic	.555

BIOLOGY

Last Name	First Name	Degree	University	FTE
Baker	Gail	M.S.	San Diego State University, Biology	1.0
Boleyn	Pat	M.S.	Humboldt State University	.722
Boyer	Lynda	M.S.	Portland State University, Biology	.253
Brown	Jennifer	Ph.D.	University of California, Santa Cruz	.444
Bungum	Peter	M.S.	University of Oregon, Biology	.444
Flatt	Patty	Ph.D.	Vanderbilt University, Biochemistry	.077
French	Pat	M.S.	San Francisco State University	.333
Freyre	Marie	M.D.		.333
Hall	Jerry	Ph.D.	Michigan State University, Zoology	1.0
Kiser	Stacey	M.S.	University of Oregon, Biology	1.0
Knelly	Leah	B.S.	Oregon State University, Education	.333
Lacy	Kit	M.S.	University of Oregon, Biology	.500
Melville	John	Ph.D	Oregon State University, Zoology	.111
Moses	Woody	M.S.	Oregon State University	.333
Newell	Carrie	M.S.	Northern Arizona University, Biology	1.0
Oswald	Bob	Ph.D.	University College of North Wales, Ecology & Physiology	.666
Peeters	Marcia	B.S.	University of Oregon, Leisure Studies & Services	.222
Pooth	Bert	Ph.D	University of Miami, Behavioral Ecology	1.0
Russin	Joe	M.S.	Utah State University, Biology	1.0
Vandegrift	Elly	M.S.	Oregon State University, Biology	.50
Zeppa	Scott	B.S.	College of Charleston, Biochemistry	.111

CHEMISTRY

Last Name	First Name	Degree	University	FTE
Behm	Harriet	Ph.D.	University of Michigan	.375
Coville	Mary	Ph.D	Oregon State University, Physical Chemistry	.481
Guadia	Shelley	M.S.	DePauw University, Biology and Chemistry	1.0
Klausmeier	Will	Ph.D	University of Michigan, Medicinal Chemistry	.308
Mitchell	Cliff	M.S.	University of Oregon, Geological Science	.496
Mort	Gary	B.S.	Southern Oregon State,	1.0

			Chemistry	
Nelson	Julie	B.S.	Iowa State University, Chemistry	.154
Rice	Harry	M.S.	University of California, Biochemistry	.750
Taylor	Brooke	M.S.	University of Oregon, Chemistry	1.0
Thompson	John	M.S.	University of Colorado, Chemistry	1.0
Schmidt	Mary	M.S.	University of Oregon	.250
Smith	Londa	M.S.	University of Oregon, Chemistry	1.0
Zeppa	Scott	B.S.	College of Charleston, Biochemistry	.250

EARTH & ENVIRONMENTAL SCIENCE

Last Name	First Name	Degree	University	FTE
Baxter	Mary	Ph.D.	University of Oregon	.389
Blackwell	David	A.B.D.	University of Oregon	.444
Fern	Jackie	M.S.	Portland State University, Environmental Science	.722
Miles	Greg	Ph.D.	University of Oregon, Geology	.888
Mitchell	Cliff	M.S.	University of Oregon, Geological Science	.111
Mitchell	Mike	M.A.T.	Washington State University	.333
Owen	Claudia	Ph.D.	University of Washington, Geology	.833
Rice	Andrea	M.S.	University of California, Geology	.722
Ulerick	Sarah	Ph.D.	University of Texas, Science Education	1.0

ENERGY MANAGEMENT

Last Name	First Name	Degree	University	FTE
Ball	James	B.S.	University of Oregon, Elementary Education	.25
Carmichael	Les	M.S.	University of Waterloo, Mechanical Engrg	.375
Ebbage	Roger	M.S.	San Jose State University, Industrial Arts	1.0
Hart	P. Reid	B.A.	University of California, Theater / OR Reg of Prof Engineers	.375
Hatten	Michael	B.S.	Oregon State University, General Engineering	.75
Hansen	Greg	B.A / MFS	U of California, Theater Design / Parsons School of Design, Architecture Ltg Design	.55
Hewitt	Pam	B.S.	Stanford University, Mechanical Engineering	.50
Kelley	Bruce	B.S.	Oregon State University, Mechanical Engineering	.666
Manclark	Bruce	B.S.	Western Washington University, Environmental Planning	.25
McClellan	Vincent		University of Hawaii, Music	.666
Scott	Tom	B.S.	University of Florida, Civil Engineer	.20
Welch	William	B.S. / B.A.	Texas A & M University, Mechanical Engineer / Elmira	.20

ENGINEERING

Last Name	First Name	Degree	University	FTE
Miner	Cathy	M.S.	University Of Oregon, Mathematics	.222
Thompson	Robert	M.S.	Univ. of California Los Angeles, Engineering	.222
White	Bob	Ph.D.	University of Virginia, Electrical Engineering	.111

PHYSICS

Last Name	First Name	Degree	University	FTE
Gilbert	Dennis	Ph.D.	University of Oregon, Physics	1.0
Gubrud	Allan	Ph.D.	Cornell University, Physics	.222
Mitchell	Cliff	M.S.	University of Oregon, Geological Science	.111
Mitchell	Mike	M.A.T.	Washington State University	.222
Philips	Roger	M.S.	University of California at Berkeley, Electrical Engineering	.458
Rajabzadeh	Ahmad	M.S.	Oregon State University, Physics	.583
Sokolowski	Jamie	M.S.	Washington State University	1.0
White	Bob	Ph.D.	University of Virginia, Electrical Engineering	.250

SUPPORT STAFF

Last Name	First Name	Job Description	FTE
Cataldo	Inga	Instructional Support Specialist	Hourly
Dumbleton	Barbara	Science Lab Coordinator	1.0
Glass	Star	Instructional Specialist	1.0
Green	Autumn	Administrative Support Specialist	1.0
Lawson	Takoa	Information Technology Tech.	Hourly
Manford	Randy	Science Lab Coordinator	1.0
Meston	Colin	Instructional Specialist	Hourly
Newton	Joseph	Information Technology Tech	Hourly
Rowlett	Connie	Administrative Coordinator	1.0
Schiappa	David	Network Administrative Specialist	1.0
Young	Ginny	Project Specialist 2	Hourly

DIVISION CHAIR

Hammon, Kyle, MS 1987 Biology. University of Oregon; BS 1986 Biology. University of Oregon; PhD (ABD) Arizona State University

7. STUDENT PROFILE

Ethnicity 2003-04 11/9/2004

Without International Students

DeptDesc	*Major_Desc*	A	B	C	H	I	&	Total
Science Total		24	6	570	28	21	95	744

Ethnicity Codes

A	Asian/Pacific Islander
B	African-American
C	Caucasian
H	Hispanic
I	American Indian/Native Alaskan
&	Unknown

Graduates 11/9/2004

Dept	DeptDesc	2000	2001	2002	2003	2004
	Science Total	3	5	8	16	32

These data are extremely suspect. Given that we have many sections of majors courses, this looks to be underreporting the number of students successfully completing our programs. A likely source of error is that students choosing direct transfer will not show as graduates.

Gender 2003-04 11/9/2004

Includes International Students

DeptDesc	F	M	Unknown	Total
Science Total	422	328	3	753

AAOT/AS/AGS Headcount by Major 11/9/2004

DeptDesc	*Major_Desc*	Major	DegC	2003-04
Science	Agriculture	1120	AAOT	4
Science	Animal Sciences	1130	AAOT	3
Science	Animal Sciences	1130	AS	2
Science	Biology	1170	AAOT	48
Science	Biology	1170	AGS	1
Science	Biology	1170	AS	5
Science	Chemistry	1190	AAOT	10
Science	Chiropractic Medicine (Pre)	1200	AAOT	2
Science	Environmental Science	1330	AAOT	10
Science	Environmental Science	1330	AS	1
Science	Forestry, Wildlife, Nat Resrce	1360	AAOT	20
Science	Forestry, Wildlife, Nat Resrce	1360	AGS	1
Science	Geography	1380	AAOT	5
Science	Geology	1390	AAOT	4
Science	Horticulture	1415	AAOT	3
Science	Medical Technology (Pre)	1490	AAOT	13
Science	Medical Technology (Pre)	1490	AGS	1
Science	Medicine (Pre)	1500	AAOT	28
Science	Medicine (Pre)	1500	AGS	5
Science	Pharmacy (Pre)	1530	AAOT	14

Science	Pharmacy (Pre)	1530	AGS	2
Science	Physics	1560	AAOT	5
Science	Physics	1560	AGS	1
Science	Science (General)	1710	AAOT	10
Science	Science (General)	1710	AGS	3
Science	Science (General)	1710	AS	3
Science	Veterinary Medicine (Pre)	1750	AAOT	12
Science	Veterinary Medicine (Pre)	1750	AGS	1

8. FACILTIES AND EQUIPMENT

We occupy building 16 along with the Math Division. This is one of the areas newly built and remodeled during the bond project of 1995-2008. Among the strengths are: most new classrooms are large enough to easily accommodate the standard 24 students per section, and if instructors allow, up to 30 students. Rooms are equipped with video projection systems operated by either PC or Mac machines at the instructor station. Classrooms and labs are equipped with Mac or PC computers for students use; most rooms have 8-12 machines. We are investigating the creation of wireless networks within the building; cost and technical support remain a major impediment to implementation. Classrooms which were remodeled in the bond project still have some shortcomings, some of which are being addressed this year. Classrooms 140 and 142 will be soundproofed and new lighting systems emplaced during spring and summer break.

Classrooms and staff availability/support remain the single largest impediment to program growth. For example, we estimate that 2-3 more sequences of Bi and CH 112, and BI 231, 232, 233, and 234 could be filled each year, but we do not have the classroom capacity to offer new sections. We are considering offering some of these courses on Saturdays, but it's not likely students could take advantage of this time.

Utilization ratios remain at >95% capacity for most sections. We offer Saturday and evening sections to meet the needs of many working students; these sections fill to ≥ 75% capacity.

Equipment inventory (partial)

ITEM	**MODEL**
Air Track Unit	Pasco
Air Track Unit	Pasco
Air Track Unit	Pasco
Air Track Unit	Pasco
Air Track Unit	Pasco
Air Track Unit	Pasco
Balance, Triple Beam	OHaus
Balance, Triple Beam	OHaus
Balance, Triple Beam	OHaus
Balance, Triple Beam	OHaus
Balance, Triple Beam	OHaus
Balance, Triple Beam	OHaus
Circuit Boards	Custom Fabrication
Circuit Boards	Custom Fabrication
Circuit Boards	Custom Fabrication
Circuit Boards	Custom Fabrication
Circuit Boards	Custom Fabrication
Circuit Boards	Custom Fabrication
Cube, Thermal Radiation	Pasco TD-8554
Cube, Thermal Radiation	Pasco TD-8554
Cube, Thermal Radiation	Pasco TD-8554
Cube, Thermal Radiation	Pasco TD-8554
Cube, Thermal Radiation	Pasco TD-8554
Cube, Thermal Radiation	Pasco TD-8554
Electric Motor Kit	Technical Training Systems
Electric Motor Kit	Technical Training Systems

Electric Motor Kit	Technical Training Systems
Electric Motor Kit	Technical Training Systems
Electric Motor Kit	Technical Training Systems
Electric Motor Kit	Technical Training Systems
Electronic Board and Electronic	Technical Training Systems
Electronic Board and Electronic	Technical Training Systems
Electronic Board and Electronic	Technical Training Systems
Electronic Board and Electronic	Technical Training Systems
Electronic Board and Electronic	Technical Training Systems
Electronic Board and Electronic	Technical Training Systems
Expander, Laser Beam 10X	Edmund Sci N61.336
Generator, Audio Frequency	ECI 40600
Generator, Audio Frequency	ECI 40600
Generator, Audio Frequency	ECI 40600
Generator, Audio Frequency	ECI 40600
Generator, Audio Frequency	ECI 40600
Generator, Audio Frequency	ECI 40600
Laser, Helium-Neon	Metrologic
Laser, Helium-Neon	Metrologic
Laser, Helium-Neon	Metrologic
Laser, Helium-Neon	Metrologic
Laser, Helium-Neon	Metrologic
Laser, Helium-Neon	Metrologic
Laser, Helium-Neon	Lasalign M500f2
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
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Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mass Sets	
Mechanical Equivalent of Heat Ki	Pasco TD-8551
Mechanical Equivalent of Heat Ki	Pasco TD-8551
Mechanical Equivalent of Heat Ki	Pasco TD-8551
Mechanical Equivalent of Heat Ki	Pasco TD-8551
Mechanical Equivalent of Heat Ki	Pasco TD-8551
Mechanical Equivalent of Heat Ki	Pasco TD-8551
Multimeter, Digital	ECI 50200
Multimeter, Digital	ECI 50200
Multimeter, Digital	ECI 50200
Multimeter, Digital	ECI 50200
Multimeter, Digital	ECI 50200
Multimeter, Digital	ECI 50200
Optic Work Station	Metrologic
Optic Work Station	Metrologic
Optic Work Station	Metrologic

Optic Work Station	Metrologic
Optic Work Station	Metrologic
Optic Work Station	Metrologic
Optic Work Station	Pasco 05-8020
Optic Work Station	Pasco 05-8020
Optic Work Station	Pasco 05-8020
Optic Work Station	Pasco 05-8020
Optic Work Station	Pasco 05-8020
Optic Work Station	Pasco 05-8020
Oscilloscope	Hitachi V-212
Oscilloscope	Hitachi V-212
Oscilloscope	Hitachi V-212
Oscilloscope	Hitachi V-212
Oscilloscope	Hitachi V-212
Oscilloscope	Hitachi V-212
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Oscilloscope	Tektronix TM504
Photometer	Pasco 8020.01
Plotter, Pen	HP 9125A
Power Supply Unit	Wear 20600B
Power Supply Unit	Wear 20600B
Power Supply Unit	ECI 20600 B
Recorder/Plotter	Welch Srlg
Rotational Dynamics Kit	Pasco ME-9279A
Rotational Dynamics Kit	Pasco ME-9279A
Rotational Dynamics Kit	Pasco ME-9279A
Rotational Dynamics Kit	Pasco ME-9279A
Rotational Dynamics Kit	Pasco ME-9279A
Rotational Dynamics Kit	Pasco ME-9279A
Smart Pulley/Photogates	Pasco
Smart Pulley/Photogates	Pasco
Smart Pulley/Photogates	Pasco
Smart Pulley/Photogates	Pasco
Smart Pulley/Photogates	Pasco
Smart Pulley/Photogates	Pasco
Stroboscope	Ametek 964
Stroboscope	Ametek 964
Stroboscope	Ametek 964
Stroboscope	Ametek 964
Stroboscope	Ametek 964
Stroboscope	Ametek 964
Tachometer	Ametek 964
Tachometer	Ametek 964
Tachometer	Ametek 964
Tester, Fluid	Scott 9009
Thermal Radiation Sensor	Pasco TD-8338
Thermal Radiation Sensor	Pasco TD-8338
Thermal Radiation Sensor	Pasco TD-8338
Thermal Radiation Sensor	Pasco TD-8338
Thermal Radiation Sensor	Pasco TD-8338
Thermal Radiation Sensor	Pasco TD-8338

Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
Thermometer, Digital	Electrotherm Tm99A
ULI Force Probes	Vernier
ULI Force Probes	Vernier
ULI Force Probes	Vernier
ULI Motion Sensors	Vernier
ULI Motion Sensors	Vernier
ULI Motion Sensors	Vernier
ULI Motion Sensors	Vernier
ULI Motion Sensors	Vernier
ULI Motion Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Pressure Sensors	Vernier
ULI Temperature Sensors	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier

Universal Lab Computer Interface	Vernier
Universal Lab Computer Interface	Vernier
Vacuum Pump	Dayton 5K577

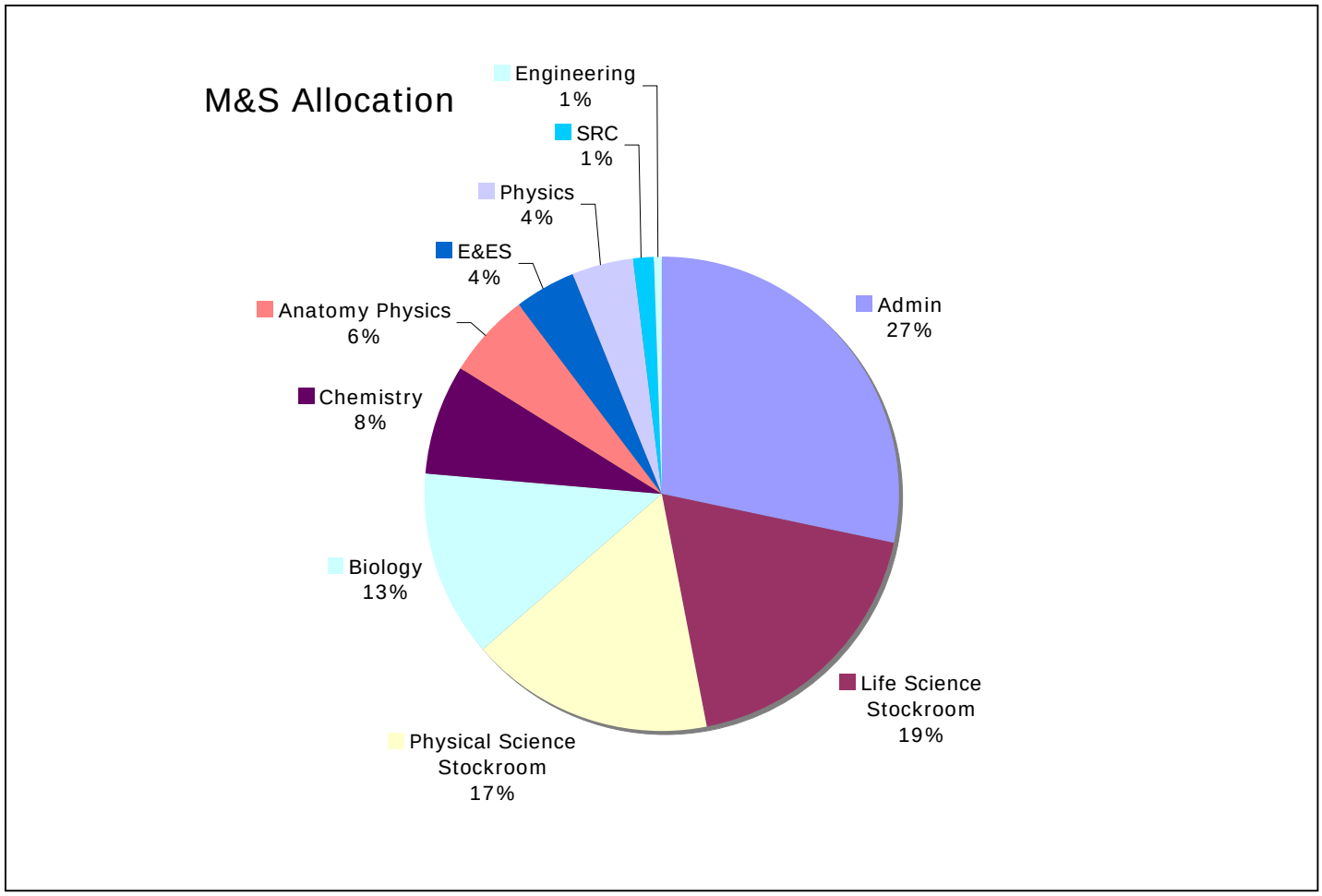
Equipment Strengths and Challenges

The bond provided big-ticket items such as several classroom sets of microscopes. One problem however, is that we have little ability to save for eventual replacement of such items, given that the college plans to "take back" 50% of M&S carryover. Another problem is that the distinction between M&S and ICP funding categories has become increasingly blurred over the past three years as per course lab fees paid by students now have been rolled into their tuition dollars, and paid to our division as M&S. The amount was set based on enrollment figures of the 2000-2001 academic year. Unfortunately, our division has added over 100 new sections since then, effectively reducing our potential income by over $19,000. The structure of tuition-supported courses mitigates this to a slight degree; we receive $100 M&S if a section has sufficient enrollment. However, given that the division receives these funds late in June, it's nearly impossible to plan for appropriate use of the funds before the close of the fiscal year, and the 50% take back occurs.

Student classroom computers are replaced approximately every 4-5 years from TACT funds, while staff machines are replaced on approximately the same schedule from M&S or other funds. The biggest technology challenge is maintaining and supporting this equipment. We have two half-time employees, but the backlog of work is such that several weeks are often required to complete larger projects, and day-to-day incidental problems may take several days to address, even if the problem is relatively minor.

9. BUDGET PROFILE

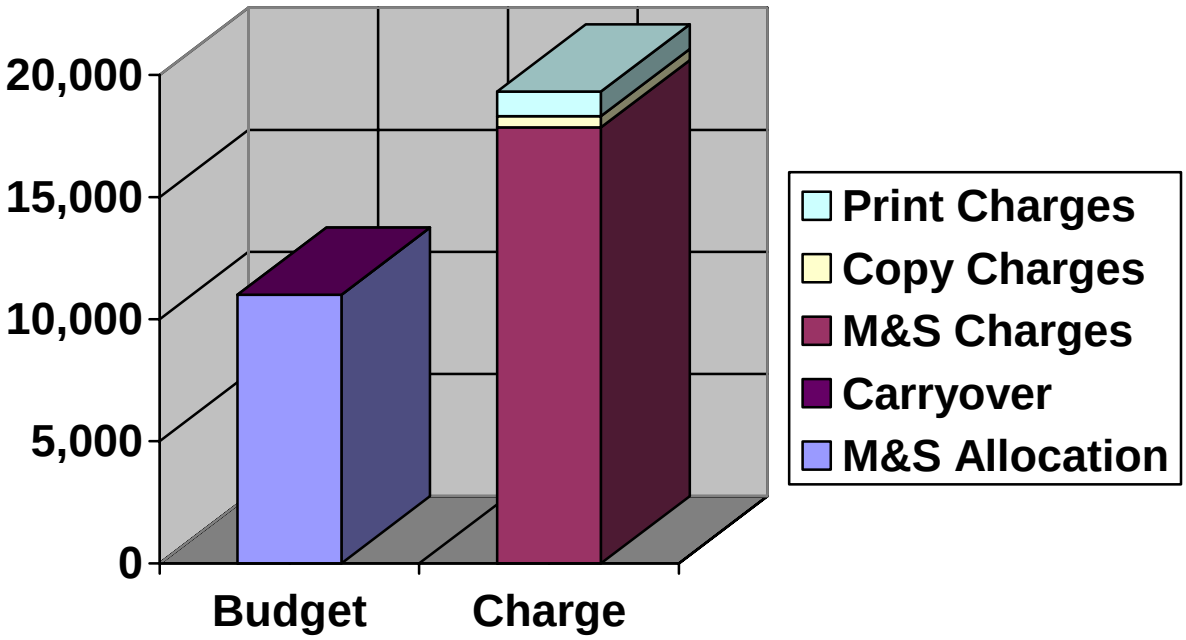
Discipline / Unit	M&S Allocation
Admin	$11,000.00
Life Science Stockroom	$7,176.00
Physical Science Stockroom	$6,448.00
Biology	$4,992.00
Chemistry	$2,912.00
Anatomy Physics	$2,184.00
E&ES	$1,664.00
Physics	$1,612.00
SRC	$500.00
Engineering	$260.00



Charges to both ICP (fund 111200) and M&S (general fund 111100), but only M&S budget is shown in the following graphics. For this reason, expenses are greater than revenues.

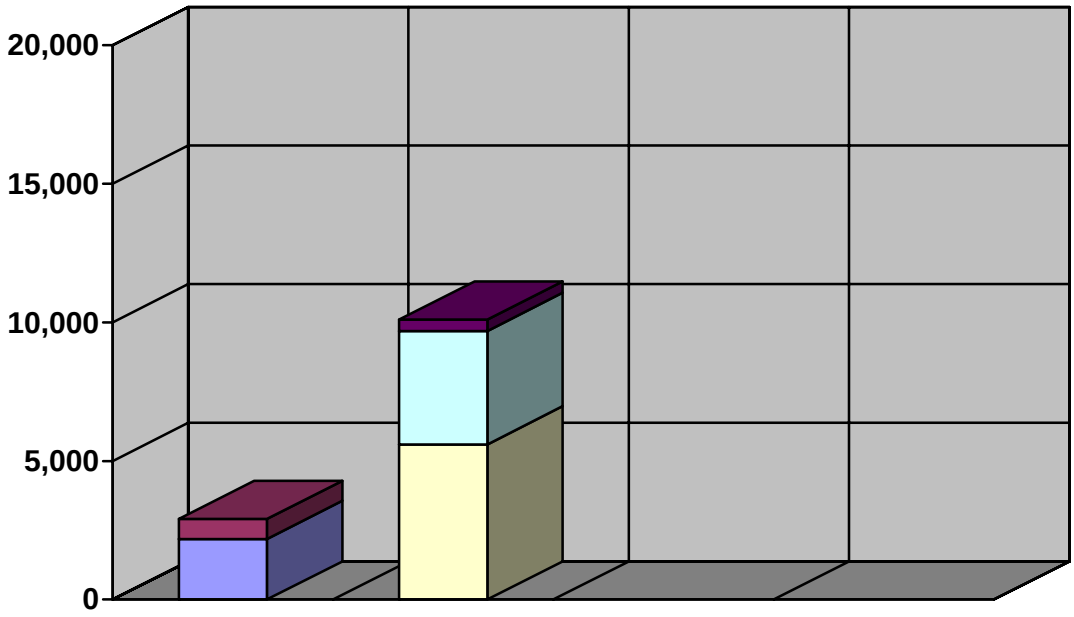
2003-2004 ADMINISTRATIVE
General Fund Budget

Description	Budget	Charges
M&S Allocation	11,000	
Carryover	0	
M&S Charges		(17,854)
Copy Charges		(465)
Print Charges		(1,007)



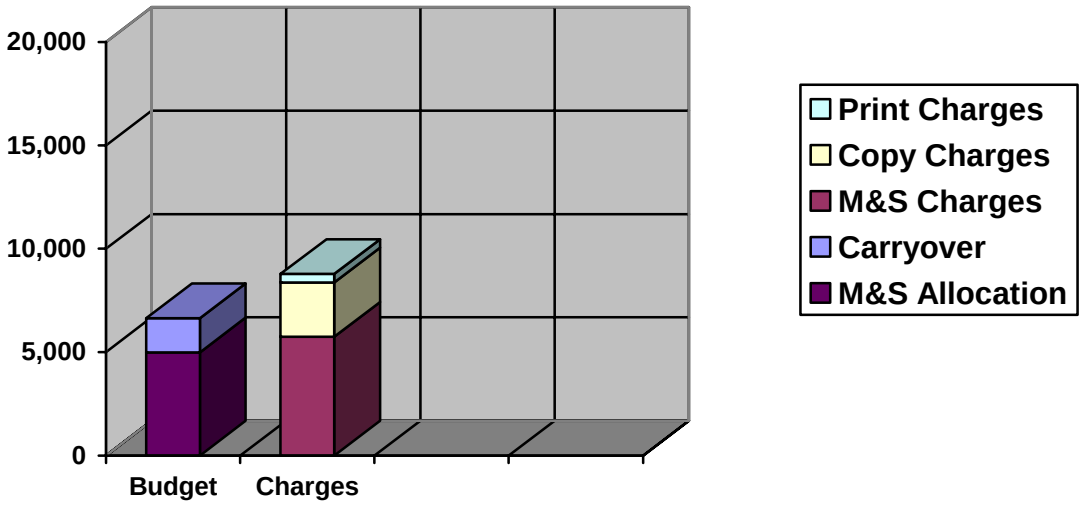
2003-2004 ANATOMY & PHYSIOLOGY
General Fund Budget

Description	Budget	Charges
M&S Allocation	2,184	
Carryover	720	
M&S Charges		(5,600)
Copy Charges		(4,086)
Print Charges		(410)



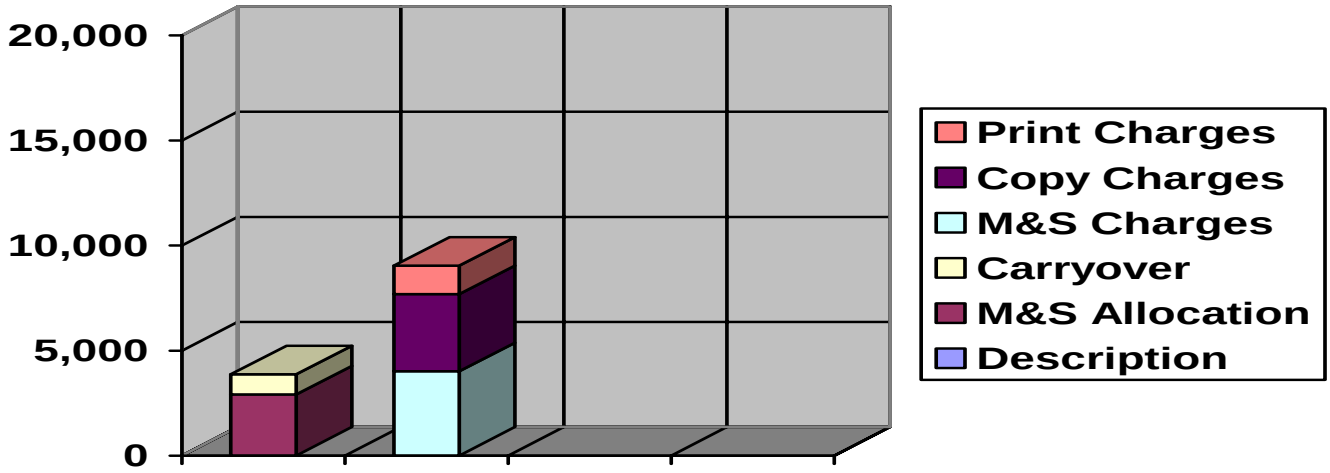
2003-2004 BIOLOGY
General Fund Budget

Description	Budget	Charges
M&S Allocation	4,992	
Carryover	1,646	
M&S Charges		(5,743)
Copy Charges		(2,628)
Print Charges		(410)



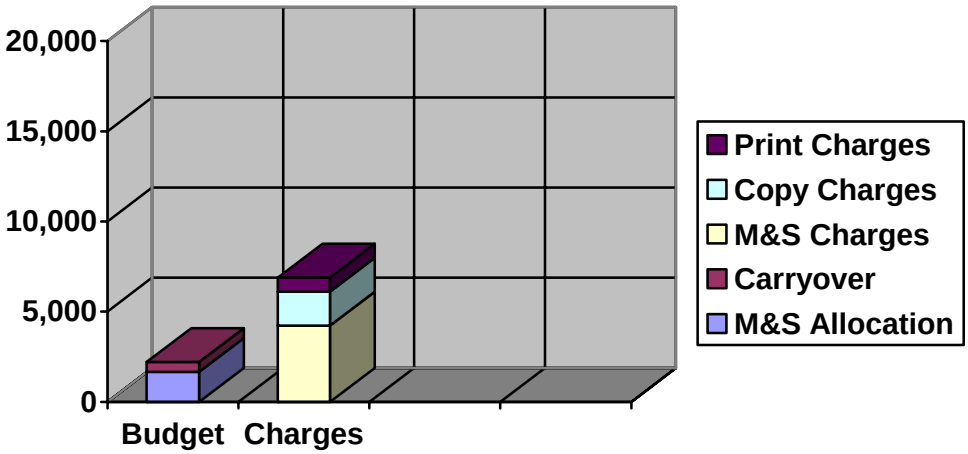
2003-2004 CHEMISTRY
General Fund Budget

Description	Budget	Charges
M&S Allocation	2,912	
Carryover	960	
M&S Charges		(4,019)
Copy Charges		(3,671)
Print Charges		(1,353)



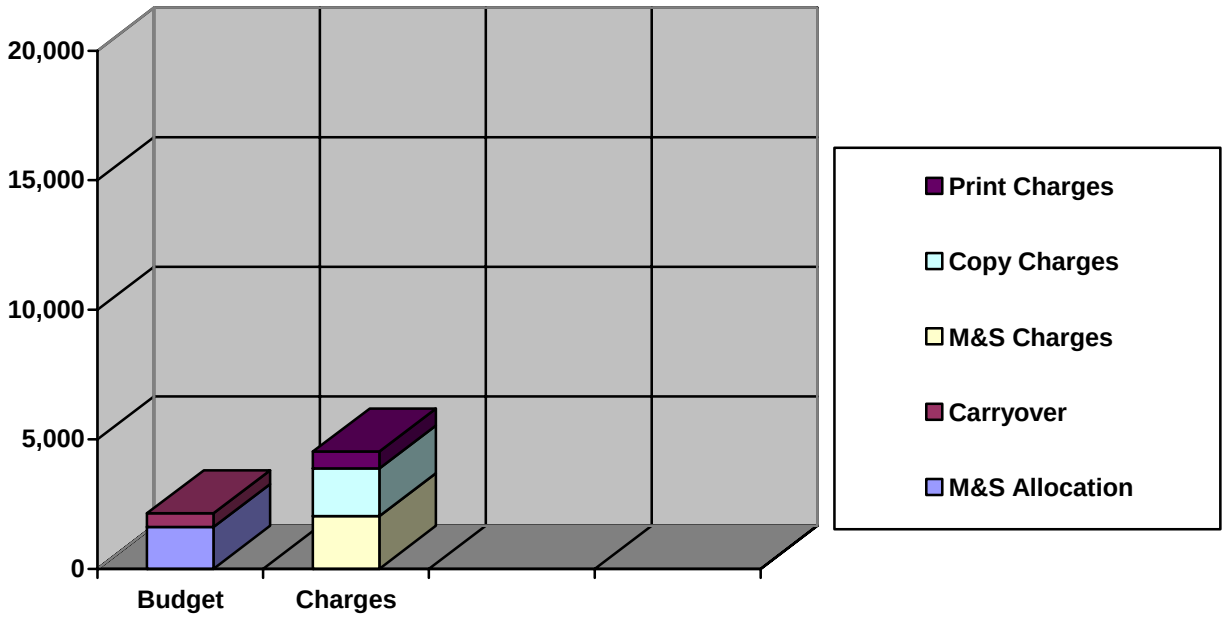
2003-2004 EARTH & ENVIRONMENTAL SCIENCE
General Fund Budget

Description	Budget	Charges
M&S Allocation	1,664	
Carryover	549	
M&S Charges		(4,233)
Copy Charges		(1,868)
Print Charges		(788)



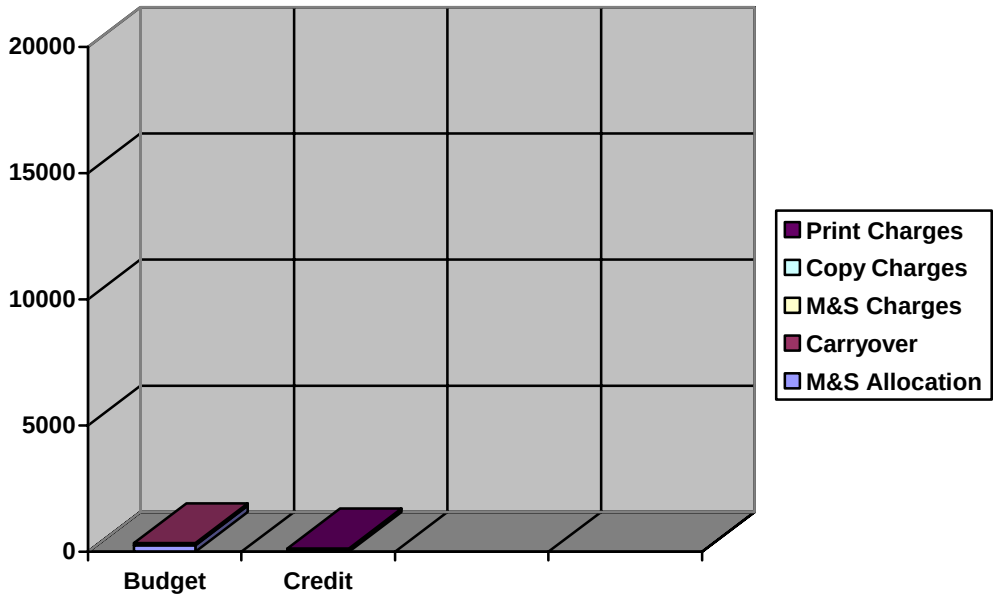
2003-2004 PHYSICS
General Fund Budget

Description	Budget	Charges
M&S Allocation	1,612	
Carryover	532	
M&S Charges		(2,032)
Copy Charges		(1,841)
Print Charges		(652)



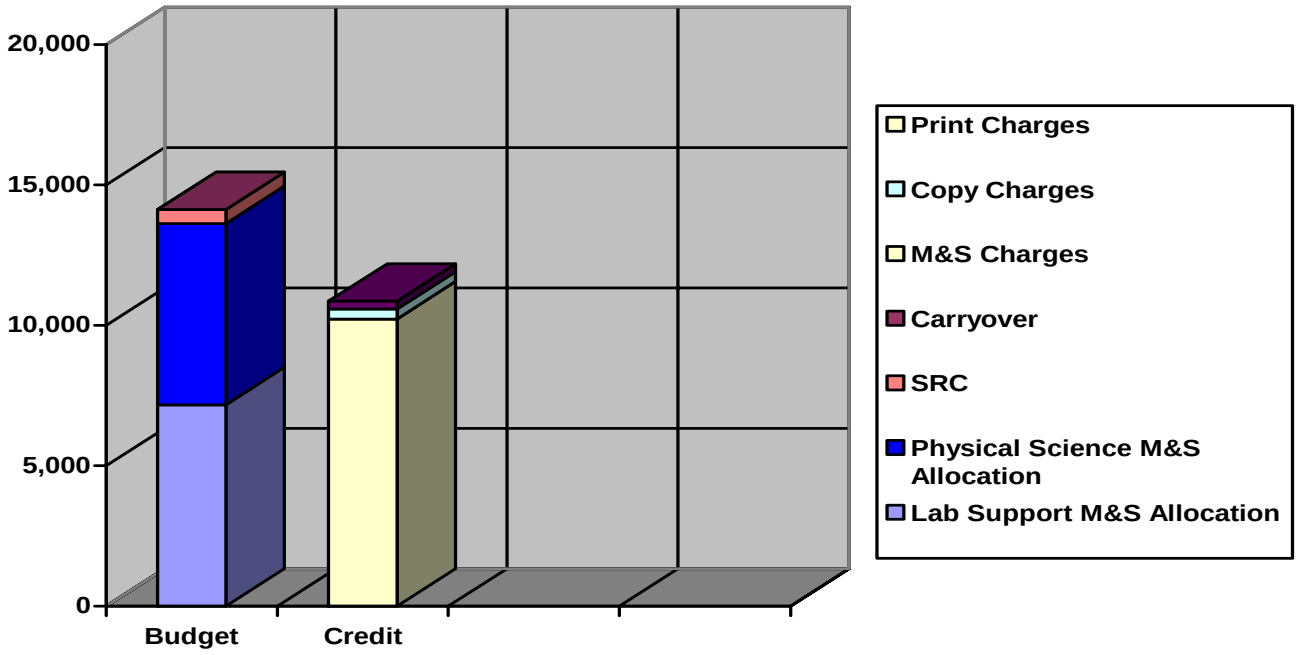
2003-2004 ENGINEERING
General Fund Budget

Description	Budget	Charges
M&S Allocation	260	
Carryover	86	
M&S Charges		0
Copy Charges		(113)
Print Charges		(25)



2003-2004 LAB SUPPORT
General Fund Budget

Description	Budget	Charges
Lab Support M&S Allocation	7,176	
Physical Science M&S Allocation	6,448	
SRC	500	
Carryover	0	
M&S Charges		(10,228)
Copy Charges		(353)
Print Charges		(282)



To reiterate: the preceding picture of the division's budget is somewhat misleading, as it records data from an anomalous year. We were directed to maintain historical spending patterns within the M&S budget at a time ICP revenues were being transferred to the M&S spending category.

1) Enrollment Data

Please provide the following enrollment data for 2003-2004:

- **Unit Level: Student FTE [1]**

Unit	FTE 2003-2004
*Life Science	505.5
Chemistry	208.1
Physics	75.1
Earth & Env Sci	69.2
**Gen Sci	89.7
NRG	38.9
total	986.4

* Life Science includes Biology and Anatomy and Physiology units

** General Science course prefix includes courses in life science, chemistry, geology, and physics units

Discussion: The total number of sections is up by 28, while FTE is down by 58.2, or approximately 400 fewer students per year. We are serving fewer students, probably due to increased tuition, and consequently increased financial attractiveness of the UO and other OUS schools relative to LCC.

- **Course Level: Student FTE [1]**

Course level FTE records are maintained in several places, both electronically and on paper in the Science office. The file is several hundred lines long. To report it here would serve no purpose.

2) Student Success Data

For Professional Technical programs only, please provide the following student success data for 2003-2004:

- For the Energy Management Program, the most relevant data is for placement - how many students landed a job?

2001-2003 29 entered the program
19 students completed the majority of the course work
18 students are employed either in the energy industry or a related field.
2 of the 18 left the program early for full-time employment and have completed or will complete the graduation requirements.

2002-2004 25 entered the program
15 students completed the majority of the course work.
12 students are employed either in the energy industry or a related field.

We are including the following completion data for general purposes.

2003-2004 Fall, Winter, Spring only 6/24/04

Co-op included in host	Completion Rate				Success Rate			
DeptName	F	W	Sp	Annual	F	W	Sp	Annual
Science	86.05%	85.44%	86.12%	85.86%	83.35%	83.25%	83.13%	83.25%

DeptName	EndWk2	EndTerm	EndPass	C_Rate	S_Rate
Science	6452	5540	5371	85.86%	83.25%

3) <u>Budget</u>

Please provide the following budget information:

- **General Fund:** [3]
  - General Fund Allocation:

  Personnel: $2,160,660
  Operational Supplies: $154,842

  TACT $90,347
  Perkins.....

  - **Actual Costs of Unit Operation**

  Personnel $2,121,552
  Operational Supplies $123,604
  - **Revenues (Course Fees, etc.). $30,239**
  - **Cost per Student FTE $2246/FTE**
    calculated as (actual costs - revenues)/FTE, but does not include NEEI grants, nor its course and program fees

[1]Enrollment Report provided by IRAP.
[2]Student/Faculty Ratios should be constructed from Enrollment Report and FT:PT Faculty Ratio Report.
[3]Budget information provided by Budget Office.

ANATOMY & PHYSIOLOGY DISCIPLINE
Chapter 3: Program Outcomes Analysis 2003-2004

Faculty Representatives: Katie Morrison-Graham, Brian Nichols, and Stan Swank

1) How effectively did your fulfill your unit's mission?

"The mission of the Science Division is to assist individuals to achieve their science education needs and goals." This includes Transfer courses and Certificate/Degree Programs.

The Anatomy and Physiology Discipline Unit (APDU) offers approximately 50 courses each year (Bi 231-234) accounting for approximately 166.24 FTE. Students enrolled in our courses often enter the Family and Health Careers Programs here at Lane, transfer to other FHC programs at other colleges, or use these credits as transferable units to other institutions for application to a bachelor's degree. Therefore, these courses provide both a professional/ technical function as well as a transfer function. The APDU strives to provide accessible courses to these students each year and assist them toward achieving their career goals in these fields. Our focus is on student learning, retention, and access to material and instructional aids in our courses. We have been very successful in obtaining educational grants, funding for instructional space, and increasing their access to resources in our Science Resource Room (SRC).

The APDU actively assesses our learning environment via entry (formative) and exit (summative) student surveys, communications with the FHC program coordinators, and anecdotal data obtained from students completing our coursework. From this data, we actively adapt our curriculum each year and apply for funding to support our needs and increase student access to our courses and materials.

From these data, several themes appear each year from our assessments:

A. Curricular
- Credit Assessment
  - The time necessary for our curriculum does not appear to be enough, and we would like to explore the change from a 4-credit sequence to a 5-credit sequence
- Mentoring
  - We have a very large adjunct faculty contingent, and do not feel we are doing an adequate job of mentoring this component of our faculty
- Module Learning
  - Transfer students to our program often are missing vital curricular components, and we need to develop independent learning modules for these students
- Hybrid Courses
  - With the advances in web-based courses, we would like to explore creating hybrid course with the APDU to increase student access and learning opportunities
- Access
  - A common theme appears to be access to resources and tutors outside of normal class time. We need to obtain funding for the SRC in our division

B. Equipment
- Lab

- While we have an extensive equipment list in the APDU, changing technology requires that we update equipment each year. Additionally, we need to replace and add several lab-related items each year due to use and damage.
- Computers and instructional technology
  - Our labs are currently utilizing current technology, but we are severely deficient in software and lab-related equipment that utilizes these computers

C. Staffing
- Faculty
  - The APDU has a fairly high FT/PT ratio, and will need to add another faculty member if our enrollment and student demand continue to increase in the next 3 years. We have increased our student numbers and class offerings by approximately 25% in the last three years.
- Support Staff
  - Our data indicate a serious need for increased SRC resources, including both staff for increasing the SRC hours of operation and for AP tutors.
  - There is a need for a lab support specialist to support the increasing demand the APDU places upon life sciences lab preparation. As we have increased the number of classes we offer and the total number of students served by 25% in the last 3 years, the number of laboratory activities that need to be set up by lab support has similarly increased.

2) How well did students meet your learning outcomes at both the Program Level and Course Level?

2a) How well did students meet Core Ability outcomes?

The APDU has developed learning outcomes for our program and for our courses as well. These outcomes have been used to develop our syllabi and each instructor in this discipline is expected to adhere to these objectives in their teaching methods and learning experiences. These outcomes are:

A. Anatomy and Physiology

Students will be able to:
- Communicate using appropriate clinically oriented anatomical and physiological terminology.
- Apply an understanding of cell structure and function to the multiple body systems.
- Utilize microscopy in evaluating tissue structure and function.
- Discuss the homeostatic mechanisms, relevant anatomy, and physiological function of different body systems, and provide examples of the interdependence of these systems.
- Evaluate clinical data pertaining to common laboratory testing methodologies (i.e. CBCs, Urinalysis, PFTs)
- Identify the names of assigned bones/bone markings and names/actions of assigned muscles.
- Communicate an understanding of genetics and their relationship to heredity.

B. Microbiology Course Outcomes:

Students will be able to:
- Discuss the cell biology and pathogenic properties of different classes of microbial organisms and infectious agents that affect human health.
- Demonstrate knowledge of infection control and the principles and practices of sterilization, disinfections, and antisepsis.
- Describe infectious disease processes, body defenses, and clinical characteristics of representative diseases affecting different body systems.

- Apply common laboratory techniques for culturing and observing microbes.

The College has also developed Core Ability outcomes, and these are:

- communicate effectively
- think critically and solve problems effectively
- increase understanding of the relationship between self and community, including self-awareness, personal responsibility, and the development of cultural competence
- explore academic discipline

Q1: Does the APDU adequately support students in meeting these learning outcomes?
The teaching methodologies employed in our unit strive to combine both our outcome objectives with the college core abilities for our instruction. While assessment of each of these is difficult, it is our goal to address each objective in our course curriculum with learning opportunities that touch on each one of the outcome goals. We assess the students several times a quarter to assess their learning of the subject materials we listed, and these assessments include not only include discipline-related material, but encourage problem-solving methodology, exploration in current discipline methods, and encourage a student's role in the medical community.

Q2: What changes are needed to better support students in meeting these learning outcomes?
Our learning outcomes can be met by several varied teaching and learning methods, however a constant theme from student survey data is the lack of sufficient time to synthesize and reflect upon the course materials. More student contact time and additional opportunities for critical analysis and problem-solving activities is needed to support these learning outcomes. Increasing our credit allotment for these courses may provide the time to support these learning outcomes. Another common theme is related to access to lab equipment outside of class. We hope to continue extramural funding to provide better access to lab equipment, both in class and outside of class, to new technologies that will provide students with better access to new learning tools for the study of the human body. Additionally, increased mentoring is necessary to insure that our adjunct faculty understand and adhere to the learning outcomes for our discipline, and articulate these outcomes to their students as well.

Q3: What does the evidence you gathered tell you about your strengths and weaknesses in helping students meet their learning outcomes and core abilities?
Overall, the APCU receives favorable reviews from student assessments and anecdotally each year. However, the time commitment for students each year is considerable for our 4-credit courses. We need to explore the possibility of increasing our credit allotment for these courses to 5-credits. Additionally, we find that there is a severe course-to-course disparity in objectives, and we feel mentoring and developing standard lab curriculum could enhance meeting the outcome goals for our program. With this said, the APDU has been very successful in obtaining grants to keep our equipment current for our laboratory learning experiences, and utilizes computer-enhanced lectures that appear to increase student learning and retention of the material presented.

3) How efficiently did you use the resources you were given?
The APDU has successfully written and received funding in the past years from the various granting agencies on campus (Perkins, TACT, Professional Development, Buskirk). We have successfully purchased the equipment, adapted the curriculum, and met the goals and objectives of the granting agencies and the objectives for our courses. Each year, we apply for more equipment and/or curricular funding that will enhance our learning environment in the Science Division. We realize that we have many emerging needs each year, and with our student survey data, we are able to successfully adapt our program to meet these needs. We

were successful in 03-04 with our Perkins Grant application and our TACT request for updated computers and software in our laboratories. While these helped to update our equipment needs, we have several more equipment and curricular needs that need to be addressed in the next few years to maintain a successful program.

4) How well are you utilizing current technology?

While our technology appears to be current, we have several needs in this area to insure that we continue to meet student needs in our program. The funding in the past several years has allowed us to purchase the equipment, however our use of this technology would be considered a weakness in our program. This year's initiative process allows us to address this deficiency, and will hopefully allow us to develop methods and laboratory exercises that will make a more effective use of this equipment. We currently use projection-based lecture formats, and this equipment is heavily utilized in our curricular presentations.

Our needs assessments in this area consists of formative and summative data collected from students, as well as bi-monthly discipline meetings with colleagues. It is our opinion that we have a large source of data in which to make our needs assessment inventories each year, and it is these needs that we will present in the initiative section of this report.

5) How well did you meet faculty and staff goals?

The APDU has three full-time faculty and several adjunct faculty each year. All faculty participate in course evaluations and the requisite staff evaluation process established by the college. The full-time faculty have completed the staff evaluation process, and each has a list of personal-expected outcomes to complete our job requirements.

Strengths of staff and goals:

a) Fully-committed individuals toward student success and our learning environment
b) Commitment to professional development
c) Active role in divisional management by annual representation on the Science Advisory Committee (SAC)
d) Committed to the grant application process to improve learning in the Sciences
e) Active participants in learning improvement methods

Weaknesses of staff and goals:

a) Increasing workload requirements within Division and College
b) Increased reliance on adjunct faculty has created needs in mentoring and quality control with respect to meeting outcomes
c) With our increasing student population, a support need has arisen in the SRC to aid in the learning process

6) Review your initiatives from 2003-2004 (Chapter 5)

The APDU was successful last year in receiving funding from both the Perkins Grant and the TACT process. Funding to support the development of a hybrid-online BI 233 class was not funded.

Q1. How well did you meet your goals?

As this is the beginning of the 04-05 year, we are now using these funds to complete our presented goals for these funds. We are using the funds to purchase updated lab equipment for our classrooms, and many of the funds have been spent toward this end. The goal is being met as the equipment is being purchased and utilized to enhance student access to equipment, and thus improving the learning environment in our program.

Q2. What benefits did your program accrue from the initiative?

The funds are being used to purchase laboratory equipment to improve access and increase understanding of the material presented in our courses.

Q3. What challenges arose?
The main challenge with receiving these funds is the management of the purchases of the materials necessary for instruction. This task is added to the teaching and administrative duties of the faculty, and it is necessary to set aside additional time each week to research the material and direct the funding toward the purchases. Additionally, once the material arrives, it needs to be assembled and directed toward classroom use. This requires addition time to learn about the equipment (trainings) and time to write and /or incorporate the material into the curriculum in a timely manner.

Q4. How effectively were you able to utilize resources?
To date, all equipment ordered is immediately place in the laboratory settings or the SRC for direct student use and access for the learning process.

Q5. For un-funded initiatives, do you intend to resubmit this year? If yes, please describe the continuing need for the initiative.
There was an un-funded initiative that will be resubmitted this year. Please refer to the initiative section of this report.

7) Overall, what strengths do you believe your unit demonstrated in 2003-2004?
The APDU has several strengths that we can build on in the following years. Our faculty group is extremely organized and motivated toward improving student learning and the environment in which we instruct. We are active in pursuing grant funding to meet our annual needs, play an active role Science Division governance, and are leaders on campus in the learning community and distance learning areas. We have made a strong attempt to remain current in instructional methods and obtaining the necessary equipment towards this end. The AP courses are usually full, and our annual planning and outcomes assessments appear to be meeting student needs in both course offerings and quality of instruction.

8) Overall, what challenges do you believe your unit faced in 2003-2004?
The APDU has experienced rapid growth in the last several years due to the increased interests in the Family and Health Careers programs here at Lane. Our facilities needs were addressed with the new Science Building as we acquired new classrooms/laboratories, stockroom space, and the SRC. However we did not anticipate our rapid growth adequately; if we continue to grow we will need additional classroom/laboratory space. In 2003-2004 we had to offer classes at times not conducive to student learning (4:00-7:00 pm classes) due to lack of open classroom/laboratory space. The challenges that we faced as an instructional unit were maintaining continuity in instruction for our courses, shortages of equipment needed for students, and major curricular changes that were necessary to improve instruction. Unfortunately, workload issues also continue to hamper the efforts of the APDU as all of us are active, both locally and institutionally, on committees. Additionally, our course load is one of the highest on campus, and our courses are usually full of active learners. Therefore, it is often difficult to find the time each week to continually assess our program and institute the changes we envision for the future.

9) What conclusions do you draw form this analysis about needed improvements or changes in 2004-2005?
Our initiative list this year attempts to address many of our above listed challenges by developing materials for both students and adjunct instructors, creating new content learning modules for students, addressing our deficiencies in distance learning options, and by requesting several new equipment pieces to supplement our instruction. This program assessment process has been incredibly helpful in noting some of the APDU's weaknesses last year. It is our hope that we can continue to complete an annual assessment process,

highlighting our strengths and weaknesses, and applying for funding that will aid in successfully improving our learning process here in the Science Division. The following chapter outlines our requests through this initiative process that will improve our instructional practices and increase student access and learning.

Science Division, Unit Planning 2004-05

BIOLOGY DISCIPLINE
Chapter 3: Program Outcomes Analysis 2003-2004

Gail Baker, Barbara Dumbleton, Jerry Hall, Stacey Kiser, Carrie Newell, Bert Pooth, Joe Russin

The purpose of the Chapter 3 analysis is to assess our discipline's strengths and challenges and ultimately, guide us in developing PROGRAM INITIATIVES requests for 2004-2005. These include our long-range plans as well as near-range objectives.

To complete this work we consulted:
Unit Planning 03-04, Chapter 2, Program Outcomes (Curriculum)
Unit Planning 03-04, Chapter 5, Program Initiatives
Science Division Strategic Plan (4/18/03); Also in Unit Planning, 03-04, Chapter 4

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Organized, edited (very loosely) and collated by Gail A. Baker 12/13/2004

BIOLOGY DISCIPLINE
Chapter 3: Program Outcomes Analysis 2003-2004

Question #1: How effectively did you fulfill you unit's mission? J Hall & C Newell

"The mission of the Science Division is to assist individuals to achieve their science education needs and goals." This includes Transfer courses and Certificate/Degree Programs.

The Biology Discipline fulfilled its mission to the greatest extent possible, given existing resources. The Biology Discipline offers 100 and 200 level biology laboratory courses that satisfy transfer as well as degree programs. The biology department consists of six full-time faculty and ten part-time faculty. These faculty have a tremendous amount of influence on the 6400 students per year that go through science courses. In taking lower division biology courses, students can choose to take either a traditional biology sequence called "Survey of Biology" or one of 16 emphasis courses. The emphasis courses cover core concepts but do so within the context of a specialized area like Marine Biology, Forest Ecology and several others. Lane Community College is distinctive in offering such an extensive variety of 100-level non-majors specialty courses. It gives students a great opportunity to experience fields of their interest while still learning the fundamental core concepts. In addition, we offer cellular biology as an innovative and very effective prerequisite for the Anatomy and Physiology courses. In the 2003-2004 FTE Report, almost 70% of the 104 biology courses were 90% of capacity or greater, and none were cancelled due to low enrollment.

We feel, however, that the balance of emphasis courses among the Bi 101, 102 and 103 courses can be better proportioned. Our faculty strengths lie strongly in ecology and field biology, and therefore, many of our emphasis courses are Bi 103 courses. Due to the strong student demand for biology courses and the disproportionate contracted/part-time faculty ratio, we feel we have a very strong need to add a new biology position. We have a clear and strong need for a faculty member strong in cellular biology, both for the Bi 101 emphasis courses and for the cellular biology, Bi 112, prerequisite for A&P.

Learning Outcomes Analysis'04/ Chapter 3 Unit Plan Biology 2003-04 G Baker

2) How well did students meet learning outcomes at both the Program & Course Levels?
3) How well did students meet Core Ability outcomes?

These questions will be addressed together.

The Learning Outcomes Analysis'04 TABLE on the following page lists the anticipated student outcomes for the Biology Discipline. These were developed during the Fall of 2003 and made available to all Biology faculty with the suggestion to incorporate these into course descriptions & outlines, goals & objectives and assessment methods. We believe that all of our biology faculty have been implementing the student outcomes and that the Core Abilities have been integrated /embedded into the learning outcomes. It was suggested that all course Syllabi include specific and general language that addresses outcomes and abilities. Our curriculum adequately supports students in meeting these learning outcomes.

This table will now be disseminated to all the biology Faculty so they can start providing specific data, evidence and examples of how the learning objectives and core abilities are implemented and met in specific courses. The follow up will be to make conclusions about needed improvements or changes in 04-05? The general question that will be addressed is

What does the Biology Discipline need to better support students in meeting our learning outcomes and core abilities?

Learning Outcomes Analysis'04 TABLE/ Chapter 3 Unit Plan Biology 2003-04

How well did students meet learning outcomes at both the Program & Course Levels?

Biology Learning Outcomes	**Bi 101-103 Survey Courses**	**Bi 101-103 Emphasis courses**	**Bi 112/Ch 112 BioBonds**	**Bi/Bot/Zoo 201-203 Sequence**
At the end of the course the student should:				
1) Have an increased ability to make informed decisions about biological issues				
2) Have an increased awareness & appreciation of all life on earth				
3) Demonstrate ability to conduct and to understand scientific inquiry.				
4) Understand the difference between scientific patterns of thought and other patterns of thought.				
5) Be able to relate course knowledge to articles about science				
6) Explain the evolutionary processes that shape the unity and diversity of organisms on earth and contribute to characteristics and adaptations				
7) Understand the principles underlying the classification of organisms & be able to describe the distinguishing features of the major categories of organisms				
8) Understand hierarchical levels of biological organization (molecular to biosphere).				
9) Demonstrate an understanding of biological processes that sustain life.				
10) Understand the processes of energy transfer in biological systems.				
11) Understanding of the critical interactive role among organisms (including humans) and be able to use this information in decision-making.				

Outcomes Drafted in 2003 by Gail Baker, Joe Russin, Carrie Newell, Jennifer Brown, Jerry Hall, Barbara Dumbleton, Katie Morrison-Graham, Bert Pooth.

4) How efficiently did you use the resources you were given? J Russin

Because biology submitted no initiatives for the 2003-2004 Unit Plan, no resources were allocated.

5) How well are you utilizing current technology?

Current technology is being utilized at a very high level in the biology discipline. Each year, more instructors become familiar with the various technological tools (software and hardware) available through the Division, the College, commercial developers, and the Internet. Reviews of syllabi, course packets, and textbook ancillary material, indicated an increase in the use of technology, both in the classroom and for development of curricular materials. There has also been an increase in faculty attendance at training sessions, through in-service activities and outside workshops.

The following is a summary of Biology's current technology resources and how they're being utilized. Each classroom is equipped with a set of 8 networked computers and an instructor workstation computer connected to an overhead projection system. Faculty use the projection systems in several ways. Many instructors display PowerPoint presentations as a way to stimulate and engage students in discussions, and to present multimedia enhancements of the concepts being discussed. The class can observe laboratory software simulations and demonstrations of laboratory experiments that stimulate critical thinking and scientific inquiry.

The student computers are used in a variety of ways. Students may given topics to research on the Internet for group discussion and projects. They can also perform software lab simulations and experiments and manipulate laboratory data within spreadsheets and statistical programs. The Science division has set up its own server where students can access the software and even save their work for future reference. The Science Resource Center (SRC) also provides student access to the Internet, the Science server, and other technology resources. A technology-oriented tutor is available for support.

Technology is well utilized by the faculty for the development of curricular materials. Many instructors maintain a Web site for their courses to provide resources and assignments outside of class. Some of these sites are supplemented by commercial "courseware" programs such as WebCT. Two WebCT-based online classes as well as several telecourses are offered through the Science Division to increase the availability of courses to students.

Faculty also use digital cameras and video equipment to capture graphics for classroom use. There is access to scanners that allow the digitization of photos and other graphics. These resources greatly enhance the richness of presented material and help to excite students about the subject and increase their understanding of the course content.

The evidence that has been gathered indicates that the above described use of technology for the Biology Discipline can be considered our strengths, but there are some areas of challenge as well. These include: insufficient tech support, limited opportunities for training, and time constraints for faculty and support staff that hinder the ability to learn how to use new equipment and how to effectively incorporate technological advances into classroom curricula and activities. Although not presently a challenge, the discipline anticipates that aging equipment will need to be replaced on a regular cycle.

S.Kiser

6) If your program works with an Advisory Committee, how effective was that relationship in helping you meet your program goals?

#6 applies only to the Energy Management Program.

7) How well did you meet faculty and staff goals?

Each instructor sets their own goals and assesses how well they meet those goals. Individual instructors explicitly assess their goals every time they conduct a developmental evaluation with the department chair, which is on a five year rotational basis.

We meet every two weeks as a program and discuss important issues at the program level. We set goals for our program as needed at these meetings and work towards those goals as a group.

We would like to note that all faculty feel a pressure of increased workload. We yearly rotate a contracted faculty onto the Science Advisory Committee (SAC) as part of our Science Division governance structure. This adds work with no compensation in reduced workload. This year Unit Planning increased workload for our program as we assessed our goals and initiatives from last year and wrote new initiatives this year. Again, the coordinating faculty member was not compensated in reduced workload. These workload issues are prompting creative solutions discussions such as a "lead faculty" that would serve on SAC and organize other governance duties for our program with a reduced class assignment to better balance their work assignments.

G Baker, B Dumbleton, J Hall, S Kiser, C Newell, J Hall, B Pooth, Joe Russin

8) Review your initiatives from 2003-2004.

Biology did not have specific Biology Unit initiatives from the previous year (2003-04)

BIOLOGY Summary of strengths and challenges. tied to our PROGRAM INITIATIVES

9) Overall, what strengths do you believe your unit demonstrated in 2003-2004?

Increase the number and variety of course offerings: the ability to offer a diverse set of subjects to students through emphasis classes, at a wide variety of times/ schedules. Broad range of choice for introductory biology courses at the non-majors level (100 level survey & emphasis courses). Course topics are developed to reflect important biological relevance to current issues (Genetics & Society)

- Increased the number and variety of course offerings at a wide variety of times
- Varied our divers set of subjects to students through changing emphasis courses.
- Development of a full-time lab manager and part-time assistant (Colin)
- We increased our enrollment
- Biology discipline met on a regular basis: excellent communication
- Increase in the use of technology in our classes
- Offer Biology majors 200 level sequence that is recognized by and articulates smoothly with 4-year institutions. Yearly updates of courses to include current biological knowledge. Bioinformatics 200 level sequence is recognized by and articulates smoothly with 4-year institutions.

10) Overall, what challenges do you believe your unit faced in 2003-2004?

Not enough full-time faculty. Increase number of part-time faculty places demands on physical resources and mentorship abilities. Full-time to part-time ratio adds increased demands on staff for mentoring, materials, lab preparation requests.

- lack of support for services in technology, lab preparation, maintenance of facilities such as Wet Lab
- a more efficient mentoring system is needed for new faculty
- greater funding resources for equipment, classroom supplies, curriculum development
- more time for meetings, collegial collaboration. With increased number of part-time faculty and courses there are fewer times to meet for logistics and professional exchanges.

G Baker, J Hall, C Newell

11) What conclusions do you draw form this analysis about needed improvements or changes in 2004-2005?

All full-time faculty were requested to send a conclusion statement with the segment of Ch 3 that they were specifically addressing. At the time of printing not all of the conclusions had been received so the following don't necessarily represent the full spectrum of conclusions.

Summary of our conclusions about needed improvements or changes in 04-05.
Tie to and introduce your 04-05 PROGRAM INITIATIVES.

Our needed improvements are threefold. First, we need a new biology position to serve student needs. Second, we need to hire a faculty member strong in cellular biology. Third, we need to reach a better balance among the Bi 101, 102 and 103 emphasis courses.

The tasks related to the Unit planning process have been very time consuming and interrupted the heavy teaching and support demands of all staff involved.

CHEMISTRY DISCIPLINE
Chapter 3: Program Outcomes Analysis, 2003-2004

1) How effectively did you fufill your unit's mission?
What approach did you take to gather evidence of your performance? What method of assessment did you use? What does the evidence you gathered tell you about strengths and/or weaknesses in fulfilling your mission in 2003-2004?

The Science Division was one of the first at LCC to carry out an extensive analysis of strengths, weaknesses, opportunities, and threats (SWOT). As a result of that process, we created the Science Division's Strategic Plan, which describes our vision of how we expect to achieve our Division's mission. In the most recent version of that Strategic Plan, two of the eleven listed goals (and their action steps) are related to this initiative:

GOAL #5 Enable all Science staff and students to optimize use of technology to support student learning (including but not limited to computer technology)

GOAL #6 Optimize use of all Division facilities and infrastructure to support student learning

2) How well did students meet your learning outcomes at both the Program Level and Course Level?
Are your learning outcomes current and relevant? What does the evidence you gathered tell you about your strengths and/or weaknesses in helping students meet their learning outcomes in 2003-2004?

A list of current and relevant learning outcomes was developed as an offshoot of the SWOT process, as we attempted to merge its products with the new Unit Planning template. We expect that students who complete any chemistry course will achieve the outcomes on that list. However, only the outcome relevant to this initiative is stated here: Students who successfully complete a chemistry course will be able to use appropriate software and hardware tools to model and/or assess a chemical problem.

Although students get some exposure to computers in the chemistry laboratories, their use is primarily for data collection and analysis. There are currently no computers available for students to use in the chemistry classrooms, so there is limited ability to achieve the modeling and assessment components of this outcome in the classroom/lecture environment.

3) How well did students meet Core Ability outcomes?
What approach did you take to gather evidence of your performance? What method of assessment did you use? What does the evidence gathered tell you about strengths and/or weaknesses in helping students meet Core Ability outcomes in 2003-2004?

Irrelevant to this initiative; info can be inserted later if required.

4) How efficiently did you use the resources you were given?
What approach did you take to gather evidence of your performance? What method of assessment did you use? What does the evidence you gathered tell you about your strengths and/or weaknesses in using resources efficiently in 2003-2004?

Computers are not installed in the chemistry classrooms in Building 16 so that students must transition to one of two computing rooms within the building. Each of these rooms has only eight computers available so that only a portion of the students can participate in any learning activity at a time.

5) How well are you utilizing current technology?
What approach did you take to gather evidence of your performance? What method of assessment did you use? What does the evidence you gathered tell you about your strengths and/or weaknesses in utilizing current technology in 2003-2004?

Our resources are inadequate and we are unable to provide students with the opportunity to utilize current technology in the chemistry classrooms.

6) If your program works with an Advisory Committee, how effective was that relationship in helping you meet your program goals?
What approach did you take to gather evidence of your performance? What method of assessment did you use? What does the evidence gathered tell you about your strengths and/or weaknesses in working with your Advisory Committee in 2003-2004?

Irrelevant to this initiative

7) How well did you meet faculty and staff goals?
What approach did you take to gather evidence of your performance? What method of assessment did you use? What does the evidence you gathered tell you about your strengths and/or weaknesses in meeting faculty and staff goals in 2003-2004?

Irrelevant to this initiative; info can be inserted later if required.

8) Review your initiatives from 2003-2004.
For each initiative: How well did you meet your goals? What benefits did your program accrue from the initiative? What challenges arose? How effectively were you able to utilize resources? For multiple-year initiatives: Where are you in the implementation of your initiative? If you had initiatives that were unfunded, do you intend to resubmit this year (if yes, please discuss the continuing need)

The chemistry discipline did not have any initiatives from 2003-2004.

9) Overall, what strengths do you believe your unit demonstrated in 2003-2004?

Described in the summary of the Science Division's SWOT analysis; info can be inserted later if required.

10) Overall, what challenges do you believe your unit faced in 2003-2004?

Described in the summary of the Science Division's SWOT analysis; info can be inserted later if required.

11) What conclusions do you draw from this analysis about needed improvements or changes in 2004-2005?*

Described in the summary of the Science Division’s SWOT analysis; info can be inserted later if required.

EARTH & ENVIRONMENTAL SCIENCE DISCIPLINE
Chapter 3: Program Outcomes Analysis 2003-2004

1) How effectively did your fulfill your unit's mission?

Methods:

Faculty from EES had numerous discussions in 03-04 over the course of Unit Planning and the accreditation self-study. Our 03-04 initiatives for curriculum development were one outgrowth of these conversations. Formal meetings and informal conversations are ongoing within the discipline.

As lead faculty, Sarah Ulerick has reviewed course offerings in geology, environmental science and GIS (Geographic Information Systems) at four-year and two-year colleges in Oregon. Our curriculum was compared to courses offered at other comparable community colleges and courses at our transfer target schools. This analysis provided evidence for the answers to this question.

Additional evidence for program expansion has been obtained as part of our preliminary study for developing a GIS program, and ongoing conversations with Geography faculty members, Jane Benjamin and Lynn Songer.

	Answers	Evidence
1A. Are there things you are doing you should stop doing?	LCC may be the only community college offering the G100-level sequence in the state. We should reduce the number of G101, G102, G103 sections we offer in order to expand course options for students.	Analysis of LCDC courses and catalogs of other colleges; interest expressed by part-time faculty in offering a more topical curriculum.
1B. Are there things you should be doing that you're not?	Implement a multi-purpose GIS curriculum.	Assessment of skills needed for problem solving with spatial data in EES and Geography; review of careers utilizing GIS skills.
	Expand our non-majors geology courses to provide more topics for students that will meet their AAOT transfer needs.	Analysis of LCDC courses and catalogs of other colleges; interest expressed by part-time faculty in offering a more topical curriculum; students' needs for transfer science courses.
	Provide in-depth learning opportunities in geology for science majors.	Faculty assessment of student needs.
	Strengthen lab activities in ENVS sequence.	Faculty assessment of current activities.
	Expand distance learning opportunities.	Faculty assessment of current courses.
	Increase the number of full-time faculty in EES to support quality instruction and growth.	Faculty assessment of workload and the ratio of part-time to full-time faculty.
1C. Which of the things are you doing that should be kept and enhanced?	The G200 sequence for majors should be continued with curricular enhancements to allow students access to state-of-the-field research methods and findings.	Faculty assessment of curriculum.

	The ENVS sequence should be supported with updated lab activities including GIS; and field equipment.	Faculty assessment of curriculum.
	EES website should be improved to be a comprehensive student resource for general geology.	Faculty assessment of current and potential website capabilities.
	The EES Stockroom should be supported with a dedicated part-time stockroom coordinator.	Faculty assessment of how stockroom is used and needs of faculty and students.

Summary of courses taught in EES

	Geology	Environmental Science	Other EES courses
Sections meeting AAOT requirements	G 101, G 102, G 103 7 sections per term.	ENVS 181, 182, 183 2 each per term	GS 106, 1 section/yr GS 142, 2 sections/yr GS 147, 2 sections/yr
Average enrollment in AAOT courses	25 students/course	25 students/course	GS 106, 25/section GS 142, 60/section GS 147, 40/section
Sections for majors	G 201, G 201, G 203 1 each per term		
Average enrollment in majors courses	18 students/course		

2) How well did students meet your learning outcomes at both the Program Level and Course Level?

EES made no plans to assess Division learning outcomes for 03-04. Therefore, we have no data that directly assesses outcomes at the program level or course level. A cursory review of syllabi indicates that students had many opportunities to meet most of the learning outcomes. Students were assessed in a variety of ways, demonstrating their success in meeting most learning outcomes.

Faculty assessment of the EES program overall reveals that the following learning outcomes are not met adequately because our curriculum fails to incorporate GIS methods for problem solving involving spatial data:

Ability to describe natural phenomena, and interpret and express scientific information, in symbolic format (e.g. equations, graphs, tables, mathematical notation, maps).

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.

Be able to demonstrate the use of Earth/environmental-science tools such as maps, graphs, aerial photos, mathematical relationships, Geographic Information Systems (GIS) and/or spreadsheets.

3) How well did students meet Core Ability outcomes?

No criteria are set for these outcomes. Further, they are so broad as to be meaningless. We are assured that all courses require students to:

- communicate effectively

- think critically and solve problems effectively
- explore academic disciplines

Students probably also:
- increase understanding of the relationship between self and community, including self-awareness, personal responsibility, and the development of cultural competence

REGARDING QUESTIONS 2 AND 3:
EES may develop a plan to assess some outcomes over the remainder of the 04-05 year. However, it is unclear how this work will guide us in developing new programs or courses. Within existing courses, curricular assessment and change are daily activities undertaken by all faculty as a part of quality instruction. The Learning College guidelines offer a better chance for designing a relevant and doable assessment of learning.

4) <u>How efficiently did you use the resources you were given?</u> [presumably in 03-04]

EES did not receive any resources from the college initiative process. Over the summer EES received 100 hours of curriculum development time from tuition-based course revenues within the Science Division. These funds supported progress on three of our 03-04 initiatives plus a new proposal to improve testing methods for a popular telecourse. We were extremely efficient in using these resources, stretching them to achieve many useful projects.

Strength: We are very capable of utilizing curriculum development funds wisely.
Weakness: We spend too much valuable time trying to get funds from the college when other methods of allocating curriculum support funds would be more effective.

Individual disciplines and divisions are best qualified to distribute curriculum development funds. 100-hours of curriculum development time equals about $2600. The college spends many times that amount having faculty complete initiative requests and having managers review them. Simply distributing funds equitably and letting Divisions decide how to use them will save time, money and morale.

5) <u>How well are you utilizing current technology?</u>

EES did not receive any new technology in 03-04. We have eight older Mac computers in Rm 140 and eight in Rm 142, plus access to additional computers in the adjacent computer labs. Computers are used at least weekly. EES has a color-laser printer in the Stockroom; this is used extensively by EES faculty, other faculty, and EES students for project research and presentations. The Macs are 4 years old and need to be updated.

Strength: We make good use of all the technology we have.
Weakness: Our computers are old and slow.

6) <u>Advisory Committee, not applicable</u>

7) <u>How well did you meet faculty and staff goals?</u>

This question has no usefulness in this process.

For the record, I make annual goals and evaluate them at year-end. I use my evaluation to set next year's goals. I share my goals and evaluation annually with my Division Chair. I have done this every year. There is no requirement for part-time faculty to state goals or evaluate them. Asking them to do so is a workload burden.

Strength: Setting goals is useful to me and I am successful in meeting most of them.

Weakness: I fail to meet some of my goals, usually due to lack of time and energy: workload demands. For example for the past several years, I have not met my goal of planning a GIS program for EES.

8) <u>Review your initiatives from 2003-2004.</u>

PROGRESS MADE ON 03-04 INITIATIVES DESPITE LACK OF RESOURCES AWARDED:

Initiative Request	**Environmental Science course packet development**
Resources awarded	*NONE*
Alternative resources used	Tuition-based course revenues
Goals met	The packet for ENVS 181 (formerly GS 171) has been started; work will be completed by the end of this term.
Benefits to program	The packet support students learning.
Challenges	Time to revise existing activities, add new ones, and obtain copyright clearances.
Effective use of resources?	30 hours of curriculum development time will be used effectively.

PROGRESS MADE ON AND CONTINUING NEEDS FOR 03-04 INITIATIVES:

Initiative Request	**Feasibility study for GIS Technician Training Program**
Resources awarded	*NONE*
Alternative resources used	Tuition-based course revenues
Goals met and unmet	Work is ongoing on this project; this is a continuing need; see below.
Benefits to program	This important initiative will bring state-of-the-art geoscience technology into our program.
Challenges	Time to focus on researching the GIS curriculum.
Effective use of resources?	25 hours of curriculum development time will be used effectively over the remainder of the 04-05 school year.
Continuing need	GIS skills are needed more than ever for students in EES and Geography; this initiative is our highest priority.
Resources still needed	We are requesting 100 hours of curriculum development time to hire a part-time faculty member to develop the program plan and seek further funding.

Initiative Request	**General Geology Web Site (now a general EES Web Site)**
Resources awarded	*NONE*
Alternative resources used	Tuition-based course revenues
Goals met and unmet	A new EES Web site is now available for online browsers and is much improved over the previous version. Unmet goals are: Add faculty web

	pages and course-specific links and materials. Maintain and update the web site to provide students and other interested people up to date information about EES courses and faculty.
Benefits to program	When students are well informed about our current program offerings and our faculty, they will be able to make better decisions about taking our classes. Course-specific materials will assist students to complete activities and projects in many EES courses.
Challenges	Time available to make modifications. More work will be done Winter and Spring terms; we were unable to add faculty web-pages for full and part-time faculty member in EES; or to add course-specific links and materials.
Effective use of resources?	25 hours of curriculum development time will be used very effectively.
Continuing need	The web site should be continually improved and updated. Goals were not completely met.
Resources still needed	Curriculum development and/or tech-support for maintaining and improving the web site.

MORE CONTINUING NEEDS FROM 03-04 INITIATIVES:

Initiative Request	**EES new course: Geology of the National Parks**
Resources awarded	*NONE*
Continuing need	Yes: The EES curriculum needs expanded options to meet students' needs and interests.
Resources still needed	Curriculum development, especially for lab activities.
Goals	Provide expanded course options for students in EES.
Potential Benefits to program	This course will attract students interested in North American geology from the point of view of travel. Broaden the geology course offerings in EES by creating a new sequence.
Challenges	At least two present part-time faculty have taught similar courses but not with a formal lab component.

Initiative Request	**EES new course: Introduction to Pacific Northwest Geology**
Resources awarded	*NONE*
Continuing need	Yes: The EES curriculum needs expanded options to meet students' needs and interests.
Resources still needed	Curriculum development, especially for lab activities.
Goals	Provide expanded course options for students in EES.
Potential Benefits to program	Students can learn about local and regional geology. Broaden the geology course offerings in EES by creating a new sequence.
Challenges	At least one present part-time faculty has taught similar courses but not with a formal lab component.

Initiative Request	**EES new course: Natural Disasters**
Resources awarded	*NONE*
Continuing need	Yes: The EES curriculum needs expanded options to meet students' needs and interests.

Resources still needed	Curriculum development, especially for lab activities.
Goals	Provide expanded course options for students in EES.
Potential Benefits to program	Students can learn science in a context that is very relevant even to non-science majors. Broaden the geology course offerings in EES by creating a new sequence.
Challenges	At least one present part-time faculty has taught a similar course, but not with a formal lab component.

9) <u>Overall, what strengths do you believe your unit demonstrated in 2003-2004?</u>

- We changed the Geology Discipline name to Earth and Environmental Science in order to promote both the geology and environmental science courses we offer.
- Part-time faculty increased their involvement in planning and managing the discipline during 03-04 when the full-time faculty member was on sabbatical.
- Faculty used Division curriculum development funds very efficiently.
- Faculty generated ideas for new course options.
- Faculty added teaching materials to the stockroom collection.
- Faculty participated in discussions to improve the learning environment of the two lab/classroom rooms dedicated to EES.
- We set up an EES website.
- We continued to teach a full load of courses, including many tuition-based sections in 03-04.
- The stockroom was well managed by a student worker who had completed the 200-level geology sequence in 02-03.
- We made good use of our existing technology.

10) Overall, what challenges do you believe your unit faced in 2003-2004?

- The only full-time faculty member in EES was on sabbatical in 03-04.
- EES currently teaches eight sections of geology and two of environmental science each term, plus some telecourses with a staff of one full-time faculty member and up to eight part-time faculty.
- Workload demands for unit planning, schedule-making, catalog revisions, course improvements and maintenance, and stockroom management are excessive for the sole full-time faculty.
- Part-time faculty spent a lot of extra time handling the accreditation demands and the 03-04 initiative process.
- Our geology curriculum is getting stale, having not been overhauled in many years.
- Very little progress was made on developing a much-needed GIS curriculum.
- Our computers got older.
- We were unable to complete the full vision for our EES website.

11) What conclusions do you draw from this analysis about needed improvements or changes in 2004-2005?

- EES needs at least one more full-time faculty member to support its existing curriculum and allow for growth.
- EES needs to move forward swiftly to develop a GIS curriculum that expands learning opportunities in Science and Social Science.
- EES needs to expand learning opportunities by adding a new sequence of topical geology courses.
- EES needs to add capability to its new website.
- EES needs ongoing stockroom support.
- EES needs updated computers in both its lab/classrooms.

PHYSICS DISCIPLINE
Chapter 3: Program Outcomes Analysis 2003-2004

Key Question: Please provide a summary analysis of your projected program outcomes for 2003-2004. Please include assessment of program outcomes as defined in your 2003-2004 Unit Plan.

Answers to these questions are specifically provided for in the rest of this chapter. With regard to the numbers of students needing physics education, Appendix A statistics show the numbers of students served by LCC 2003-04. The data shows an increasing number of transfer credit and professional-technical students, many of whom take science courses, including a percentage that takes physics. This indicates a growing need for physics education at LCC.

In addition, information and analysis provided in this chapter indicates that past physics enrollment figures greatly under-represent the numbers of students needing physics courses, and do not include the effects, beginning in 2004-05, of removing barriers to student registration and increasing knowledge of physics classes among counselors and advisors. So the need for physics education is actually far greater then even an extrapolation from recent experience would imply.

1) <u>How effectively did you fulfill your unit's mission?</u>
What approach did you take to gather evidence of your performance? What method of assessment did you use?

The mission of the Science Division is to assist individuals to achieve their science education needs and goals. The corresponding Physics discipline mission is developing, updating, aligning, and maintaining physics courses and the wider learning environment that serve the learning needs and goals of people. We provide courses in six areas: the conceptual introduction to physics, the technical introduction to physics, astronomy, algebra-based general physics, calculus-based general physics, and engineering. (A future 100-level meteorology course would probably end up in the first area.)

In general, to analyze effectiveness, we looked at

- the needs of students and how much of their needs we have met,
- the level of incorporation of established means for improving meeting student needs,
- the performance in class of students and their feedback to us,
- how well our courses work with other courses and other parts of the college, and
- how time and energy of staff was used toward the above.

There are not sufficient full-time faculty members in the discipline to have regular comprehensive analysis, so that the data is necessarily incomplete. Specific sources of information include:

- identification of science students needing physics courses and the rate at which they take physics (See Appendix B),
- investigation of the times students take math pre-requisites in comparison to times leaving Lane (See Appendix C),
- complaints and praise from students,
- written feedback in journals of students (See Appendix D),
- review of curriculum development needs and efforts (See Section 7),
- level of planning and level of use of available funds,
- observation of level of collective curriculum discussion,
- history of the LCC physics club,
- history of burn-out by regular faculty member,
- actual and anticipated turn-over of part-time faculty members in the discipline,
- observation of use of pedagogical tools,
- level of adequacy of equipment and rooms and plans for improvement,
- level of equipment purchase/replacement planning,
- workload required to keep up,

- comparison of LCC physics courses with other LCC and externally articulated courses,
- comparison of LCC physics courses with comparable OUS physics courses,
- level of student success,
- kinds of work required to maintain and update courses to meet student needs,
- the history of active lack of support for the principles of technology courses,
- developmental evaluations of faculty,

What does the evidence you gathered tell you about your strengths and/or weaknesses in fulfilling your mission in 2003-2004?

The evidence tells us that we work hard, that we persist for significant periods of time in the face of significant challenges, and that we are making some progress in some areas and have pockets of excellence; but at the same time, we do not have the resources, staff, and institutional support

(1) to meet more than 1/5 of the needs of students majoring in science,
(2) to create conditions to serve in comparable proportions female and male students,
(3) to fully incorporate basic research-validated pedagogical reforms,
(4) to be optimally aligned with OUS schools, professional-technical programs, mathematics courses, and other science classes,
(5) to keep up developing needed classes,
(6) to work at a level that is sustainable in terms of health and satisfaction,
(7) to create a supportive extra-curricular environment for physics students,
(8) to make the best use of resources available,
(9) to sustain the current level of catching up, and
(10) to work in an environment that supports our best work.

2) <u>How well did students meet your learning outcomes at both the Program Level and Course Level?</u>

Are your learning outcomes current and relevant?

Generally, yes. However, there remain significant improvements to be made concerning

- articulating with the nearby OUS schools in our general physics curriculum, aligning the math content of the Math 52 pre-requisite with our 100-level or sub-100-level courses,
- aligning our PH 211-3 courses with math pre- and co-requisites,
- meeting the needs of professional-technical programs through PH 091-092, other physics courses and new courses,
- expanding the scope of astronomy offerings,
- teaching modeling, and
- developing better physics learning opportunities related to the humanities.
- generally integrating improvements into the curriculum based on physics

What approach did you take to gather evidence of your performance in meeting these outcomes?

Evidence for the currency and relevancy of our learning outcomes was gathered by paying attention to the level of alignment of specific courses with courses coming before and after in the students' sequences of learning, the degree of matching our learning outcomes in our available courses with our professional judgment of what is current and relevant, and feedback from students about the value of their physics learning experience. With not enough full-time faculty members it is impossible to gather all the data available, full analyze it, and make all the improvements suggested by the analysis.

What method of assessment did you use?

Professional judgment informed by the desire to serve student learning.

What does the evidence you gathered tell you about your strengths and/or weaknesses in helping students meet their learning outcomes in 2003-2004?

Our discipline takes ongoing improvement of the physics curriculum seriously, but there are too few regular faculty members to fully engage data gathering and full analysis of the data. One strength is that we do what we can with what we have, and have been willing to do more than we can sustain

over a long period of time. In addition, while we do our best, we are not in denial that a lot could be done to improve our service to students. Though people go all out for students, we do not have sufficient time to ensure that fewer students "fall through the cracks" in our courses. We have reports from some of our classes that detail positive transformation in outlook and skills, but this data throughout the discipline is incomplete. The discipline has not been able to engage in a collective discussion of grades and standards, but it is reasonable to assume that the grades students receive indicate learning. While many students taking physics courses are served well, it is clear that far more students who need a physics course do not take it at LCC, and thus we are not helping them meet their learning needs. For example, less than 20% of declared science majors take their 200-level physics requirements at LCC.

3) How well did students meet Core Ability outcomes?

What approach did you take to gather evidence of your performance?

Generally speaking, our course outcomes match well with the core abilities. Of students who succeed in our courses, it is reasonable to assume (though no full conversation of this regularly takes place given the inadequate numbers of full-time faculty and their workload) that those students meet the Core Abilities outcomes. The critical piece of the question calls for different evidence: How many students who need to take our classes actually do, to what extent could our students be learning better, and to what extent could the outcomes of the courses better align with the Core Ability outcomes. With the current levels of staffing, there is not much capacity for regular, comprehensive data gathering for assessment involving these critical questions and subsequently making improvements.

What method of assessment did you use?

Professional judgment.

What does the evidence you gathered tell you about your strengths and/or weaknesses in helping students meet Core Ability outcomes in 2003-2004?

A strength of our physics courses is their breadth; however, we do not have the staff to regularly assess the extent to which we help students meet Core Ability outcomes throughout the discipline and apply what we learn from one class to another. We have some evidence of meeting these outcomes well, the critical thinking in PH 101-3 is exemplary, for example, but the weakness in the discipline as a whole described above remains, so that there is potential for substantial improvement.

4) How efficiently did you use the resources you were given?

What approach did you take to gather evidence of your performance?

We looked at the resources we have and the processes in which we utilized those resources, and the purposes for which we used them. The extent of this effort is limited by staff and record-keeping within the discipline.

What method of assessment did you use?

We asked the following: To what extent are we aware of the resources available to us? To what extent do we engage in mindful use of these resources? How are we, and to what extent are we, using these resources?

What does the evidence you gathered tell you about your strengths and/or weaknesses in using resources efficiently in 2003-2004?

In designated physics rooms, significant improvements are needed in all three. Efforts are being made to equip them appropriately, so that we can have lecture-lab format classes, especially in the 200-level classes, since that is well known to better support learning. We are in the process of learning what resources are available for modifying these spaces. Generally speaking, we are not keeping up, as a discipline, with improvements in pedagogy, though our courses are adequate to excellent in comparison to physics offerings generally. In this way, we are not making use, or even fully aware of resources available. This is a matter of not having enough full-time faculty members, not a lack of commitment.

Generally, due to the workload of too few full-time faculty members, little regular formal long term planning takes place to drive equipment purchases, which is significant in a science discipline. We are also not keeping up with what equipment is available. We are only beginning to formally catalogue existing equipment, and organize it. We did facilitate receiving a donation of optics equipment during 03-04; however, we also have funds designated for optics equipment, which is yet to be spent due to lack of time to fully research the purchase. The funds available to the discipline are not fully understood to the discipline. In the past, grants have been declined due to lack of time to leave teaching because the discipline had insufficient leadership from an insufficient number of full-time faculty members. There are opportunities for Carl Perkins funding, which we have not applied for in the last decade due to lack of time.

Local, regional, and national conferences and opportunities for cooperation with the UO are resources that are under-utilized due to under-staffing of full-time faculty. The turnover and lack of understanding of the curriculum by part-time faculty also has associated costs that drain resources.

5) How well are you utilizing current technology?

What approach did you take to gather evidence of your performance?

We looked at the current technology we have, looked at the process in which we utilize it, and looked at the purposes for which, and the extent to which, it is used.

What method of assessment did you use?

We asked the following: To what extent are we aware of the technology available to us? To what extent do we engage in mindful use of technology? How are we, and to what extent are we, using technology?

What does the evidence you gathered tell you about your strengths and/or weaknesses in utilizing current technology in 2003-2004?

Much of our lab equipment connects directly to computers, so that the comments on resources bear directly on the question of technology. To the extent that we are not keeping up, as a discipline, with improvements in pedagogy, this concerns technology, since much pedagogical improvement involves information technology interfaced equipment. We do not make use of modeling programs like Interactive Physics in the 200-level classes, nor make use of web-based resources in most of our courses to the extent we could. Much useful software is available in astronomy that we don't yet use. We also haven't made consistent use of reforms like WorkShop Physics and RealTime Physics. As a discipline we make far from full use of the equipment available in physics rooms, or the IT infrastructure in the division or the opportunities available in the college. This is primarily a matter of too few full-time faculty members and lack of time to learn new equipment/software and implement into the curriculum and maintain it in the curriculum.

Not only has there been a lack of long-term planning in the discipline as a whole, the sub-disciplines have not generally experienced it. There has not been a sub-discipline-wide visioning of the direction of astronomy in a decade, principles of technology has had more attention mainly because the curriculum was being criticized and its existence threatened, and in the 200-level courses, the full and part-time faculty did not have a practice of all working together for years. Meteorology has not been paid attention to. (In place of this, the individual full-time faculty member with responsibility for a particular sub-discipline has had to make decisions, usually in the context of a too-high workload and without much immediate experience in all of the sub-discipline.) Wider discussion is where significant discussion of technology planning would optimally need to take place. This is not to say no significant technology planning took place. Each of the two full-time faculty members generally took initiative, while consulting the other, without much consulting with part-time faculty members, and without a formal long-term plan for the discipline. Gilbert did begin developing a discipline course plan in 02-03 as part of his Developmental Evaluation, but it did not include technology planning.

In the last year, the physics discipline was able to secure some TACT funding, and we expect to continue to do that, including getting an overhead projector in room 144. In October, a technology grant opportunity had to be declined, due to lack of time, which was taken up with problems

associated with a backlog of physics issues due primarily to lack of institutional support and an insufficient number of full-time faculty members.

There is also currently a view of information technology with a boundary on the input side that does not extend beyond computers and software. The reality today in much, though not all, of physics equipment used in teaching/learning is that data acquisition equipment is as inherently tied to computers and software as is presentation equipment like overhead projectors. The nature of effective teaching technologies in physics puts the discipline at a disadvantage in making TACT requests according to the current criteria.

6) If your program works with an Advisory Committee, how effective was that relationship in helping you meet your program goals?

NOT APPLICABLE

7) How well did you meet faculty and staff goals (for the discipline) ?

Our discipline program goals were summarized in a couple of places:

SUPPORT NEEDED FROM THE DIVISION in DG's Developmental Evaluation:

1. Workload. It needs to be recognized that with very little support from the Physical Science Stockroom (a situation that will not change for a number of reasons), the workload benchmark in the contract about biology does not generally apply to physics. Further, in as much as our labs, in conformity with physics education research, are not the traditional labs but more accurately described as lecture-labs, the college policy on lecture-lab applies. The reasonable application of this policy to the teaching of many of the physics courses means that eight lecture lab classes makes approximately 45 TLCs, and nine (the current load) is over 50. The load needs to be adjusted immediately and compensation made for the current year in which this issue was noted.

2. Curriculum Development. A backlog of curriculum development needs should be addressed as soon as feasible. First, funding needs to be provided for the science modeling labs and Principles of Technology (the fall term part at least) over the summer. In the fall term, the rest of Principles of Technology curriculum development needs to be supported. As soon as feasible, the Applied Physics Calculations course set to go to the Curriculum Approval Committee needs substantial curriculum development in the next year before summer. After discussion within the physics discipline on other priorities, they need curriculum development funding. If money cannot be secured from centralized sources, divisional sources need to be accessed, particularly physics funds budgeted assuming there would be two full-time positions next fall and next year.

3. Curriculum Advocacy. Principles of Technology (PH 91, 92) needs immediate divisional advocacy in the face of attempts to substitute an advanced technology physics course for it.

4. Advocacy for Physics Positions. Two more physics positions need to be advocated for and secured so that up to three new faculty members can be simultaneously hired in the next search, bringing the number of physics positions equal to the number of chemistry positions, and still far less than the number of biology positions. Though two more positions are needed in physics, if they don't seem clearly necessary to everyone now they could be framed to include math and engineering responsibilities for now, and grow into physics as the physics as the need is clear to all.

5. Understanding the Physics Discipline. The physics discipline plan outlined in the Appendix needs wide discussion among those interested.

APPENDIX to DG's Developmental Evaluation: Physics Discipline Goals

Curriculum Goals

In general, a balanced expansion is needed in all 6 sub-divisions of the discipline; that is, expansion within each sub-discipline in ways appropriate to it, but not at the expense of any of the others.

Technical Introduction to Physics:

- Stabilize and develop Principles of Technology to serve professional-technical programs as PH 91,92
- Establish the Applied Physics Calculations to use the overlap between physics classes and professional technical mathematics Math 86, and to offer, with PH 101, 102 a transfer level option to fully serve professional-technical programs
- Expand Applied Physics Calculations to use overlap with modules of Math 95
- Develop and establish courses (using the appropriate format/schedule) for established professionals and advanced students in Transducers in Medicine, Manufacturing, Environmental Monitoring
- Develop Principles of Technology to serve professional-technical programs as a 3-term transfer-level sequence connected to transfer level mathematics (Math 111), if/when the mathematics requirement is increased
- Develop and establish capstone physics courses for professional technical programs in partnership with those programs (in addition to Transducers courses, which could serve this purpose)

Conceptual Introduction to Physics:

- Stabilize and expand numbers of PH 101, 102, 103 sections, so that the numbers of 100-level physics courses are comparable to biology and chemistry
- Establish the science modeling labs at the 100-level and 200-level
- Establish Ph 101, 102, 103 sections (using appropriate format/schedule) for K-12 teachers and students studying to be teachers
- Establish courses (using appropriate format/schedule) linked with other courses of study, such as Physics of Light and Color (Art), Physics of Sound and Music (Music), Physics of the Internet (Computer Information Technology)
- Maintain GS 104 in the Physical Science Survey sequence ("physics first" at the 100-level)
- Develop and establish multi-disciplinary courses Origins, Motion, and Endings
- Establish physics book group courses
- Develop and establish ongoing learning communities; such as Physics/Astronomy for Poets Physics/Astronomy with Poetry), Writing into Space and Time (Physics/Astronomy with Writing)
- Develop learning community links to math modules as they are developed, and whole math courses as feasible

Astronomy:

- Establish the full 100-level 3-quarter astronomy sequence with a lab option
- Maintain and update the 1-quarter survey course in classroom and tele-course formats
- Develop and establish ongoing learning communities; such as Reading the Milky Way (Astronomy with Folklore and Mythology)

General Physics, Algebra-based:

- Expand offerings of PH 201, 202, 203 to meet demand
- Develop and establish "physics first" multi-disciplinary courses, including Thermodynamics of Physics, Chemistry and Biology; Light and Light Phenomena of Physics, Chemistry and

Biology; Quantum Phenomena of Physics, Chemistry and Biology; Chaos in Physics, Chemistry, and Biology
- Develop and establish “Physics-Excell” Study/Tutorial sections

General Physics, Calculus-based:

- Expand offerings of PH 211, 212, 213 to meet demand

Engineering:

- Maintain engineering classes
- Develop and establish nano-technology courses

Organizational Goals

The organizational goals depend on and make full use of having a substantially full-time faculty in the discipline, a commitment by the faculty to a lively, collective, collaborative, synergistic, progressively evolving excellent physics learning environment.

- Four full-time faculty positions in the short term
- All stable part-time assignments fully consolidated in full-time positions in medium term
- Full-year and day/evening program
- Permanent position in divisional governance committees
- Discipline budget/planning process
- Collective discipline self-management
- Discipline seminar/joint study/ongoing pedagogical/physics discussion
- Physics student club
- Lively intellectual environment throughout the discipline
- Lively partnership with professional-technical programs
- Lively partnership with mathematics
- Lively partnership with humanities
- Lively partnership with community and former students
- Ongoing professional development commitment
- Stabilized and ongoing collective curriculum development
- Capacity to rotate areas of discipline curriculum responsibility
- Active participation in college-wide innovation
- Lively partnership with UO, other OUS schools, other community colleges
- Active participation in physics education partnerships
- Active participation in undergraduate research partnerships
- Lively integration of physics-related public policy issues into the physics learning environment

Resource Goals

The expectation is that the physics rooms will continue as largely self-contained units, and that preparation for physics labs and demonstrations will be largely the responsibility of the physics faculty.

- Full use of the 3 physics rooms
- Optimal modification of the room space, hallway, and outdoor space
- Rooms well equipped with lab equipment, furniture, information technology
- Facilities and support for building equipment
- Adequate curriculum development funds
- Web-based resources in place
- Distance education options

- Planetarium (general purpose) space
- Effective advertisement of physics learning opportunities
- Support from counseling and advising staff for physics classes
- Support from counseling and advising staff for students with learning disabilities
- Tutoring support readily available through in-person and online help
- Support for learning physics for students whose primary language is not English

What approach did you take to gather evidence of your performance (meeting physics discipline goals)?

Discipline members were invited to contribute to and look over the list of goals and give their sense of the level of progress made, as well as to review the goals to see the extent to which they were appropriate, complete, and well stated.

What method of assessment did you use?

Generally, we relied on the expertise and judgment of the discipline members.

What does the evidence you gathered tell you about your strengths and/or weaknesses in meeting faculty and staff goals in 2003-2004?

In 2003-2004, we were pretty much buried in a huge backlog of work to maintain and advance the discipline. One full-time member, focusing on personal transformation and suffering burn-out from the discipline workload, early-retired. The other full-time member was able to make use of his Developmental Evaluation to examine major elements of the current state and needs of the discipline and take responsibility for identifying a vision for moving the discipline ahead, and at the end of 2003-2004 to take some initial steps forward. This was done through working well over the expected workload at an unsustainable level.

8) <u>Review your initiatives from 2003-2004.</u>

For each initiative: How well did you meet your goals? What benefits did your program accrue from the initiative?

A. One or more physics full-time positions for each discipline was the request from the division. Physics specifically requested two. We got no new positions. No benefit accrued from the request other than a written record of the expressed need and an opportunity to formulate it. (The financial analysis and analysis of the physics need in the document contained errors.)
B. TACT request: Physics Student Data Acquisition Project ($33,155). We received less than the $15,768 requested for lap-top station computers for room 119 (includes associated costs). The cost for the computers were $14,491.40 plus approximately $300 for additional connectors, so that full funding required internal division funds.
C. No Carl Perkins request.
D. No Curriculum Development request made it into the document due to distraction of the physics representative (JS) and the competitive climate of the process.

What challenges arose?

A. We fell further behind in keeping up and moving our discipline forward. One full-time faculty member early-retired and is burned-out in relation to physics teaching.
B. The lap-tops were acquired. Challenges included installing them in time for fall term, restructuring and developing tools to make best use of them (still not done), buying and installing connections to existing hardware when found to be needed (in November), and scheduling the room immediately following their use created security considerations limiting their use. There is still a need for the rest of the request. Its lack limits the use of room 144 and 145 to less than the full lecture-lab format, which is optimal for student learning.
C. Lack of a request is caused by lack of time to write it, a challenge that persists due to lack of sufficient full-time faculty members.
D. Lack of curriculum development turned out to be highly problematic.

How effectively were you able to utilize resources?

A. The initiative was not granted.

B. The implementation is in its first stage. The lap-tops are being used for what the previous computers were used for, but software for additional uses is yet to be developed and implemented.
C. There was no relevant initiative.
D. There was no relevant initiative.

For multiple-year initiatives: Where are you in the implementation of your initiative? If you had initiatives that were unfunded, do you intend to resubmit this year (if yes, please discuss the continuing need for them)

A. The two or more positions will be in the new initiatives for reasons, which will be more thoroughly delineated.
B. The unfunded equipment need will be in the initiatives, along other needs.
C. A Carl Perkins request will have to wait until we have two more full-time faculty positions.
D. We will have extensive Curriculum Development requests.

9) <u>Overall, what strengths do you believe your unit demonstrated in 2003-2004?</u>

Commitment to student learning and the physics program in allowing (1) survival during this period with insufficient staff and institutional support, and (2) the creation of plans to move the program forward with sustainable excellence.

10) <u>Overall, what challenges do you believe your unit faced in 2003-2004?</u>

- Achieving an appropriate full-time workload for members of the discipline (partially successful)
- Avoiding burn-out (partially successful)
- Providing personal support for colleagues (successful)
- Achieving appropriate understanding and support within the Science Division (beginnings achieved)
- Achieving appropriate support within the division and outside of it for the Principles of Technology courses and their place within Physics (overcame lack of support and opposition by fall term 2004)
- Establishing the Principles of Technology courses (successful)
- Establishing more consistency in the astronomy offerings (little progress)
- Resolving issues raised by student complaints (adequately successful)
- Dealing with problematic Banner implementation with regard to pre-requisites in PH 101-3 (successful)
- Achieving a process of coordination in the discipline with regard to planning, purchasing, and curriculum development (little progress)
- Understanding and more fully meeting physics needs of students (much greater understanding but little progress meeting needs beyond current level)
- Achieving better alignment of PH 201-3 and PH 211-3 with UO, OSU courses (greater understanding but little progress)
- Better use, equipping, and scheduling of 119,144,145 (a little progress)
- Using optics funds (no progress)
- Considering and adopting pedagogical and related technological advances (some steps forward)
- Sharing expertise and collective learning from experience within the discipline (little progress)
- Curriculum development of current courses and development of new courses to meet student needs (some progress)
- Getting financial data and understanding its meaning for making decisions (no progress)
- Establishing appropriate numbering of courses (some progress)
- Increasing understanding of physics offerings among counselors and advisors (significant progress over Summer)
- Achieving consensus on the future staffing structure of Engineering in relation to Physics (issue raised for future discussion)
- Achieving discipline-wide review and learning from student feed-back (no progress)
- Reversing mathematics stigmatization affecting enrollment in physics courses (no progress)

- Bringing comparable numbers of female and male students into physics classes (little progress)
- Tapping the potential of UO-LCC dual enrollment (no progress)
- Resolving jurisdictional challenges to the integrity of the technical physics curriculum (successful)
- Aligning the math and physics curriculum (beginning to raise some issues only)
- Breaking the spiral of low enrollment (no progress until Summer preparation of materials)
- Countering the lack of economies of scale in a small discipline (little progress)
- Having time to learn and make use of new technology (little progress)
- Developing a long-term vision of the physics discipline (significant progress)
- Hiring new full-time physics faculty members (no progress in creating new positions)
- Achieving an appropriate role in division governance (issue raised)
- Sustaining the Physics Club (club ceased to function)
- Attending conferences (very little participation until Summer)
- Learning from the results of physics education research projects (no organized effort or major projects)
- Responding to the early retirement of a colleague (JS) (only beginning in the time period)

11) <u>What conclusions do you draw from this analysis about needed improvements or changes in 2004-2005?</u>

Virtually all of the challenges remain (with a few exceptions), and they are now more clearly defined and generally larger than earlier anticipated. These past identified efforts to move forward accomplishing the discipline's mission need to be advocated for in 2004-05 and are part of the initiatives outlined in Chapter 4.

APPENDIX A

AAOT/AS/AGS Headcount by Major 11/9/2004

DeptDesc	*Major_Desc*	Major	DegC	2001-02	2002-03	2003-04
Science	Agriculture	1120	AAOT			4
Science	Animal Sciences	1130	AAOT			3
Science	Animal Sciences	1130	AS			2
Science	Biology	1170	AAOT			48
Science	Biology	1170	AGS			1
Science	Biology	1170	AS			5
Science	Chemistry	1190	AAOT			10
Science	Chiropractic Medicine (Pre)	1200	AAOT			2
Science	Environmental Science	1330	AAOT			10
Science	Environmental Science	1330	AS			1
Science	Forestry, Wildlife, Nat Resrce	1360	AAOT			20
Science	Forestry, Wildlife, Nat Resrce	1360	AGS			1
Science	Geography	1380	AAOT			5
Science	Geology	1390	AAOT			4
Science	Horticulture	1415	AAOT			3
Science	Medical Technology (Pre)	1490	AAOT			13
Science	Medical Technology (Pre)	1490	AGS			1
Science	Medicine (Pre)	1500	AAOT			28
Science	Medicine (Pre)	1500	AGS			5
Science	Pharmacy (Pre)	1530	AAOT			14
Science	Pharmacy (Pre)	1530	AGS			2
Science	Physics	1560	AAOT			5
Science	Physics	1560	AGS			1

Science	Science (General)	1710	AAOT			10
Science	Science (General)	1710	AGS			3
Science	Science (General)	1710	AS			3
Science	Veterinary Medicine (Pre)	1750	AAOT			12
Science	Veterinary Medicine (Pre)	1750	AGS			1

APPENDIX B, Physics Required by Majors

200-Level Physics required for Science majors at UO and OSU

Major	Number of Majors	U of Oregon Physics required	Oregon State U. Physics Required
Biology	102	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203
Biochemistry	**	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 211, 212, 213
Botany	*	n/a	Ph 201, 202, 203
Chemistry	39	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Computer Science	108	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 211, 212, 213
Crop & Soil Science	n/a	n/a	Ph 201, 202 or Ph 211, 212
Engineering	132	n/a	Ph 211, 212, 213
Envir. Health	n/a	n/a	Ph 201
Envir. Studies	n/a	Ph 201, 202, 203	n/a
Envir. Science	10	Ph 201, 202, 203	Ph 201, 202, 203 or Ph 211, 212, 213
Exercise/Mvt. Sci.	48	Ph 201, 202, 203	Ph 201, 202, 203
Food Science & Tech.	n/a	n/a	Ph 201, 202
General Science	29	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Geology	7	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Math	31	None	Ph 211
Medical Terminology	59	n/a	Ph 201, 202, 203
Microbiology	*	n/a	Ph 201, 202, 203
Physics	11	Ph 211, 212, 213	Ph 211, 212, 213
Wood Science & Tech.	n/a	n/a	Ph 211, 212
Zoology	*	n/a	Ph 201, 202
Pre-Pharmacy	58	Ph 201, 202, 203	Ph 201, 202, 203
Pre-Medical	100	Ph 201, 202, 203	Ph 201, 202, 203
Pre-Veterinary	45	Ph 201, 202, 203	Ph 201, 202, 203
Total Majors	**779**	**(Major count for Students Registered F03, W04, Sp 04 as of 2-25-04)**	

*Included with Biology count
**Included with Chemistry count

APPENDIX B, Physics Required by Majors

Major	Number of Majors	Majors for which Ph 201, 202, 203 meets requirements: U of Oregon Physics required	Majors for which Ph 201, 202, 203 meets requirements: Oregon State U. Physics Required
Biology	102	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203
Biochemistry	**	Ph 201, 202, 203 or Ph 211, 212, 213	
Botany	*	n/a	Ph 201, 202, 203
Chemistry	39	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Computer Science	108	Ph 201, 202, 203 or Ph 211, 212, 213	
Crop & Soil Science	n/a	n/a	Ph 201, 202 or Ph 211, 212
Envir. Health	n/a	n/a	Ph 201
Envir. Studies	n/a	Ph 201, 202, 203	n/a
Envir. Science	10	Ph 201, 202, 203	Ph 201, 202, 203 or Ph 211, 212, 213
Exercise/Mvt. Sci.	48	Ph 201, 202, 203	Ph 201, 202, 203
Food Science & Tech.	n/a	n/a	Ph 201, 202
General Science	29	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Geology	7	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Medical Terminology	59	n/a	Ph 201, 202, 203
Microbiology	*	n/a	Ph 201, 202, 203
Zoology	*	n/a	Ph 201, 202
Pre-Pharmacy	58	Ph 201, 202, 203	Ph 201, 202, 203
Pre-Medical	100	Ph 201, 202, 203	Ph 201, 202, 203
Pre-Veterinary	45	Ph 201, 202, 203	Ph 201, 202, 203
total count of majors	605		

* Included with Biology count
** Included with Chemistry count

APPENDIX B, Physics Required by Majors

Major	Number of majors	Majors for which Ph 211, 212, 213 meets requirements: U of Oregon Physics required	Oregon State U. Physics Required
Biology	102	Ph 201, 202, 203 or Ph 211, 212, 213	
Biochemistry	**	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 211, 212, 213
Chemistry	39	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Computer Science	108	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 211, 212, 213
Crop & Soil Science	n/a	n/a	Ph 201, 202 or Ph 211, 212
Engineering	132	n/a	Ph 211, 212, 213
Envir. Science	10		Ph 201, 202, 203 or Ph 211, 212, 213
General Science	29	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Geology	7	Ph 201, 202, 203 or Ph 211, 212, 213	Ph 201, 202, 203 or Ph 211, 212, 213
Math	31	none	Ph 211
Physics	11	Ph 211, 212, 213	Ph 211, 212, 213
Wood Science & Tech.	n/a	n/a	Ph 211, 212
total count of majors	469		

** Included with Chemistry count

APPENDIX C, Timing of MTH 112

MTH 112 Completers by Major by Term 11/

15

	Completed MTH 112 ---------->					Fall 2004 Credit Classes ---->			
Major_Desc	Su03	F03	W04	Sp04	Grads	Su03_F4	F03_F4	W04_F4	Sp0
_NonCredit Personal Enrichment		1							
Anthropology			1		1				
Architecture/Environmental Des		1	1	2				1	
Art			1						
Aviation Maintenance Tech	1		1		2	1		1	
Biology		1		3					
Business Management			1						
Business Mgmt & Administration		1	1	3					
Chemistry		1	2	3				1	
Computer & Information Science			1	4					
Computer Network Operations			1					1	
Computer Programming				2					
Computer User Support		1							
Drafting		1	1					1	
Education (Elementary)			1					1	
Education (Secondary)	1		1	1	1			1	
Engineering	8	3	3	6		3		1	
Engineering Technologies				1					
English/Literature				1					
Fitness Specialist		1	1		1			1	
Food Service Management				1					
Forestry, Wildlife, Nat Resrce				1					
Health & Health Education			1	1				1	
Journalism & Communication	1					1			
Law (Pre)	1					1			
Mathematics	1	1	2		1			1	
Medical Technology (Pre)			1	1				1	
Medicine (Pre)		3	2	3				1	
Not Declaring a Major	3	3	3	9		1		2	
Nursing				2					
Other Prof Tech (Not on list)			1	1	1				
Other Transfer (Not on list)	1			2					
Pharmacy (Pre)		1	2					1	
Physics		1							
Psychology		1	1	1					
Science (General)		1		3					
Theater Arts			1						
Undecided Professional Tech				1					
Undecided Transfer		1	3	5	1			2	
Unknown Transfer	6	17	16	10	8	1	2	7	
Veterinary Medicine (Pre)	1	1		2					
	24	41	50	69	16	8	2	25	

Grads: students who earned an award during 2003-04 or through today.

APPENDIX C, Timing of MTH 251

MTH 251 Completers by Major by Term 11/1

	Completed MTH 251 ---------->					Fall 2004 Credit Classes ---->			
Major_Desc	Su03	F03	W04	Sp04	Grads	Su03_F4	F03_F4	W04_F4	Sp04
Architecture/Environmental Des			2					1	
Biology		5	2						
Business Mgmt & Administration		1	1						
Chemistry		2							
Computer & Information Science			2					1	
Computer Programming			1						
Drafting			2					2	
Education (Elementary)		1			1		1		
Engineering		14	2		1		1	2	
Forestry, Wildlife, Nat Resrce		1							
Law (Pre)			1					1	
Mathematics		3	1		1		1		
Medicine (Pre)		1	2						
Music		1							
Not Declaring a Major		5	2						
Other Transfer (Not on list)		2							
Pharmacy (Pre)		1	1					1	
Physics			2					1	
Political Science			1						
Science (General)		2							
Undecided Professional Tech		1							
Undecided Transfer			1					1	
Unknown Transfer		16	14		3		2	8	
	0	56	37	0	6	0	5	18	

Grads: students who earned an award during 2003-04 or through today.

APPENDIX D

The following student reflections on the course express common impacts of participation in the PH 101, 102, 103 courses:

"The information I gained from this class changed how I look at things around me. This class was my first science class in college and I was surprised how much I didn't know. … Before taking this class, my understanding was 'that's just the way it is'."

"I've found that I view the environment and technology around me in a more analytical way. As I encounter scenarios and objects related to the subject matter I'm moved in a different way. There is a new found fascination in so-called ordinary occurrences previously taken for granted."

"I really enjoyed this class. I really never thought I would enjoy science so much. I've always been very interested in how things work. This class allowed me to further my understanding of … many things that [I] previously took for granted. I see and talk about things differently. I am actually a little sad the end of the term has come."

"First of all the class changed a lot of misconceptions or outdated ideas I had about the naturally occurring phenomena we observe daily, and which mostly goes unnoticed as I grow older. It brought back a lot of childhood memories (the better ones) and answered some of the mysteries of nature I marveled over in youth. In some ways it has sparked my curiosity to study further and become more precise about my personal assumptions."

"This class has changed my perceptions greatly. I read the Science section in the NY Times now. Physics is consistently on my mind, whereas it was not before. I have been linking much of what I learned about physics to other aspects of my life."

"For one of the only times I've said this, this class leaves little room for negative comment; I mean, I can't think of a better way to introduce students to the often intimidating world of physics. I learned a tremendous amount and even surprised myself at my ability to learn even difficult topics if I apply myself, and more importantly, if my interest is stimulated… and, physics being the nature of life and reality, how could one not be interested? This class, on top of directly applicable material, taught me that I can learn anything I want to – that is a tool that is irreplaceable."

"At the beginning of 101 there were times that it was difficult to 'let go' of preconceived notions or the sort of general public knowledge of how things work. … the class changed the way in which I thought of things, it made me much more critical in thought. I have found that I do think about things from all angles now rather than a superficial learning of facts. Now I look for explanations to things and ways to connect new information to previously learned information in order to understand both better. This has also come about from seeing the many connections between all my science classes and the ways each subject ties so well into the other. This has changed the way in which I am approaching my degree of Integrated Science."

"Although we often discuss science as a framework instead of a body of knowledge, I don't think I got a sense of how true this was until this class, because before I never had actual examples of drastically changing frameworks. I knew it, but I still felt that some things in physics were well enough understood to be 'concrete'. However, after learning about quantum physics, and then general and special relativity I really saw how much we don't understand about fundamental workings of the universe. That's pretty incredible."

Program initiatives are in priority order by Funding Source.

Anatomy and Physiology Discipline

1. **Initiative Title**
   Investigate changing some or all of the BI 231-234 classes from 4 credits to 5 credits

2. **How is the initiative linked to your Program Outcomes Analysis for 2003-2004?**
   This initiative is linked to our analysis of science specific/discipline specific outcomes and core abilities. Student evaluations, performance on assessment exams, and qualitative assessment data indicate that while students are attaining specific content knowledge, many are not meeting the critical thinking and synthesis skills outcomes which are required by the medical careers our students are entering (see Chapter 3; College Core Ability outcomes). We plan on evaluating the impact of changing our courses from 4 to 5 credits by adding one hour a week to each class. This hour will be devoted to developing critical thinking and synthesis skills through collaborative group activities and laboratory work utilizing appropriate software/hardware for creating and analyzing physiological/clinical data.

3. **Description of the Initiative**
   Product of the initiative: The product of this initiative will be a recommendation to either change some or all of our course credits from 4 to 5 credits or to leave them at 4 credits. In order to make a recommendation, we will assess the impact on student learning, complete an extensive survey of students completing our sequence, analyze the potential budget impact if the change reduces the number of classes faculty teach per year, and articulation with the LCC's Family and Health Career programs.

   Need for the initiative: Analysis of student performance on synthesis skills, comments in course evaluations, qualitative assessment of student understanding and surveys of students supports the need for more contact time of faculty with students and students with their peers in structured activities designed to help student integrate the large content of our courses. Many students do well on "fact" retention but they are not able to apply the information in meaningful ways or they struggle to learn the content and simple run out of time to synthesize the material. Restructuring our courses to allow for 1 hour/week for integration and application of concepts will better prepare our students for the allied health programs they will be entering. In addition, this will put our Anatomy and Physiology courses in line with four year institutions such as the U of O and OSU.

   Is the initiative feasible? Currently this initiative is not related to a budget request. However if the outcome of this investigation is to change the course credit, this initiative could have budgetary implications for the future. However if we decide to only change BI 233 and 234 to 5 credits, this may not result in a decreased number of courses taught by a full time faculty member and would in turn be revenue gaining. If all of our courses change from 4 to 5 credits, the number of classes taught/ year by full and part time faculty would decrease. This however may be offset my increased student success and retention (during the 2003-2004 academic year 29% of the students who began Bi231 did not enroll in BI233).

   Campus location: All of these courses are taught in the Science division and all work on this initiative will involve Anatomy and Physiology discipline faculty.

   How many students will benefit? Currently we are offering approximately 50 sections per year accounting for approximately 166.24 FTE.

   How will students benefit? Students will benefit by more contact time with the instructor and with peers. The increased time would allow for collaborative activities to enhance student learning and synthesis/critical thinking skills (refer to Chapter 3, 2a; Question 1 and 2). It will

also provide time to incorporate laboratory experiences that will enhance learning with current technology (refer to Chapter 3 2a; Question 3).

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4. **Describe the resources needed**
   One class reassignment for full-time faculty for one term; cost of part-time faculty to cover class would be at Level 3, Step 6, Salary $4296, plus OPE, $1701, **Total $5997**

5. **List the possible funding sources**
   General Fund, Personnel

6. **Provide ORG & PROG codes**
   ORG = 691110, PROG = 111000

7. **How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?**
   The outcome of this initiative will be a recommendation to either change some of all of our course credits from 4 to 5 credits or to leave them at 4 credits. If we make a recommendation to change our credits it will be to provide students a learning-centered environment that will strengthen their critical thinking skills and provide increased access to current technology.. This will promote their success as they continue within the Family and Health Career Programs. This will have a positive impact on our community as our students become graduates of the Family and Health Career Programs and begin providing necessary health care to our community.

Physics Discipline

Other Initiatives

Sufficient Faculty Positions is, by far, the most important and urgent initiative of the physics discipline, and other initiatives are partially or wholly dependent on it. Given the limited time to prepare this draft document by December 1, the other initiatives are listed briefly.

1. Provide students with an updated, enhancement of current curriculum. Division Priority #19

This initiative aims at completing a backlog of curriculum updating and enhancements to existing courses aimed at meeting proven student needs. Due to understaffing and the complexity of the discipline there are significant needs, which are listed below:

Course affected	Curriculum Development Project	Hours needed
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
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
ASTR 107 GS 148	Review and align the classroom and telecourse astronomy survey courses.	20
ASTR 122	Create the traditional partner courses ASTR 121 (the solar system) and ASTR 123 (the large-scale structure of the universe and cosmology).	50
ASTR 122	Create optional, then permanent, laboratory options for ASTR 121,2,3.	100
ASTR 107, ASTR 121,2,3 GS 148	Develop extensive web-based resources for use in the all astronomy classes.	100
PH 091,2 PH 101,2,3 ASTR ***	Identify and integrate specific calculations, concepts, and problems for enhancing Math 52 to better serve physics students – a collaborative effort by Physics and Mathematics	20
PH 201,2,3 PH 211,2,3	Fully integrate elements of successful physics education reforms, including ILDs, RealTime Physics, Workshop Physics, Interactive Physics.	300
PH 211,2,3	Restructure the curriculum so that Math 251,2,3 are co-requisites to align with the comparable UO classes and to better serve LCC students	100
	Total hours (Carl Perkins = 50)	990

2. Provide students with new kinds of courses to meet needs beyond the current curriculum

Division

Priority #25

This initiative aims at enhancing the overall curriculum by adding different kinds of courses, based on needs of current and potential students. Given the understaffing and complexity of the discipline, a significant unmet need has accumulated, and is listed below.

Course # (tentative)	Curriculum development project	Hours needed
PH 111	Applied Physics Calculations (passed through division and stakeholder process), a two-credit course to be taken along with PH 91,2; 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
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
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.	100
GS 152	Motion, a multidisciplinary science course organized around the theme motion offering a sampling of science topics, led by a selection of science faculty.	100
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.	100
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
PH 161,2,3	Transducers 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.	300
	Total (Carl Perkins = 300)	820

3.Refine a Long-Term Vision for the Physics Discipline **Division Priority #8**
EXISTING GENERAL FUNDS

This initiative aims are providing students with the benefits of a well thought-out vision of the Physics discipline. The vision would deal with questions of strategic curriculum planning, staffing, technology, equipment, and partnerships, and would prepare for the hiring of new contracted faculty. The current regular contracted Physics faculty member would work with a team that includes UO physics colleagues with a strong interest in teaching.

The funds would be for release time requested from General Fund accounts.

4. Adequately Equip Physics Rooms to Meet Student Learning Needs Division Priority #13

This initiative aims to provide students with well-equipped learning spaces. The initiative includes TACT requests for the following (in order of priority):

1. The data acquisition software and hardware in the previous TACT request*: $14,753
2. Remodeling 144 to best accommodate the yet to be installed overhead projection system (raising the HVAC channel, moving the screen over the board, and segmenting or remounting the front light): $1,200.
3. Interactive Physics software (20 station license with savings through Physics Academic Software): $1,295
4. Transducers and appropriate interfaces to existing computers for the future PH 161,2,3 courses, initially estimated cost (Donations from local hospitals, manufacturing operations, government agencies, and producers of transducers would be solicited for additional transducers.): $10,000

Total = $27,248

- -

***Physics Student Data Acquisition Project Remaining from Last Year**

Category of request:
Increase student access to technology

How does this request fit in with other unit or college technology plans?
TACT GOALS:
Tact Goal 1, Objectives 1.1 and 1.2
Tact Goal 2, Objectives 2.2, 2.3, 2.4, 2.5

Cost breakdown, including any unit resources being applied to the project (i.e. hardware, software, wiring, installation costs; timesheet staffing, licensing, other)

Portable data acquisition systems:

CBL Units; 24 @ $220	$5,280
Portable Motion Sensors; 12 @ $69	828
Accelerometers; 24 @ $98	2,352
Software:	149

Lab set of dynamics equipment:

Motion sensors; 12@ $85	1020
Analog to Digital Converter; model 750 USB interface; 6 @ $659	3,954
Force Sensors, 6 @$195	1,170
Total	$14,753

Additional Information:
There is currently no source of funding for this project, which is necessary for a second physics laboratory /classroom that has been added. Part of the project allows student data acquisition outside of the classroom. The systems and equipment described above use sensors and interfaces that connect directly to the computer. Such systems and equipment do not function without the computer and are an integral part of it as are information projection systems.

Earth & Environmental Sciences Discipline

1. ***Initiative Title***

Support Quality Instruction and Growth in Earth and Environmental Science

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

This initiative meets the challenge of supporting quality instruction and continued growth in the EES Discipline. The program has maintained a core of course offerings over the past six years and has added nine sections of geology and restored six sections of environmental science each year. In essence, we have added the course equivalent to a full-time position.

The workload demands of the program are too much for one faculty-member to support.

3. Describe the initiative

The product of this initiative will be hiring a full-time faculty member to teach geology and/or environmental science. The hiring will take place in 04-05, with the new faculty starting work in 05-06.

Need for supporting quality instruction and growth in EES

The Earth and Environmental Science Discipline includes courses in geology, environmental science, and physical science, including telecourses. Since the 99-00 academic year, we responded to financial cut-backs by reducing our courses to as few as 20 sections in 01-02 and then rebuilding the program using tuition-based courses extensively, with a cadre of excellent, enthusiastic part-time instructors. As a result, we currently teach 34 sections; only nine of these are taught by our one full-time faculty member. Our courses are fully enrolled and in high demand by students.

	Total sections	Geology	Environmental Science	Other EES courses	Tuition-based
2004-05	34 sections	24 sections	6 sections	4 sections	8
2003-04	32 sections	24 sections	6 sections	2 sections	17
2002-03	28 sections	21 sections	3 sections	4 sections	17
2001-02	20 sections	16 sections	0 sections	4 sections	1 extra
2000-01	23 sections	15 sections	3 sections	5 sections	
1999-00	25 sections	15 sections	6 sections	4 sections	

We have capped our growth at this level because we cannot manage more demand on our resources with only one full-time faculty member. As noted in our Program Analysis, EES wants to add a GIS component to the curriculum as along with a new course sequence. In order to do so, we will drop an existing course sequence and replace it with the new sequence.

Managing growth with only one full-time faculty member is extremely challenging. Completing Unit Planning as a solitary activity is extremely challenging. EES serves a valuable role in the

Science Division and should be supported with additional faculty positions. This is long overdue.

Feasibility of supporting quality instruction and growth in EES
The tuition-based course revenues currently earned by the Science Division could cover all or part of a new faculty position. The general fund also budgets funds for personnel.

What would be the campus location of this request/project?
EES discipline, Science Division, main campus

How many students (per year) will benefit?
All Earth and Environmental Science students and the entire Science Division will benefit. EES serve about 900 students each year.

How will students benefit?
Students will benefit by:

- increased access to mentoring and learning experiences (from both full-time faculty)
- strengthened curricula
- greater consistency in course curricula
- better resources for learning (since the workload of maintaining our teaching materials will be shared)
- more options in choosing courses and instructors
- more creative responses to instructional problems
- improved management of teaching materials and the learning environment

4. Describe the resources needed
Full-time faculty position
Level 3, Step 6, Salary, $51,015, OPE $27,038 ..... $78,053

5. List the possible funding sources
General fund, personnel.

If not fully funded as a full-time faculty position, some of the goals of this initiative could be met by assigning a part-time faculty member to do administrative duties within the discipline. The part-time faculty member would also teach three courses per year. The total annual FTE would be .167 paid at the part-time faculty rate.

Level 3, Step 6, Salary, $6451, OPE $2555 ..... $8,006

6. Provide ORG & PROG codes
ORG = 691500, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

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 moves the Science Division forward in Transforming Students' Lives and Transforming the Learning Environment in EES. Our ability to respond creatively to the demands of our curriculum is limited by time and energy. This initiative will:

- develop and expand the learning experiences available to students
- support creativity, experimentation and institutional transformation
- allow us to foster personal, professional, and intellectual growth of learners
- develop and expand systems for assessing learning

- create a diverse and inclusive learning college
- create, enhance and maintain our facilities and classrooms
- promote professional growth and development opportunities for our faculty
- make significant progress in meeting the goals of a learning-centered college

Physics Discipline

1. Initiative Title:

Authorize Sufficient Faculty Positions to Create and Sustain an Excellent, Comprehensive Physics Learning Environment

2. How is this initiative linked to the Program Outcomes Analysis for 2003-2004?

Challenges to address, the lack of capacity or conditions for:

- Carrying out regular comprehensive data gathering and analysis of the effectiveness of the discipline as a whole and each of its sub-disciplines in relation to program outcomes
- Regularly formulating a complete set of needed actions based on program outcomes and existing data and analysis to improve the physics learning environment in the discipline as a whole and in each sub-discipline
- Providing for more than 1/5 of the physics learning needs of students majoring in science
- In some sub-discipline areas serving female students in comparable proportions to male students
- Fully incorporating established, research-validated pedagogical reforms into the physics learning environment
- Optimally aligning physics offerings with OUS schools, professional-technical programs, mathematics courses, and other science and humanities classes (including articulation of our general physics curriculum, alignment of Math 52 with 100-level and pre-100 level classes that require it as a pre-requisite, aligning PH 211,2,3 with math pre- and co-requisites, and activating learning communities with classes in the humanities)
- Developing needed classes (involving expansion in each sub-discipline as described in Chapter 3)
- Working at a level that is sustainable in terms of health and satisfaction
- Creating a supportive extra-curricular environment for physics students (including a sustained physics club)
- Making the best use of resources available
- Catching up with a backlog of essential infrastructure work
- Having a working environment that supports the best work of faculty in the discipline
- Ensuring students do not “fall through the cracks” for preventable reasons by the discipline
- Regular discipline-wide discussion and implementation of pedagogical, curriculum, and resource planning
- Carrying out regular, comprehensive data gathering on student learning in the discipline
- Making and executing plans to fully equip rooms to make optimum use of existing facilities
- Making full use of existing technology currently available
- Having awareness of the full range of options for funding improvements
- Having full awareness of current equipment options for curricular improvements
- Applying for grants that are relatively assured
- Making and following through on long-range plans for grant-funded projects to enhance the physics learning environment
- Establishing and maintaining regular collective curriculum development to make best use of the intelligence in the discipline
- Regularly rotating teaching assignments to refresh the instruction and faculty, and to provide more opportunity for collective curriculum development
- Catching up on a backlog of needed curriculum development
- Providing physics offerings in the summer and evenings
- Participating in regular, sustained partnerships with professional-technical, mathematics, humanities faculty at Lane and outside Lane
- Having a working environment that need not produce burn-out

- Having adequate support and advocacy from the division (in some ways this is a catch-22 situation in which too few physics faculty cannot get the support, which in turn perpetuates too few faculty members)
- Having a long-term plan for the stability of the Engineering program
- Having adequate representation in division governance (a matter automatically resolved with more physics discipline faculty members)
- Having a physics discipline capable of fully playing a leading role in the division in those areas where physics could be expected to lead (including incorporation of modeling, mathematics, and calculation; articulation with Math; utilization of dual enrollment with UO; dealing with the under-representation of women in some physics areas; restructuring curriculum more appropriately to the physics-chemistry-biology approach; technology emphasis in courses; sharing the physics education experience of positive radical reform, particularly dealing with student misconceptions)

How will this initiative address the challenges?
The initiative will address the challenges in several general ways:
- There will be sufficient people to effectively deal with many of the challenges directly
- There will be sufficient people to deal with the remaining challenges, though other resources are also needed to fully meet these challenges
- The commitment to this initiative will provide the incentive for existing faculty members to persist in making improvements at a level that is not otherwise sustainable.

3. Description of the initiative

What will the product, innovation, or change of this initiative be?
This initiative consists of its essential core and two ancillary parts. The core of this initiative is the authorization of two additional physics faculty positions, which would bring the physics discipline up to the level of chemistry currently. (This initiative is not intended to establish that this level of full-time positions is fully optimal for either discipline, because, in fact, both disciplines could also make effective use of one more full-time position, so that each discipline would have five full-time positions, a number still less than biology positions.)

Authorization of these two additional physics positions would lead to a hiring of three positions (assuming the current regularly contracted member remains) for fall of 2006. There are good reasons to suppose that hiring for three positions at once would produce both a stronger pool and a stronger ensemble selection, assuming the pool was adequate for that. One ancillary part of this initiative is that in 2005-06, one or both of those positions be filled with temporary contracted faculty. Preferably, these faculty members would not be interested in applying for the permanent postings, so that work done to define the physics discipline of the future does not undermine the national search process envisioned.

The other ancillary part of this proposal is the formal transfer of the positions of the two contracted faculty members who teach Engineering, from two full-time positions in Mathematics into two joint positions in Mathematics and Physics in Science. Currently these faculty members have assignments in engineering courses, mathematics courses that need direct coordination and advocacy from engineering instructors, as well as additional mathematics assignments. Upon the retirement of these two people, these positions would entail engineering and physics teaching and mathematics associated with engineering. Should the search for three faculty positions for fall 2006 (from the core of this initiative) yield a faculty member also capable of teaching engineering courses at a sufficient level of excellence, this faculty member could move into one of the joint math/physics positions upon the retirement of one of the current faculty members. This formal redefinition of the Engineering faculty's positions would increase the long-term stability to the Engineering program, and would provide for the needed expansion of the physics discipline in the medium term when the workload associated with non-engineering related math would be devoted to physics. (The current Engineering faculty in Mathematics are supportive of this ancillary part of the initiative.)

What is the need or intended use? How was that need assessed? What is your evidence of the need?

The need for this initiative, the methods of assessment, and the evidence were outlined in Chapter 3 of the Physics section of the Unit Plan. The intended use of this initiative is meeting the challenges outlined.

Given college resources, is it feasible?

Currently, based on reasonable expectations of schedules and workloads, the staff FTE for two new positions would otherwise be accomplished by part-time assignments. Previous calculations have shown that the cost of consolidating part-time positions is approximately $26,000 per full-time position, for a total net cost on the order of $52,000. It is extremely important to realize that a net cost is what is involved. A more specific framework for net cost is provided in Section 5.

This calculation completely neglects the many hidden costs associated with the current use of this many part-time assignments. Classified and management staff are needed to deal with numerous administrative turn-over tasks. In addition, the heavy use of equipment places a burden on existing faculty as a major issue of turn-over, which also requires increased time from technical staff and the replacement of improperly used equipment. As a result of the high workload placed on the contracted faculty, longer term efforts at grant funding and getting donations are not utilized.

The initiative, then, is feasible based on college resources.

Is it an efficient use of college resources?

The initiative is an efficient use of college resources for a number of reasons:

- Given that the current level of full-time staff has proven too little to sustain a quality physics discipline, the use of college resources are not well used to meet the college mission.
- The initiative would put less of a burden on existing technology resources and make more efficient use of them in two ways. The resources would be used more fully. And less staff-time per use would be achieved.
- The initiative would allow faculty to give a higher percentage of their time to high level curriculum planning and implementation and teaching tasks related directly to improving student learning and a lower percentage of their time to “treading water” with tasks that come primarily from compensating for having insufficient full-time faculty. The initiative makes more efficient use of the time and expertise of each full-time faculty member.
- The initiative would allow full-time faculty members to standardize an effective curriculum, while allowing for individual implementations to maximize the idiosyncratic contributions of each person, placing less of a burden on part-time faculty member to unnecessarily re-create equipment configurations, labs, and curriculum. Thus the initiative makes more efficient use of the time and expertise of each part-time faculty member.
- The initiative would allow the physics discipline to be a more full and effective partner with other science disciplines, mathematics, professional-technical programs, and humanities at Lane, and also with other efforts at OUS and community college schools. The initiative thus creates more collective efficiency within the college and among college partners.
- The initiative would allow the discipline faculty to attend and learn significantly more from colleagues at conferences and through time keeping up with the current thinking about teaching in the discipline. The initiative thus results in greater efficiency through expanded utilization of external resources.
- The initiative thus results in greater efficiency through expanded utilization of grant resources. Not only are there longer-term opportunities made possible, but opportunities that easily arise could be accessed, a situation currently not feasible.
- The initiative allows more of the physics learning needs of students to be satisfied, which contributes to greater enrollments and FTE reimbursement from the state.

- The initiative creates a higher level of educational experience, which creates the case for more public support for the college.
- The initiative validates the commitment to existing staff of a quality learning environment for students, and thus inspires, or continues to inspire staff to go all out to create an exemplary educational experience for students. Failure to validate this commitment undermines the commitment of staff and thus leads to less efficient use of existing human and capital resources.

What would be the campus location of this request/project?
The Science Division at the main campus. One ancillary portion of the initiative would impact the Math Division.

How many students (per year) will benefit?
All students taking physics in all six of the sub-disciplines will benefit. However, as concluded in Chapter 3, there are hundreds of students who need existing physics courses, who are not being served. As well, there are students who would be well served by courses that do not exist presently. And finally, students who would benefit from the level of partnership that would be feasible with mathematics, professional-technical programs, humanities, as well as other science disciplines.

How will students benefit?
Students will benefit in a number of ways, including:

- Students will find classes that have fully incorporated established, research-validated pedagogical reforms, and local ongoing data-gathering and analysis to refine and update the curriculum.
- More than 1/5 of the physics learning needs of students majoring in science will be provided for.
- In some sub-discipline areas significantly under-serving female students, students will benefit from the faculty's capacity to create and carry out plans aimed at serving female students in comparable proportions to male students.
- Students will benefit from a physics faculty that has the capacity to engage in ongoing comprehensive study, analysis, and implementation of improvements in the physics learning environment aimed at serving the wide diversity of physics students.
- Physics offerings will be optimally aligned with courses and programs at OUS schools, professional-technical programs, mathematics courses, and other science and humanities classes (including articulation of our general physics curriculum, alignment of Math 52 with 100-level and pre-100 level classes that require it as a pre-requisite, aligning PH 211,2,3 with math pre- and co-requisites, and activating learning communities with classes in the humanities).
- Classes will be available that respond to demand that is already known (involving expansion in each sub-discipline as described in Chapter 3), so that curriculum development can focus on immediately identified needs and opportunities to provide students with a cutting edge education.
- Faculty will have the capacity to flexibly respond to student learning needs, because they will be working at a level that is sustainable in terms of health and satisfaction.
- There will be a supportive extra-curricular environment for physics students, including a sustained physics club.
- Students will have the advantages that come from faculty able to make the best use of resources available.
- Faculty can focus attention on currently identified tasks and challenges to improve the students' learning environment, because they have been able to complete up a backlog of essential infrastructure work.
- Students will engage faculty at their best, because faculty have a work environment that supports the best work of faculty.
- Students do not "fall through the cracks" for preventable reasons by the discipline because the discipline has the capacity to build and maintain safety nets and bridges to them.

- Students benefit from mindful creation of their learning environment, based on discipline-wide discussion and implementation of pedagogical, curriculum, and resource planning by the physics discipline faculty.
- Classroom/lab rooms are fully equipped and optimally configured.
- The students' learning environment makes full use existing technology currently available.
- The students' learning environment, as is feasible, is up to date, because the physics faculty is aware of pedagogical options, aware of current equipment options for curricular improvements, and aware of the full range of options for funding improvements.
- The students' learning environment is cutting edge, because the physics faculty has the capacity to applying for grants that are relatively assured to disseminate new innovations, and because the physics faculty has the capacity to make and carry out long-range plans for grant-funded projects to enhance the physics learning environment.
- Students have the benefit of the collective intelligence of the physics faculty, because they have the capacity for sustained collective curriculum development to make best use of the intelligence and experience of teaching in the discipline.
- Students benefit from a continually refreshed learning environment, because the physics faculty has the capacity to regularly rotate teaching assignments to refresh the instruction and faculty, and to provide more opportunity for collective curriculum development.
- Students have physics learning opportunities of assured high quality in the summer term and in evening classes throughout the year.
- Physics students have a learning environment that is enriched by regular, sustained partnerships with professional-technical, mathematics, science, and humanities faculty at Lane and outside Lane.
- Students have teachers that are fully available to them and their learning because there is a regular physics faculty of a size sufficient to assure a high quality learning environment in all sub-disciplines without burn-out.
- Students in physics courses have a learning environment that has been enhanced through adequate support and advocacy from the division, because with the number of physics faculty matching Chemistry, appropriate representation in division governance is assured without hardship and there is sufficient capacity to educate the division about the needs of the physics discipline.
- Students in Engineering will benefit from the faculty having more assurance of the program's stability, and the synergy that comes from a cooperative relationship with other physics faculty members.
- All science students will benefit from having a physics discipline capable of fully playing a leading role in the division in those areas where physics could be expected to lead, including incorporation of modeling, mathematics, and calculation; restructuring curriculum more appropriately to the physics-chemistry-biology approach; and technology emphasis in courses, and the experience of successful radical curriculum reform in physics.

How specifically will it address Core Abilities or Learning Outcomes of your program?
Generally, the discipline aims for goals aligned with the Core Abilities, and the Learning Outcomes of the discipline are to carry out the mission of serving the physics learning needs of students. The specifics of the improvements listed above all address Core Abilities and Learning Outcomes of the physics program. They include also, creating the capacity for regular comprehensive data gathering, analysis, and action to assess and assure that efforts to meet Program Outcomes and alignment with Core Abilities are understood for immediate purposes and in the context of ongoing improvement.

4. Describe the resources needed

Core of initiative: Two new Physics positions beginning fall 2006

In 2004-05,

- Work to develop a general vision of the physics discipline
- Hiring committee work

In 2005-06,

- Continuation and completion of above

In 2006-

- Recurring funding for moving part-time assignments to regular positions of approximately $52,000, which is a product of increases to General Fund budget and Reduction in Fund 9 budget. In addition, the resources needed are reduced by increased tuition and state reimbursement revenue over Fund 9 expenses from physics course expansion made possible by the initiative.
- New equipment needs are limited to office furnishings.
- Office space, which is available, is needed.

<u>First ancillary initiative element: One or both temporary contracted physics positions (i.e. filling one or two of the positions of the core initiative) beginning 2005-06.</u>

In 2004-05:

- Work to develop a general vision of the physics discipline
- Hiring process for temporary contracted positions developed and candidates recruited

In 2005-6

- Recurring funding for moving part-time assignments to regular positions of approximately $52,000, which is a product of increases to General Fund budget and Reduction in Fund 9 budget. In addition, the resources needed are reduced by increased tuition and state reimbursement revenue over Fund 9 expenses from physics course expansion made possible by the initiative. The extra revenue from reimbursement will continue for the next two years.
- New equipment needs are limited to office furnishings, which will be used by the regular faculty member hired for the following year.
- Office space, which is available, is needed, which will be used by the regular faculty member hired for the following year.
- Work to develop the general vision of the physics discipline will be particularly aided if the people hired for the temporary contracted positions can help with this vision building, but do not intend to apply for the positions.

<u>Second ancillary initiative element: Formal transfer of two Engineering faculty positions from Math to joint Math/Physics positions, with the understanding that when people retire from those positions, the workload in math not needing to be taken by engineering or physics instructors, would be used for physics workload.</u>

In 2004-05 and 2005-2006:

- Work to develop a general vision of the physics discipline, which would be aided by the commitment of this ancillary initiative.
- Long-term:
- There will be an impact on Mathematics positions in raising the ratio of part-time faculty, unless some amelioration is planned for upon the retirement of the Mathematics faculty members teaching engineering courses.

5. List the possible funding sources

<u>Partial funding options</u>

To meet the needs addressed by this initiative, two new positions are required. It might be supposed that because one additional position would help and be half of the initiative request, that it would accomplish half of the needs addressed by the initiative. This, however, is a fundamental misreading of the situation. Also for historical reasons, physics has been overlooked for new positions within the division, so that an assumption about the existence of staffing parity with other disciplines is not valid.

It could be accurately argued that the need is for an additional three positions, but this would be a practical over-reach, since the goals of this initiative can plausibly be met by two new positions.

(The need for an additional position beyond the initiative would plausibly put Physics in a comparable position as Chemistry, which could also accurately argue for the need for an additional position, putting Physics and Chemistry contracted positions at five each.)

For these reasons, this initiative, at a minimum, requires two additional physics positions.

The options for partial funding include partially implementing one or both of the ancillary elements of the initiative. The cost is mainly in the first, which involves temporary contracted positions. It is essentially about the level of filling existing regular faculty positions with people on temporary contracts.

Minimum cost of partial funding

Minimum per year cost of the initiative involves granting of the two additional contracted positions without initiating temporary contracts to fill them before fall 2006. The actual minimum cost would involve an estimate of the hidden costs of the high use of part-time faculty and the hidden costs of not having the synergy of an adequately staffed physics discipline. The following is a means for estimating an upper limit on this per year cost.

This (upper limit on the) minimum long-term per year cost of partial funding is estimated by the following:
PLUS (X1): The salary of two contracted faculty positions between level 2 and level 3 at step six.
PLUS (X2): The cost of benefits appropriate to the faculty members in this position (taking into account that the standard OPE is averaged over all employee groups).
MINUS (X3): The cost of 2FTE of part-time assignments at level 3 step 6.
MINUS (X4): The cost of benefits for 2FTE of part-time assignments (taking into account the actual eligibility of part-time faculty in assignments in the discipline).
PLUS (X5): The additional tuition and State reimbursement from classes filled closer to capacity from increased planning, marketing, and attention to student needs.
PLUS (X6): The additional grant revenue obtained from having an adequately staffed and motivated discipline.
MINUS (X7): The cost of additional part-time assignments at level 3 step 1, coming from the future expansion of the physics program to meet student need made possible by the additional contracted positions, and the hiring of new people based on the anticipated retirement or full-time employment (here or elsewhere) of current faculty filling part-time assignments.
PLUS (X8): The tuition and State reimbursement brought in by this expansion.
MINUS (X9): The amortized savings, if any, from not letting out temporary contracted positions in 2005-06.

X	lower ($k)	higher ($k)	comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
Tot			

6. Provide ORG & PROG codes

ORG = 691600, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This initiative fits with the college's vision, mission and variety of college-wide goals in a number of ways, the main ones of which are highlighted below:

College Vision: Transforming lives through learning

The education provided by a community college is a gateway to many possible futures. Basic physics courses are part of the foundational study for all science majors, for understanding much of modern technology, and for scientific literacy in a time that democratic decision-making requires it. Physics courses play a key role in the transformation of people we aim for in college. This initiative can allow more than a minority of students needing physics courses to take them at Lane.

Physics education plays a particularly strong role in the formation of higher order thinking skills, because successful physics learning requires fundamentally changing one's deeply held misconceptions about the way the world works. Within the last fifteen years physics education research has led to radical improvements in physics education, which allow the vast majority students (rather than the traditional 10%) to learn basic physics concepts and have a positive, self-aware experience of fundamentally changing their minds. This initiative will allow such reforms to be fully and comprehensively implemented and maintained at Lane in physics, to be a useful model for other disciplines, and to provide a partner for transformational interdisciplinary learning opportunities.

College Mission: Lane is a learning-centered community college that provides affordable, quality, lifelong educational opportunities that include(s): Professional technical and lower division college transfer programs

This initiative allows the accomplishment of this goal primarily by providing more learning opportunities of a consistently high quality to meet more of the learning needs of Lane students.

Lane's Core Values

The initiative supports and is aligned with all of Lane's core values. Those directly and most decisively engaged by implementation of this initiative are:

Learning

- Working together to create a learning-centered environment
- Recognize and respect the unique needs and potential of each learner
- Foster a culture of achievement in a caring community

Diversity

- Cultivate a respectful, inclusive and accessible working and learning environment

Innovation

- Support creativity, experimentation, and institutional transformation
- Respond to environmental, technological and demographic changes
- Anticipate and respond to internal and external challenges in a timely manner
- Act courageously, deliberately and systematically in relation to change

Collaboration and Partnership

- Encourage and expand partnerships with organizations and groups in our community

Integrity

- Promote responsible stewardship of resources and public trust

Accessibility

- Strategically grow learning opportunities

Strategic Directions

The initiative supports and is aligned with all of Lane's strategic directions. Those directly and most decisively engaged by implementation of this initiative are:

Transforming Students' Lives

- Foster the personal, professional, and intellectual growth of learners by providing exemplary and innovative teaching and learning experiences and student support services.
- Commit to a culture of assessment of programs, services and learning.
- Position Lane as a vital community partner by empowering a learning workforce in a changing economy.

Transforming the Learning Environment

- Create a diverse and inclusive learning college: develop 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.
- Create, enhance, and maintain inviting and welcoming facilities that are safe, accessible, functional, well-equipped, aesthetically appealing and environmentally sound.

Transforming the College Organization

- Achieve and sustain fiscal stability.
- Build organizational capacity and systems to support student success and effective operations.
- Promote professional growth and provide increased development opportunities for staff both within and outside the College.

Biology Discipline

1. Initiative Title

Addition of one full-time faculty position in the Biology Discipline of the Science Division.

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

The challenge that this initiative addresses is created by the high proportion of Biology sections taught by instructors not contracted in Biology. Our part-time instructors are of the highest quality, yet the low contracted/part-time ratio causes increased work for support staff, increased demand on materials and facilities, less unified and somewhat less professional teaching of Biology, and more time spent by contracted faculty in mentoring part-time faculty.

The Biology Discipline consists of six contracted faculty, and there is always at least one who is either on sabbatical or has at least one course release time for various other college business. This Fall, 2004, we offer 34 regularly scheduled sections of Biology, and only 14 of them are taught by contracted Biology faculty.

Science has added a new program in the BioBonds learning community to serve as an innovative and effective preparation for students desiring to enter Anatomy and Physiology. For the year 2004-05, BioBonds adds at least 16 sections of Cell Biology for Health Occupations, BI 112. Much of this student load was previously born by CH 104 and now feeds into both BI 112 and CH 112. And the success rate among students entering A&P is markedly higher. However, most sections have been taught by part-time instructors, and turn-over has been high. In addition, we have increased our offerings of non-majors Biology sections by adding sections of the popular Marine Biology classes.

In summary, addition of a full-time position in the Biology Discipline will have immense impact and is long overdue.

3. Describe the initiative.

This initiative will fund one full-time faculty position in the Biology Discipline of the Science Division. This position will allow the Biology Discipline to continue to offer an excellent array of courses, coordinate part-time instruction and take responsibility for Cell Biology, Survey or other program. The specific description of this position must be determined in collaboration within the Science Division.

4. Describe the resources needed.

Resources needed for this initiative would include funds and support for one full-time instructor on a recurring basis, and would range from

Level 3, Step 6 ➔ $51,015, salary + OPE @ .530, $27,038 = $78,053
Level 3, Step 1 ➔ $43,579, salary + OPE @ .530, $23,097 = $66,676

As one contracted instructor replaces two or more part-time instructors, office space, equipment and technology can be provided from existing resources within the Division.

5. List the possible funding sources.

Payroll with OPE has no other funding source. Office, equipment and technology can be provided from existing resources within the Division.

6. Provide ORG & PROG codes.

ORG = 691120, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This initiative enhances the learning and success of students in Biology classes by enhancing teaching effectiveness over-all. It promotes innovation by supporting creativity among a cohesive and motivated discipline with facility for creative collaboration and reinforcement. It promotes collaboration and partnership through meaningful participation in shared governance. It promotes responsible stewardship of resources and public trust through more unified oversight.

Support Staff

1. Initiative Title

The **Science Division Technology Maintenance Project** will meet science student computer use needs, support instructional delivery using various forms of information technology, and also serve science program outcome demands related to the use of technology in teaching.

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

The initiative keeps existing instructional technological teaching methods functioning by providing necessary maintenance funds to meet the demands associated with rapid technological changes in science instruction.

3. Describe the initiative

- The product will be the conversion of two part-time Information Technology Technician positions (currently funded by the student technology fee) to two full time positions.

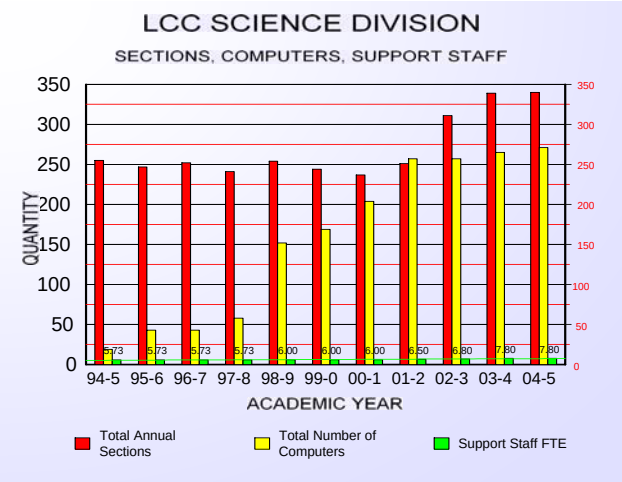
- The need is to maintain the support of student computers and other forms of technology used in science teaching. An analysis of data accumulated over the last decade provides evidence that the human resources originally allocated during the 1994-95 academic years has not been appropriately expanded at a suitable rate. Increases in total number of science sections, and the total number of computers have outpaced the ability of staff to support instruction.

- The project is feasible and necessary to meet science program outcomes.

- The project will be located within the Science and Math Divisions, Building #16, main campus.

- More than 6,000 students will benefit by having an Information Technology Specialists directly helping students in the Science Resource Center (SCI 193) and also in 17 science labs where computers are used.

- The following graph shows growth in the Science Division over the last decade. The number of sections taught was steady for 8 years, with some minor adjustments. Then 3 years ago, sections increased by about 90 sections. Also, the number of computers during the same 10 years, has increased 14 times.



- In conclusion, the Science Division classified staff needs to be expanded to continue to offer services as we have in the past. Planned expansion of offerings would require even more help. Thank you for your time and consideration to this situation.

4. Describe the resources needed

Two 1.0 FTE Information Technology Specialists
Level A, Step 3; $30,329 Salary, $16,074 OPE, $46,403 x 2 = $92,806

5. List the possible funding sources

- The project may be funded by the general fund.
- The project may be partially funded, provided that any reduction of the requested amount, be distributed equally between the two proposed positions.

6. Provide ORG & PROG codes

ORG = 691800, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

The project will transform lives through learning and it articulates with the college vision primarily by providing the support necessary for meeting the demands of the rapid technological changes in science instruction. It refocuses our existing internal system to better meet the needs of students and program outcomes.

The project responds to technological changes; anticipates internal and external challenges in a timely manner; acts courageously; deliberately and systematically in relation to change; improves integrity and accessibility while strategically growing learning opportunities to minimize barriers to learning.

Support Staff

1. **Initiative Title**
   Life Science Laboratory Support Project

2. **How is the initiative linked to your Program Outcomes Analysis for 2003-2004?**
   What is the challenge you are trying to address?
   The challenge is to continue to provide adequate laboratory support for the Life Science Program.

   How will this initiative address the challenge?
   This initiative will address this challenge by providing financial support for a full-time Instructional Specialist in Life Science.

3. **Describe the initiative**
   What will the product, innovation, or change of this initiative be? Please be as specific as possible.
   This initiative will provide the necessary instructional laboratory support of the traditional and innovative laboratory instruction for the Life Science classes including Anatomy & Physiology, General Biology, Majors Biology, Environmental Science, and the new Biobonds program. This position also provides instructional support for the Wetlab which is currently used as a laboratory for student experiments, the Native Landscape project and the greenhouse, which provide an extended classroom for Botany, environmental studies, and general biology classes.

   What is the need or intended use? How was that need assessed? What is your evidence of the need?
   The need is for a 1.0 FTE Instructional Specialist for the Life Science Program. The college has supported this position for the past 13 years. Prior to the bond-supported Science Division expansion, course offerings and facilities were well matched to the level of support staff. However, the amount of work and complexity of the various tasks has increased to the point that a student worker, whether work-study or some other casual employee cannot be expected to provide the expertise, responsibility, nor commitment required to adequately maintain the facilities.

   When the Division realigned job duties last summer, this position became vacant of a contracted person and is currently being supported by Division funds as a .5 instructional support, a .25 Wetlab support and an additional outside specialist for the marine aquarium.

   - ***Given college resources, is it feasible? Is it an efficient use of college resources?***
     This position is essential for the functioning of the Life Science Laboratory program. The Science Division is currently funding the position because it is recognized as an essential position needed to continue our current level of services to our Life Science students.

   - *What would be the campus location of this request/project?*
     Science Division, main campus

   - *How many students (per year) will benefit*
     The Life Science Instructional Specialist provides instructional laboratory support for approximately 150 class sections per year and app. 3600 students.

- *How will students benefit? How specifically will it address Core Abilities or Learning Outcomes of your program?*
  Students will benefit by having the necessary equipment, materials, and expertise available to provide them with a hands-on science learning experience. It supports, among others, the following Science and Biology outcomes:
  1) Build upon and apply a systematized body of knowledge or principles through observation and experimentation.
  2) Understand and be able to demonstrate the application of the scientific method to solve science problems.
  3) Demonstrate an understanding of natural processes that govern the interactions between organisms and their environment.

4. Describe the resources needed

Instructional Support Position: $42,608 in salary and OPE

5. List the possible funding sources

General Fund

- *Can this project be partially funded?*
  Yes

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

  It could be funded as a .75 FTE position, providing full time instructional support for Fall, winter and spring term with the Science Division providing the funding for the summer term.

6. Provide ORG & PROG codes

ORG = 691800, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

The life Science Instructional Support position serves to increase student access to quality instruction in diverse settings and modalities. This position helps to create diverse learning opportunities and contexts, and serve to better support recent expansion in the Division. This initiative improves the working and learning environment and better respects the work of our existing support staff, thus creating a more caring community. It responds to internal challenges to personnel infrastructure created by changes within the Division.

This project supports the College's Strategic Direction of "Transforming the college organization by building organizational capacity" with the goal of "Increasing human resource capacity to support student success and effective operations"

Support Staff

1. Initiative Title

An addition of 0.5 FTE classified position in the Science Administrative Office.

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

- One Challenge that is trying to be addressed is the workload issues. This issue consists of not being able to support faculty, students, and management because of continuous growth of the division, while support staff lands have remanded stable.

- This initiative will address the challenge by offering support to Admin in the Science office giving them time to work on other projects given by the college.

3. Describe the initiative

- This would be a.0.5 office support position in the Science Division office.

- The intended use of this position would give the office, student, and faculty support. This need was assessed by the growing amount of classes being added to the Science Division, and the amount spent with students that are planning on going into Family and Health Careers. Fall Term Administrative Support Specialist has paid special attention spent with the BioBonds students the time spent with staff and students ranges from 3 hours to 15 hours a week depending on what part of the term was being looked at. This was for a total of 6 linked classes.

- With the overload of work and money spent on sick leave due to stress it is feasible for the college to grant this initiative.

- This support staff would be located in building 16 in office 156.

- This would benefit over 8,000 students in a single year.

- This new position will address Core Values by working together to create a learning centered environment, responding to environmental, technological and demographic changes, promotes responsible stewardship of resources and public trust, and allows the strategic growth of learning opportunities.

4. Describe the resources needed

The needed resources for this position would be a work station ($1000), computer ($1500), plus hourly ware of Step 5 level 3 salary of $23,243 and an OPE of $ 9,204 figured in at .396% for an annual recurring total of $ 35,562.

5. List the possible funding sources

- This position can be partially funded.
- The minimum funding would be .25 FTE
- Recurring General Fund

6. Provide ORG & PROG codes

ORG-691001, PROG-111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

See answer to question 3 last bullet.

Science Division, Unit Planning 2004-05 **Division Priority #12**
Chapter 4, General Fund, Personnel, Initiative

Support Staff

1. Initiative Title

Science Resource Center Student Support Project

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

- *What is the challenge you are trying to address?*
  The challenge is to continue to offer student support services through the Science Resource Center.

- *How will this initiative address the challenge?*
  This initiative will provide personnel to run the Science Resource Center and to offer tutoring, testing, and other student services. These services offer support to science classes and help retain students.

3. Describe the initiative

- ***What will the product, innovation, or change of this initiative be? Please be as specific as possible.***
  This initiative will allow the Center to be open nights in the summer term to serve especially distance learning class testing and offer tutoring to all students. Also, an overlap with daytime staff will allow exchanges of information and more tutor help.

- ***What is the need or intended use? How was that need assessed? What is your evidence of the need?***
  The need is for a .75 FTE position where now we have a .31FTE position. The Science Division is already funding this position at close to .5 FTE to offer night hours on Finals week and some summer hours. As the division teaches more summer classes, more support is needed.

- ***Given college resources, is it feasible? Is it an efficient use of college resources?***
  Yes, as the Science Division has been teaching up to 90 more sections a year, for the last 3 years our need for student support has also gone up. The division is already expanding this position as needed. Without this position the Science Resource Center could not continue to offer the range of hours we do, and student retention would be lowered.

- *What would be the campus location of this request/project?*
  Science Division, Main Campus.

- *How many students (per year) will benefit?*
  We serve all Science classes. Approximately 340 sections per year and app. 8000 students.

- *How will students benefit? How specifically will it address Core Abilities or Learning Outcomes of your program?*
  Students will benefit by having tutors, testing, computers, microscopes, and other class materials, available outside of the classroom. This assists in the retention of students and creates and environment that allows students to achieve the maximum success.

4. Describe the resources needed

Instructional Support Position: 16,024 Salary and 6,346 OPE, Total: $22,370

5. List the possible funding sources

- *Can this project be partially funded?*
  Yes

- *If so, what portion could be funded at what minimum cost?*
  It could be funded at .500 FTE. This is still better than it is now, and summer hours could still be offered.

6. Provide ORG & PROG codes

ORG = 691800, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This Instructional Support position increases student access to materials, testing, and quality instruction one on one, at a time convenient to busy students. This position helps to create diverse learning opportunities, and to better support recent expansion in the Science Division. This initiative improves the working and learning environment, and better respects the work of our existing support staff, thus creating a more caring community. It responds to internal challenges to personnel infrastructure created by changes within the Division.

This project supports the College's Strategic Direction of "Transforming the college organization by building organizational capacity" with the goal of "Increasing human resource capacity to support student success and effective operations"

Anatomy & Physiology Discipline

1. **Initiative Title**
   Educational Support for Future and Current Family and Health Career Students

2. **How is the initiative linked to your Program Outcomes Analysis for 2003 – 2004?**
   What is the challenge your trying to address?
   The Anatomy and Physiology Unit teaches courses BI231 – BI324 that support Lane Community College's Family and Health Careers Programs. As the demand for Family and Health Career programs has increased over the past few years, so have the number of classes we offer and the number of students we serve. During the 2003 – 2004 school year our Anatomy & Physiology unit served ~ 350 students, this is an increase of ~ 75 students from the 2000 – 2001 school year.

   How will this initiative address the challenge?
   This initiative addresses the increased demand on our laboratory equipment and models due to increased number of students. It seeks funding to update and expand materials used to support student learning. It will allow our unit to continue to maintain program quality and student access to laboratory models and materials.

3. **Description of the Initiative**
   What will the product, innovation, or change of this initiative be?
   The anatomy and physiology unit is requesting Perkins funds in the amount of $13,048.85. These funds will go to the purchase of laboratory materials and models to support student learning.

   What is the need or intended use? How was that need assessed? What is your evidence of the need?
   As the number of class offerings has increased, we need to keep pace with an increase in laboratory models and materials so that all students have access to these study aids. Class polls demonstrate that 75% to 80% of students use models available in the resource room outside of class time. As the number of students in our courses increases, the number of available models must increase proportionately to ensure student access.

   Given college resources, is it feasible?
   Completion and implementation of this initiative is feasible if the resources are available.

   What would be the campus location of this request/project?
   The location would be the classrooms and resource room of the Science division, main campus, which specifically serve the students within the above listed courses.

   How many students will benefit?
   Currently we are offering approximately 50 sections per year accounting for approximately 166.24 FTE

   How will students benefit? How will it address Core Abilities or Learning Outcomes of your program?
   Our discipline uses laboratory equipment and anatomical models to enhance learning and understanding of the complex curriculum presented within our classes. This initiative will contribute to our ability to address various learning modalities in our classes by addressing needs to acquire necessary laboratory materials. Additionally, it will allow for the purchase of models specifically for the science resource room to provide students access outside of class time.

4. **Description of the resources needed**
   a. $2250 - 25 classic human skulls ($90 apiece- A-20 Anatomical Chart Company)
   b. $1725 – 25 locking skull cases ($69 apiece - SC70 Denoyer – Geppert)
   c. $864 – 1 Transversely Striated Muscle Fiber/ Motor End Plate (BS 36 Holt Anatomical)
   d. $680 – 2 Anatomical Skull/ Facial Muscles ($340 apiece HA 2 Holt Anatomical)
   e. $1044 – 3 Premier Teaching Skulls ($348 apiece – SK80PB Denoyer – Geppert)
   f. ~$5500- 1 Muscular Torso with Head (AS 6 Holt Anatomical)
   g. $306 – 1 Stomach Wall (JS 6 Holt Anatomical)
   h. $350 – 2 Sensi-Disc Antibiotic Disk Dispensers ($175 apiece – Carolina Biological)
   i. $108 – 2 Atlas of Pathophysiology ($54 apiece -LWW158255109X)
   j. $99.90– 2 Steadman's Medical Dictionary 27th Ed ($49.95 apiece -LWW068340007X)
   k. $46.95 – Tabor's Cyclopedic Medical Dictionary, 19th Ed
   l. $75 - Cross Sectional Anatomy Software ($25 apiece CS1 Holt Anatomical)

Total: $13,049

5. **Possible funding resources**

Can this project be partially funded?

The project can be partially funded because requested funds are for different items. Partial funding would allow the purchase of priority items first.

What portion could be funded at what minimum cost?

If the entire proposal cannot be funded the above items are listed in desired, descending order. Priority items would be purchased first.

Request for Carl Perkins Funds to support this initiative

How does the request meet one or two of the Carl Perkins act goals?

Goal #1 – Student Skills Gain Goal

It is imperative that our pre–medical health students posses a working knowledge of clinical anatomy. The addition of the laboratory materials and models will provide our students with an enhanced understanding of the course materials and assist in their successful transition into their Family and Health Career program.

Goal #2 – Special Populations Student Result Goal

Current data collected from student surveys indicates that of the ~ 350 students that we serve approximately 30 – 40% of our students could be categorized into one of the special population categories (disabled, economically disadvantaged, single parent, displaced homemaker, academically disadvantaged, and limited English proficiency). As our unit is serving more students and providing added classes, the purchase of anatomical models, that will be available in the Science resource room, will provide special populations with additional access to classroom materials. By providing a diverse learning environment for special populations through the funding and addition of resource room models, the opportunity for student success within these populations will greatly increase.

How will the use of funds contribute to the success of Lane's Professional Technical students?

The use of 3-dimensional laboratory models for teaching and testing purposes affords the Professional Technical student an additional method of understanding structure, outside of written descriptions or 2 dimensional images.

Briefly describe your past history of utilizing Carl Perkins funds.

The anatomy and physiology unit has been very fortunate to receive Carl Perkins funds for the acquisition of numerous models, laboratory equipment and computer hardware and software. With these funds we have successfully purchased the equipment and met the goals of the granting agency, while meeting the objectives for our courses. Carl Perkins

funds have allowed us to make available resources, which have been instrumental in providing students with a variety of educational modalities to optimally learn the material presented in our courses.

6. **Provide ORG & PROG codes**
   ORG code: 691110, PROG code: 111000

7. **How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?**
   The equipment requested by this initiative will provide students within our program an accessible, quality learning-environment that will enhance their learning and promote their success as they continue within the Family and Health Career Programs. This will have a positive impact on our community as our students become graduates of the Family and Health Career Programs and begin providing necessary health care to our community.

1. Initiative Title

The **Science Division Technology Maintenance and Repair Project** will keep science student computers and other hardware functioning, achieve compliance with copyright laws by renewing critical software, and by addressing needs with various forms of information technology associated with serving science program outcome demands related to the use of technology in teaching.

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

The initiative keeps existing instructional technological teaching methods functioning by providing necessary funds to meet existing demands associated with using technology in science instruction.

3. Describe the initiative

- The product will be the annual renewal of the academic licensing agreement for student computers using our network operating system, funding for student computer restoration software, and replacement of hardware components directly used by science students and for instructional delivery.
- The need is to maintain student computers and other forms of technology used in science teaching.
- The project is feasible and necessary to meet science program outcomes.
- The project will be located within the Science and Math Divisions, Building #16, main campus.
- More than 6,000 students will benefit by having Information Technology Specialists directly helping students in the Science Resource Center (SCI 193), ans also in 17 computer labs. Existing science student hardware and software will also be kept functioning.

4. Describe the resources needed

Information Technology Specialist #1		
(Level A, Step 3, Salary $30,974 plus OPE $12,265)		
Hourly up to 1039 hours for computer labs	$21,620	
Information Technology Specialist #2		
(Level A, Step 3, Salary $30,974 plus OPE $12,265)		
Hourly up to 1039 hours for Science Resource Center	$21,620	
Total for staff		$43,239
Software: 250 ALA Value Bundle Student Workstation licenses	4,679	
Workstation restoration software (DeepFreeze Enterprise)	2,000	
Hardware replacement components:		
Keyboards, hard drives, monitors, printer supplies, cables, RAM, mice		
Power supplies, accessory drives, Cmos batteries, cleaning and data tapes,		
UPS batteries, switch components, projector lamps, sound cards, NIC	3,500	
Printer replacement (1) SCI188	1,500	
Warranty extensions	1,427	
Total for software/hardware		$13,106
Total Project cost		$56,345

5. List the possible funding sources

- The project may be funded by the general fund and by the student technology fee.
- The project may be partially funded at a minimum of $54,345.

6. Provide ORG & PROG codes

ORG = 691800, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

The project will transform lives through learning and it articulates with the college vision primarily by providing the support necessary for meeting the demands of the rapid technological changes in science instruction. It refocuses our existing internal system to better meet the needs of students and program outcomes.

The project responds to technological changes; anticipates internal and external challenges in a timely manner; acts courageously; deliberately and systematically in relation to change ; improves integrity and accessibility while strategically grow learning opportunities minimizes barriers to learning.

Chemistry Discipline

1. **Initiative Title**
   Portable Classroom Computing Laboratory

2. **How is the initiative linked to your Program Outcomes Analysis for 2003 – 2004?**
   - *What is the challenge you are trying to address?*
     Computerized tools are an important part of chemistry. Many of these are available and useful in the classroom. Computer access is however limited both by physical location (the computer lab is not in the classroom) and the number of computers (eight) available do not allow all the students to participate in the activity at the same time.

   - *How will this initiative address the challenge?*
     A portable computer laboratory will allow us to bring the computers directly into the classroom easing access and minimizing disruption/wasted time. Purchasing enough computers (24) will allow all the students to participate in the computer activity together.

3. **Describe the initiative**
   a. *What will the product, innovation, or change of this initiative be? Please be as specific as possible.*
      This initiative will place twenty-four laptops on a cart with a printer and wireless networking so that a computer laboratory can be rolled directly into a classroom and learning can transition smoothly from traditional classroom activities directly into computer-based activities. This system will be setup so that students have access to science division computing resources so that all department-wide software resources are available in the classroom.

   b. *What is the need or intended use? How was that need assessed? What is your evidence of the need?*
      Computers are not installed in the classrooms (many laboratories do have computers) in Building 16 so that students must transition to one of two computing laboratories within the building. Each of these computing laboratories has only eight computers available so that only a portion of the students can participate in any learning activity at a time. These resources have been found to be inadequate as chemistry faculty try to bring computer resources into the learning environment.

   c. *Given college resources, is it feasible? Is it an efficient use of college resources?*
      The cost of laptop computers is somewhat higher than desktop models, however placing these on a secured cart allows for them to be used in many different locations and in different ways throughout the term. This allows for using less resources overall to achieve the same goals, making this an efficient use of college resources.

   d. *What would be the campus location of this request/project?*
      These computers would be kept in a secured location in Building 16 by the science division. While this request is specifically for the chemistry faculty, these laptops would be available for use by all science faculty.

   e. *How many students (per year) will benefit?*
      The chemistry discipline instructs 1300+ students each year. Many of these students will be given the opportunity to use these computers throughout the academic year. This will also free up other computing resources increasing their usage as well.

f. *How will students benefit? How specifically will it address Core Abilities or Learning Outcomes of your program?*
Computer literacy is critical for chemistry as well as all science students. Bringing computers into the classroom will both improve chemistry learning and increase students exposure to and comfort level with technology.

4. Describe the resources needed.
A secured cart with laptops (24), wireless hubs (4) and laser printer (1).
(Spreadsheet below)

5. List the possible funding sources

This is being submitted as a TACT request

a. *Can this project be partially funded?*
Partially funding this project would severely limit its functionality.

b. *If so, what portion could be funded at what minimum cost?*
The only changes that could be made is to the number of computers purchased. Usage of this system would be limited with less than 24 laptops and would not be worthwhile with less than 12.

6. Provide ORG & PROG codes

ORG = 691200, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

Redundantly described elsewhere; info can be inserted later if required.

"Spreadsheet"

Equipment	Price	Extended Price
24 Dell Laptop (Inspiron 1150)	$1,578.50	$37,884.00
Mobile Notebook Security Cabinet (NSC-030)	$1,825.00	$1,825.00
4 Super G Wireless Network Hubs	$149.95	$600.00
HP4200 Printer	$1,500.00	$1,500.00
Total		$41,809.00

Science Division, Unit Planning 2004-05
Chapter 4, TACT Initiative

Biology Discipline

Wireless Internet Hubs, Priority #4 — **Division Priority #15**
Interactive White Boards, Priority #5 — **Division Priority #16**

1. **Initiative Title**
   Biology Technology Improvements/Upgrades

2. **How is the initiative linked to your Program Outcomes Analysis for 2003-2004?**
   Biology did not submit any initiatives for 2003-2004. We are asking for innovative technology to improve teaching. The technology innovation upgrades address growing needs that will greatly improve teaching.

3. **Describe initiative:**

   Innovation Items:

- Wireless Internet hubs for biology classrooms 103, 111, 115 and 117

A wireless internet connection is requested for each of the four biology classrooms. This would allow students and faculty to utilize newer technology and use personal laptop computers while at school. All the biology classrooms currently are wired for Ethernet connections. These connections are in the floor in many cases. They have collected dust over the years and are of questionable status. Wireless access is preferred so that students can move their computers around the lab area and use them at lab desks, side benches, etc. without problems of Ethernet cords.

A recent faculty workshop was held in the Science labs at Lane at which several faculty from other schools wanted to use their personal computers to access the internet. This demand is only going to increase in the future and will soon reach our students.

Four classrooms at Lane serve an average of 16 sections each term (check figures), each with an estimated minimum of 24 students. Potentially it would serve 384 students a term.

Estimated cost: four Super G Wireless Network Hubs $149.95 for a **total of $599.80**

- Interactive white boards for biology classrooms 103, 111, 115 and 117

Four interactive white boards are being requested for the biology classrooms. These allow for integration of annotated visuals during lectures and presentations as well as running software right from the front of the room. Annotated visuals can be saved for later use by students to study.

Four classrooms at Lane serve an average of 16 sections each term (check figures), each with an estimated minimum of 24 students. Potentially it would serve 384 students a term.

Estimated cost: The "experimental classroom" uses a "Starboard" from Hitachi. We would prefer to remain consistent with that technology. We are asking for the largest size available in order to improve presentation to the back of the classroom. We are requesting four 75" wireless whiteboards at a cost of $1895 for a **total of $7580.**

5. **List the possible funding sources:**

We are making this request of the Student Technology Fee funds.

This initiative can be partially funded by breaking up the requested items. Individually the items are either not capable of partial funding or capable for classroom-by-classroom funding. This will create an inequity in classrooms, however. The Mac CPU request is for one unit so it cannot be partially funded. The wireless internet hubs and interactive white boards are requests for all the biology classrooms. If necessary the classroom units can be separated. See the spreadsheet for cost per unit for the whiteboards and wireless internet hubs.

6. Provide ORG and PROG codes

ORG = 6911120, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This project would greatly improve the learning centered atmosphere in the classroom. The software emphasizes student learning. Providing students with computer platform diversity prepares them for future situations with computers. The wireless internet hubs promote learning when students can bring their own computers to the classroom and access Lane computer resources while in the classroom. The interactive white boards promote learning by making lectures, visuals, and even student presentations much more interactive, accessible to multiple learners, and engaging. These will provide opportunities to capture data and save it for students to access at a later time for study. All will provide more opportunities for teaching innovation. All will expose students to new technology and its possibilities.

Earth & Environmental Sciences Discipline

1. Initiative Title
Expand Learning Opportunities in Science and Social Science: Implement a Geographic Information Systems (GIS) Curriculum for Transfer Students and Technicians

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?
The initiative meets the challenge of providing expanded learning opportunities for students in Science and Social Science. The GIS curriculum will assist both programs to meet these learning outcomes:

Be able to describe natural phenomena, and interpret and express scientific information, in symbolic format (e.g. equations, graphs, tables, mathematical notation, maps).

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.

Be able to demonstrate the use of Earth/environmental-science tools such as maps, graphs, aerial photos, mathematical relationships, Geographic Information Systems (GIS) and/or spreadsheets.

3. Describe the initiative
The product of this initiative will be a multi-purpose GIS curriculum, jointly supported and utilized by the Science Division and the Social Science Division. The curriculum will:

- incorporate GIS activities into existing EES (Earth and Environmental Science) and Geography courses for transfer students.
- teach GIS skills for management of large data sets that require spatial analysis using current GIS technology.
- utilize computing and software resources for a variety of GIS applications
- outline a curriculum for an AAS degree in GIS
- outline a curriculum for a professional-technical certificate in GIS
- articulate GIS courses with university programs in Oregon that teach GIS

<u>Need for a GIS curriculum at Lane</u>
Lane's interdisciplinary science programs and geography courses, state of the art teaching facilities, leadership in short and long-term job training programs, and proximity to OSU and OU uniquely position the college to take a leadership role in incorporating GIS activities and training in the region.

GIS skills are extremely marketable. The 2003 national survey of GIS professionals conducted by the Urban and Regional Information Systems Association (URISA) indicates that the lowest level of GIS technicians earns on average $33,604 annually; GIS specialists or coordinators reported salaries between $46,000 and $50,000 per year. These are living-wage jobs with career advancement opportunities.

GIS skills are applicable in a great number of fields, but have perhaps their greatest use in the Earth and Environmental Sciences and Geography applications. Some of the agencies that currently use GIS in the U.S. are Planning, Public Works, Watershed Management, Forestry, Wildlife, all Natural Resources, Community Development, Emergency Services, Community Health, Transportation, Real Estate, and Advertising. According to the GIS Certificate Institute 56% of professionals using GIS are from the public sector, 38% from private sector and 6%

from academia. In Oregon, regional planning, forestry, geosciences, and bio-resource engineering fields all use GIS. University courses in GIS are often reserved for upper-level students and are fully enrolled. There are few opportunities to gain entry-level skills in this emerging profession.

Feasibility of developing a GIS curriculum at Lane
Developing a full GIS degree program and GIS activities for existing courses is a large undertaking. We need to dedicate time, energy and expertise into thoughtfully planning the curriculum. This initiative is the first step in a long-range, multi-year project. The time requested in this initiative will allow an expert geography educator to design the program and help us develop the next steps. A grant proposal to NSF is a strong possibility for funding the first few years of the program. The timetable for NSF Advanced Technological Education grant proposals is an April deadline for preliminary proposals and an October deadline for full proposals.

The two principal faculty in EES and Geography teach full-time and, despite strong interest, have not been able to develop a GIS program. We want to hire Lynn Songer, a part-time faculty member in Geography, to develop this program. Lynn is current in GIS technology and pedagogy and is ideally trained to undertake this work.

What would be the campus location of this request/project?
The GIS curriculum would be used in Geography and EES. The "home" for the GIS degree programs could be either the Social Science Division or Science.

How many students (per year) will benefit?
At this point, we can only guess. Fully implemented, a GIS training program could support two sections (maximum 18 students each) each term in the daytime program; at night we could serve an additional section, designed for people using GIS in their current jobs. I'm estimating 60 to 70 students per term, and (including potential summer courses), as many as 200 per year.

In addition, we plan to add GIS activities to numerous existing EES and Geography courses. These courses currently serve nearly 300 students per term, and about 940 students per year.

How will students benefit?
Students will learn state-of-the-art GIS skills that can lead to a high-demand, well-paying career. Transfer students will gain GIS skills that can be applied in their advanced work at four-year colleges. Working professionals will be able to learn new applications and stay current in their skills.

The GIS curriculum will meet the learning outcomes list in item #2 above.

The GIS curriculum will meet these Core Ability Outcomes:

- communicate effectively: by using GIS maps as a tool for summarizing large amount of spatial data
- think critically and solve problems effectively: by solving problems that require GIS data and methods
- increase understanding of the relationship between self and community, including self-awareness, personal responsibility, and the development of cultural competence: by gathering and interpreting a wide variety of GIS data, much of which relates to issues of environmental management
- explore academic disciplines: by learning about GIS applications and careers

We envision this program to be embedded into the existing curriculum of Geography and EES and to offer GIS trainings classes for people who need job skills training and/or are currently

using the technology. A number of community colleges award GIS Certificates and Associate GIS degrees within the U.S. See http://www.urisa.org/Career_center/college_certif_programs.htm . A certificate program directly benefits students who want applied technology skills for employment. Students in existing Geography and EES courses will gain experience using state-of-the-art GIS applications.

4. Describe the resources needed

Extensive resources will be needed to implement a GIS curriculum program. For this initial step, we are requesting 100 hours of curriculum development. These funds will allow Lynn Songer to design the program elements so that we can prepare one or more grant proposals and future initiative requests. We are putting this request into the Social Science Division and the Science Division. By doing so, we hope to draw your attention to the high commitment we have to this undertaking and the high value it will bring to the college.

Summer 2005 thru Spring 2006, 100 hours curriculum pay, $2644 Salary, $1047 OPE **,**
Total: $3691

5. List the possible funding sources

For this initiative, curriculum development funds are requested. If the program is pursued, potential funding sources include TACT funds for hardware and software; a Perkins grant; NSF funding; and tuition based courses.

Funding a portion of the development time requested will allow us to make progress, but might not result in a fully developed program. We request a minimum of 50 hours of curriculum time.

THIS REQUEST IS FOR ABOUT $3700. PLEASE NOTE, JANE BENJAMIN AND I HAVE SPENT AT LEAST FOUR HOURS DEVELOPING THIS PROPOSAL. I ESTIMATE THIS WOULD BE ABOUT $350 FOR THE TWO OF US. OTHERS WILL SPEND TIME REVIEWING THIS REQUEST. ARE WE SURE THE INTITIATIVE PROCESS IS THE BEST USE OF ALL OUR RESOURCES?

6. Provide ORG & PROG codes

ORG = 691500,PROG = 111000 Science Division

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This initiative meets numerous elements of the college's vision, mission and goals, as well as contributing to the college's strategic plan:

- Expanded learning experiences in professional technical and college transfer programs.
- Employee skill upgrading and career enhancement.
- ALL aspects of Lane's Core Value of Innovation.
- Develop and expand learning experiences.
- Seeks external funding sources to enhance student learning.

Anatomy & Physiology Discipline

1. **Initiative Title**
   Development of Anatomy and Physiology Specific Materials: Mentoring Manual and Standardized Laboratory Manual

2. **How is the initiative linked to your Program Outcomes Analysis for 2003-2004?**
   One of the themes that emerged from our program outcomes analysis is the need for better mentoring of our adjunct faculty. This initiative will lead to a mentoring manual and BI 231-234 standardized laboratory manuals.

3. **Description of the Initiative**
   Product of the initiative: The Anatomy and Physiology discipline proposes to develop the following materials:
   - *(1) Mentoring manual for adjunct faculty*: This manual would provide specific course content and skill outcomes for part time faculty. We will also work towards common exam questions for program assessment. Currently the outcomes we have do not adequately indicate the depth topics need to be covered. By providing more specifics and adding a few standardized exam questions we will provide more guidance for our part time faculty and create a comparable experience for all the students our program serves.

   - (2) *Laboratory Manual*. The laboratory manual for our Anatomy and Physiology sequence developed through this initiative will replace the current lab book which is expensive and not used equally in our classes. The new manual will contain a set of labs that will standardize the laboratory skills component of our classes. Additionally we will update/revise the current microbiology laboratory manual which is currently used by all of our microbiology classes.

   Need for the initiative: Within the last several years the number of classes taught in our discipline has increased approximately 25% thereby increasing our reliance upon part time faculty. Since our classes form a 3 term sequence, it is not uncommon for many of our students to have 2-3 different instructors. For this reason it is imperative that students receive the same foundational material in all of the sections of the same course we offer. Similarly, since our sequence is required for several of the programs in Lane's Family and Health Career division, it is critical that all students who successfully complete our entire sequence have the same foundational knowledge. The need for this initiative is reflected by the inconsistent background of students entering BI 232 or 233 classes. This inconsistent background has been assessed through classroom assessment techniques and completion rates (last year we lost 116 of 399 students between BI 231 and BI 233 or 29% of the students that enrolled in BI 231 did not enroll in BI 233).

   Is the initiative feasible? There is a large demand for our classes (all classes are generally filled by or before the end of the first day of advanced registration) and this translates into significant revenue generation as we have increased our courses approximately 25% in the last 3 year years. However the integrity of our discipline is very important and we can not continue to offer the number of classes that we have been without standardizing the content and helping part time faculty meet specific course content and laboratory outcomes. This initiative requests curriculum development support (reassignment time) to develop material to both standardize our classes and mentor faculty. This is more cost effective to the college than the other alternative (i.e. loss of revenue from inability to offer sections) which is the inability to offer the large number of courses currently taught..

Campus location: All of these courses are taught in the Science division and all work for this initiative would involve anatomy and Physiology discipline faculty .

How many students will benefit? Currently we are offering approximately 50 sections per year accounting for approximately 166.24 FTE.

How will students benefit? Students will benefit by being better prepared for not only the next term within the A&P sequence but also for the allied heath programs they enter. (Science outcome #2, "build a foundation to connect skills and knowledge to other disciplinary learning, thus meeting the needs of other programs)

4. **Describe the resources needed**

This work will require 1 course reassignment time during the 2005-2006 academic year for one full time faculty member of the APDU. This work will best be accomplished during the school year because it will rely upon input from other faculty members.

The replacement at level 3 step 4 would be $3817 salary plus $1511 OPE,
Total: $5328

5. **List the possible funding sources**

This project could also be divided into 2 projects, mentoring manual and standardized laboratory manual each with 75 hours of curriculum development to be shared among two faculty members at a rate of $ 26.44/hour ($1983 for 75 hours + $ 785 OPE at a rate of 0.396). If fully funded by curriculum development the total will be $5536, more than one reassignment time.

- *How will the initiative improve learning?*
  This initiative will improve student learning through the development of materials that will standardize our classes so that students will have the necessary foundation to enter the next course in the sequence or enter into the Lane's Family and Health Career program they choose.

- *What specific curricular materials will be created?*
  The curricular materials will be (1) a mentoring manual containing specific course content and skill outcomes for of the body systems covered in our Anatomy and Physiology sequence as will as exam questions that can facilitate program assessment and (2) a laboratory manual for the BI 231 -233 sequence and our BI 234 classes.

6. **Provide ORG & PROG codes**

ORG code: 691110, PROG code 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

The curriculum development support requested by this initiative will provide students within our program with a quality learning-environment that will enhance their learning and promote their success as they continue within the Family and Health Career Programs. This articulates with the mission of the college by providing the foundation for our students to enter Family and Health Career Programs. Similarly it furthers the core learning values of the college. This will have a positive impact on our community as our students become graduates of the Family and Health Career Programs and begin providing necessary health care to our community.

Biology Discipline
Chemistry Discipline

1. **Initiative Title:** Curriculum Development to Develop Linked Activities Between Chem 112 and Bi 112 to Enhance Student Success and Retention by Improving Student Comprehension of Complex Concepts and Student Attitudes.

2. **How is the initiative linked to your Program Outcomes Analysis for 2003-2004?**
This initiative is linked to Program Outcomes Analysis for 2003-2004 by increasing retention of students through the BioBonds learning community as well as through the Anatomy and Physiology and Microbiology sequence, and by increasing the preparedness and success of our students in the Allied Health careers. Students enroll in Chem 112 and Bi 112 concurrently, for a total of six credits, as prerequisites to A&P. We have found that creating the BioBonds learning community has improved retention in the A&P and Micro sequence substantially. Still, and inordinate amount of time is spent by faculty and staff helping these students understand related concepts and expectations of them. We seek a way to clarify concepts and expectations both for the students and for faculty and staff as well.

3. **Describe the initiative.**
This initiative will produce a sequence of linked activities in Chem 112 and Bi 112 that will provide students a broad and unified experience of content material. We have found that aligning topics of Chemistry and Biology has helped students' understanding of both chemistry and biology. We have experimented with occasional linked activities and have found student response to be very positive. Linked activities can include simple paired activities, integrated activities and case studies shared between the two courses. Examples can include glucose metabolism and conditions such as diabetes or hypoglycemia, cellular metabolism and how it can relate to gas exchange between erythrocytes and other tissue, pharmacological examination of drugs in which small changes in chemical structure can have observed and even predictable changes in chemical and physiological properties of the drug, implicating treatment design and schedule. Many other examples are possible. The goal of this initiative is to identify linked activities that teach the very sequence of topics in both Chem 112 and Bi 112 that we have found is successful for students in later courses.

4. **Describe the resources needed.**
Resources needed are 200 hours of curriculum development spread over Spring, 2005, and Summer, 2005, for a combination of full-time, part-time faculty, a chemist and biologist.

200 hours @ $26.44 per hour = $5288 salary, $2094 OPE, **Total: $7382**

5. **List the possible funding sources.**
Besides College curriculum development funds, the only other source of funds currently for this initiative are Division funds emanating from tuition based courses enrolled past a break-even number. These funds are very limited, however, and are expected to be used for other needs.

6. **Provide ORG & PROG codes.**
ORG = 691120, PROG = 111000 Biology
ORG = 691200, PROG = 111000 Chemistry

7. **How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?**
Allied Health Careers students show a profile of older than the college average and intending to change their lives toward service to others and success for themselves and their families.

Thus serving them helps us transform lives through learning. This initiative will allow us to provide a learning-centered experience for professional technical students; it hones their life skills development, and it helps them attain lifelong personal development and enrichment. It exemplifies Lane's core values of Learning, Innovation, Collaboration, and Accessibility. We will be transforming the learning environment in order to transform students' lives.

Earth & Environmental Sciences Discipline

1. Initiative Title
Improve the EES Website to become a Comprehensive Student Resource

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?
This initiative meets the challenge of completing the development of the EES website. Last year we built a home page with a few links, using a minimum investment of curriculum development time allotted by the Division (25 hours). We would like to continue this project and fulfill our initial vision for the site.

3. Describe the initiative
The product of this initiative will be a comprehensive online student resource that includes these features:

- Online lab activities and homework providing immediate feedback to students in any General Geology course
- Self-tests such as practice quizzes in General Geology
- Links to useful sites to enhance student learning in General Geology
- Links to library search tools
- Links to course syllabi
- Links to faculty web pages

Need for improving the EES website
In this project we can explore new assessment techniques and provide students with more immediate and thorough feedback than can be supplied by more conventional evaluation. Students benefit from more practice to help them learn course material. A web site available to General Geology students could help many students at once, reinforcing the material they learn in class, and can be useful to a number of instructors.

This web site would be used in any General Geology classes to assist students in checking their answers to lab activities. Students who want more practice learning the material could use the site. It could also be used in classes as part of lab activities and even for testing. Students could practice, check answers from home, or do homework assignments on the web site.

Students could access specific assignments from their teachers, along with links for course research projects. Students could access their syllabus and a faculty web page to learn more about general geology courses they may be considering enrolling in.

Feasibility of improving the EES website
The program WebCT is already supported on campus for this type of Web site. Geology classrooms have computers with Internet access. Earth and Environmental Sciences discipline has faculty members who are experienced in using WebCT and other Web site and quiz-building software.

What would be the campus location of this request/project?
EES discipline, Science Division, main campus

How many students (per year) will benefit?
All General Geology students would benefit, which is commonly more than 500 students a year.

How will students benefit?

Students will benefit because they will receive instantaneous evaluation of their answers for lab activities, practice quizzes and tests. They will also have the opportunity to practice the material they learn from home or outside of class time. They will have immediate access to information about Geology classes and faculty.

4. Describe the resources needed

50 hours of curriculum development: $1322 Salary, $524 OPE **Total: $1846**

5. List the possible funding sources

General fund, curriculum development.

Funding a portion of this initiative will enable us to meet some but not all of our goals for this initiative. The minimum funding is 30 hours of curriculum development pay.

6. Provide ORG & PROG codes

ORG = 691500, PROG = 111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This initiative meets numerous elements of the college's vision, mission and goals, as well as contributing to the college's strategic plan:

- develop and expand systems for assessing learning
- recognize and respect the unique needs and potential of each learner
- support creativity, experimentation and institutional transformation
- develop and expand the learning experiences available to students
- increases student access and use of existing technology

Anatomy & Physiology Discipline

1.**Initiative Title**

Development of an On-line BI 233 course

2. **How is the initiative linked to your Program Outcomes Analysis for 2003-2004?**

The goal of this initiative is to better meet the scheduling needs of students we serve in the Anatomy and Physiology discipline and is one of the themes that emerged from our program outcomes analysis.

3. **Description of the Initiative**

Product of the initiative:

The product of this proposal will be the development of a "hybrid"online BI233 Human Anatomy and Physiology 3. This class will meets only once/week in the classroom for collaborative group activities and laboratory sessions.

Need for the initiative:

This course is the 3rd and last course in the Anatomy and Physiology sequence offered by the Science division to support Lane's Family and Health Career Programs. In fall term many students within this course are concurrently enrolled in LCC's Nursing Program. For many of these students it is very difficult for them to fit 6 hours/week in Anatomy and Physiology along their nursing classes and clinicals. Furthermore, to fit their clinical schedule we need to offer classes at times such as 3:00-6:00 p.m., or 4:00-7:00 p.m, or 6:00-9:00 p.m. twice a week. These times are not optimal for student learning. This proposed alternate format class will significantly reduce the on-campus time commitment thereby serving the scheduling needs of our students.

Is the initiative feasible?

Joe Russin and Shelley Gaudia in the Science Department have been successfully offering "hybrid style" classes for a few years and they have been successful. In addition by the time student enter Anatomy and Physiology 3 they have already completed 2 terms of the sequence and with support of online technology and scheduled lab/discussion sections they should be successful in such a course. As an added benefit this class would free up classroom space which is at a premium during fall term.

Campus location:

The ultimate product will be housed on the WebCT server and available either at home to students or via the science resource room or community learning centers at their convenience. The classroom component would be within the Science division, main campus.

How many students (per year) will benefit?

Initially only one or two sections (25-50 students) would be offered but if successful such a class could be a model for others within the Anatomy and Physiology/Microbiology sequence.

How will students benefit?

Student will benefit by the flexibility an online format offers.

4. **Describe the resources needed**

This initiative will require 1 section reassignment time fall term 2005 for Katie Morrison-Graham to develop and implement the class at a cost of $3817 salary plus $1511 OPE,

Total $5328

5. **List the possible funding sources**

Although not as efficient as being able to develop and trouble shoot the class as it is being offered, this project could be partially funded by providing curriculum development pay during summer 2005 for 100 hours at a rate of $26.44 /hour ($3691 with .396 OPE).

How will the initiative improve learning?
This initiative will improve student learning through providing access. Many of the students enrolled in our BI 233 class in fall term are concurrently enrolled in the Lane's nursing program. Due to other demands upon their time they are often unable to attend 6 hours/week.

What specific curricular materials will be created?
The curricular materials will be a WebCT class that will replace the "lecture" component of the course and curricular materials to support synthesis and critical thinking skills for in class group activities and laboratory experiences.

6. **Provide ORG & PROG codes**
   ORG code: 691110, PROG code 111000

7. **How does this project articulate with the college's vision, mission & goals and contribute towards meeting the President's/Board's approved goals?**
   This project targets the core values of accessibility and learning. By allowing students the option of an online course format that fits their schedule while still providing the necessary laboratory time to foster hands on learning and student-student learning, this project creates a quality learning environment in an accessible environment.

Biology Discipline (submitted by Joe Russin)

1. Initiative Title

Expand Course Offerings in Biology: Implement the development of curriculum for a BI103, non-majors "emphasis" course entitled "Evolution: The Central Theory".

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

This initiative meets the challenge of expanding and enhancing the relevance our biology course offerings. Adding a sequence of lecture/lab topical courses in biology will afford our students more options in completing their AAOT degree requirements. It also addresses the challenge of providing students with greater opportunities for utilizing the "scientific method" and critical thinking skills through scientific inquiry.

3. Describe the initiative

The product of this initiative will be the curricular materials to offer a 4-credit lecture/lab course for non-science majors that satisfies the AAOT transfer requirements of a lecture-lab science class. The course will need to be approved by the Curriculum Committee. It will be numbered as a BI103 class entitled "Evolution" and will include the following topics:

- The meaning and process of scientific inquiry
- The definition of evolution
- The evidence for evolution
- The sources of genetic variation in a population
- The mechanism of Darwinian evolution
- The mechanism of speciation
- Patterns of evolution
- The relationship between evolution and taxonomy
- Macroevolution vs. microevolution
- The rise of the major groups of organisms
- Behavioral evolution
- Evolutionary ecology

The need for this course reflects the goals of the Biology discipline to offer a diverse set of subjects, which are specific in content but cover a widely accepted set of important "core" biological principals and concepts. The Biology discipline refers to these content-specific classes as "emphasis" classes. This provides students with an opportunity to choose from a variety of topics that match their interests and allows for instructors to generate excitement and interest in a subject that coincides with their area of expertise. The proposed course will focus specifically on the principals of evolution, while addressing the core concepts of a BI103 class: ecology, a survey of the Kingdoms of life, and evolution. The subject is very relevant to students' lives in areas such as "genetically modified organisms", emerging diseases, resistant strains of bacteria and insects, and the discussions about the origin of life on earth.

<u>Feasibility of developing new courses</u>

Based on the high enrollment in other BI103 courses that include evolution as a smaller section, and discussions among students and other faculty, there is a great interest in the subject matter; therefore, enrollment should be high and the course should be "self-sustaining". This also makes it an efficient use of college resources.

<u>What would be the campus location of this request/project?</u>

These courses will be taught in the Biology classrooms of building 16.

<u>How many students (per year) will benefit?</u>

Initially, this course will be offered as one section in one term, reaching about 25 students. If the course proves popular, we could expand to one section for two terms. The curricular materials developed for this course could be utilized in any other biology course and some Geology courses offered at Lane, since all of them include a component of evolution.

How will students benefit?

One of the key benefits of the biology "emphasis" courses for students is the ability to satisfy their science transfer requirement by choosing a subject that matches their interest. By offering "Evolution" as a BI103 emphasis class, students will have the opportunity to study a topic that is considered to be the "central theory" of biology. The topics covered in this course will also allow for collaboration with other classes, such as anthropology, geology, chemistry, geography, mathematics, and philosophy. This would create the possibility for Learning Communities to be formed. Students will utilize outside resources such as the University of Oregon Natural History Museum, which will strengthen community connections with the college,

There are several other student Learning Outcomes that will be addressed. The student will:

- communicate more effectively about Science, by reading and writing about current topics in evolution.
- have an increased ability to make informed decisions about biological issues
- have an increased awareness & appreciation of all life on earth
- Demonstrate the ability to conduct and to understand scientific inquiry.
- Understand the difference between scientific patterns of thought and other patterns of thought.
- Be able to relate course knowledge to articles about science
- Explain the evolutionary processes that shape the unity and diversity of organisms on earth and contribute to characteristics and adaptations
- "Understand the principles underlying the classification of organisms and be able to describe the distinguishing features of the major categories of organisms
- Understand hierarchical levels of biological organization (molecular to biosphere)
- Understanding of the critical interactive role among organisms (including humans) and be able to use of this information in decision-making.

4. Describe the resources needed

One section reassignment time: level 3, step 4, Salary $3817+OPE $1511, **TOTAL $5328**

5. List the possible funding sources

The most appropriate funding source would be curriculum development. This project cannot be partially funded, as it calls for one release position that cannot be divided.

1. The initiative will improve learning by offering a content-specific course that students will find interesting and relevant. It will provide opportunities for developing critical thinking skills through problem-solving activities and discussions of controversial issues. It will increase collaboration skills through in-class group work and out-of-class projects. It will enhance the learning of technology-related skills through computer simulations and Internet activities.

2. The specific curricular materials that will be created will be a syllabus with course objectives, laboratory and computer-based activities, and both formative and summative assessment tools.

4. This is a new course; there is no revision involved.

6. Provide ORG & PROG codes

691120, 111000

7 How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This initiative meets numerous elements of the college's vision, mission and goals, as well as contributing to the college's strategic plan:

- recognize and respect the unique needs and potential of each learner
- support creativity, experimentation and institutional transformation
- develop and expand the learning experiences available to students
- enhance lifelong personal development for members of the community as a community service
- promote responsible stewardship of natural systems

Biology Discipline

1. Initiative Title

Development of curriculum for a BI103, non-majors "emphasis" course entitled "Animal Behavior".

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

This initiative meets the challenge of expanding and enhancing the relevance our biology course offerings. Adding a sequence of lecture/lab topical courses in biology will afford our students more options in completing their AAOT degree requirements. It also addresses the challenge of providing students with greater opportunities for utilizing the "scientific method" and critical thinking skills through scientific inquiry.

3. Describe the initiative

We will develop a non-majors course that teaches:

1. a set of general biology concepts, including:
    a. the meaning of science and the scientific method
    b. cell theory
    c. taxonomic overview of life
    d. general requirements for sustaining life
    e. the hierarchical organization of life
    f. the correlation of structure and function in organisms
    g. homeostasis
    h. the acquisition and use of energy by organisms
2. in greater detail the biological concepts of ecology and evolution:
    a. ecology: a holistic view of life (populations, communities, ecosystems, and the biosphere)
    b. energy flow and nutrient cycling in ecosystems
    c. zonation, seres and succession
    d. conservation biology
    d. behavioral ecology (predation, communication, social systems, mating strategies)
    e. genetic control and changes
    f. interactions among genotypes, phenotypes and the environment
    g. natural selection and microevolution
    h. reproductive isolation, speciation and macroevolution
    i. the fossil record and developmental, chemical, anatomical and physiological expressions of evolution
    j. proximate and ultimate causes of behavior
    k. cost-benefit analyses of behavior
3. general principles of animal behavior:
    a. Tinbergen's four levels of ethology
    b. behavioral ontogeny: genetic and learned components of behavior
    c. levels of learning
    d. migration, territoriality, and coloniality
    e. reproduction and parental care
    f. sexual selection and mating strategies
    g. altruism
    h. an ethological approach to human behavior

In addition, we will consider scientific methodology: collecting, graphing and analyzing data, with an emphasis on measuring behavior.

Potential Benefits to the Program:
The General Biology emphasis courses for non-majors provide an opportunity to learn general biology principles while examining one area of the biological sciences in greater depth. This allows students to fulfill a science requirement in the framework of an area of particular interest. Discussions of animal behavior generally generate considerable interest among students. A course with this topic as its emphasis will add to the opportunities students have when looking for courses to fill their science requirements, or to generally broaden their understanding of biology. In addition, the instructors will act as resources for faculty teaching other courses that may include animal behavior components.

Because of their intrinsic value to the course, a variety of outside resources (*e. g.* The Cascade Raptor Center and Mt. Pisgah Arboretum) will become more closely allied with the science division.

This course will add to the use of existing resources like the wet lab, the Eldon Shafer Nature Trail and the Marston Forest Reserve.

Challenges:
Introduction of this course will likely result in a redistribution of students among the available classes with the same number designation (Bi103). As a result, there will need to be a shift in instructor responsibilities among these classes.

Because of the need for full-time instructor management of different areas of emphasis, the inclusion of new courses increases the need for a larger ratio of full-time to part-time instructors. Such a shift would be beneficial to students in a variety of other ways (in addition to providing more course selections), so it is a challenge worth overcoming.

4. Describe the resources needed

Funding:
We have received funding from the Science Division to support 30 hours of curriculum development. This has allowed us to conduct early assessment of the plan, as a result of which we have determined that development of this course is feasible, warranted and progressive. The full development of the course will require an additional 70 hours of curriculum development work which remains unfunded.

$1851 salary, $733 OPE = $2584

Resources Still Needed:
We need to use the general outlines of the course we have generated to develop a set of class notes, exercises, assessment tools and desired outcomes. We need to identify and acquire materials and instruments for demonstration and activity purposes. Funding to support 70 hours of work to complete this project will be required.

5. List the possible funding sources

6. Provide ORG & PROG codes
691120, 111000

7 How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?
This initiative meets numerous elements of the college's vision, mission and goals, as well as contributing to the college's strategic plan:

- recognize and respect the unique needs and potential of each learner
- support creativity, experimentation and institutional transformation
- develop and expand the learning experiences available to students

- enhance lifelong personal development for members of the community as a community service
- promote responsible stewardship of natural systems

Earth & Environmental Sciences Discipline

1. Initiative Title

Expand Course Offerings in Earth and Environmental Science

2. How is the initiative linked to your Program Outcomes Analysis for 2003-2004?

This initiative meets the challenge of expanding and "modernizing" our geology curriculum. EES faculty identified a need for expanded course offerings in our 03-04 analysis. This need continues. Geology students currently are limited to taking either a standard 100-level introductory sequence or a 200-level sequence for science majors. Adding a sequence of lecture/lab topical courses in geology will afford our students more options in completing their AAOT degree requirements.

3. Describe the initiative

The product of this initiative will be a three-course sequence of 4-credit lecture/lab courses. The courses will need to be approved by the Curriculum Committee and forwarded through the state approval process. We propose these course numbers and titles:

G161 Introduction to Pacific Northwest Geology
G162 Natural Disasters
G163 Geology of National Parks

Need for expanded course offerings

The present Geology curriculum is very limited and does not extend a wide range of choices to students. Offering topical courses provides students with expanded variety that will attract their interest and give them more options for meeting their AAOT science requirements.

The three courses planned can be linked in a sequence that parallels topics in the current 100-level sequence but does not have excessive overlap. The courses will be 4-credit course with labs, designed for non-science majors and can be taken in lieu of the current Geology 100 series. Science majors with particular interests in these topics could also benefit. In addition the courses will appeal to the general public interested in geology.

Introduction to Pacific Northwest Geology allows us to teach concepts of plate tectonics, rocks and minerals, volcanism, continental accretion and mountain building in a way that is very relevant to our region. The course will take advantage of vast local resources of learning materials in the form of local rocks, local plate tectonics and field trip destinations. By focusing on the Pacific Northwest, students can become more involved and excited because they can see the geology around them.

Natural Disasters will teach surface processes with a focus on geohazards, weather disasters and environmental issues. These topics can capture students' imaginations while at the same time exposing them to important scientific concepts. The course can help people become better-informed citizens for decision making in dealing with geologic and meteorologic hazards.

Geology of the National Parks provides many opportunities to sample aspects of North American geology and tectonic history. The course is an exciting way to teach beginning level geology. Members of the general public will also find such a class valuable as a way to enhance their experiences of the natural world especially when traveling through national parks. This sort of class provides a valuable community service.

Feasibility of developing new courses

A review of the course offered at two- and four-year colleges in Oregon indicate that these courses are offered at several other colleges, thought not always in a lab format or as a sequence. The UO offers *Geology of the National Parks*, which attracts a number of students. Last fall's enrollment was 29 students and last winter's course was full with a cap of 20 students. *Introduction to Pacific Northwest Geology* is not offered at UO but a 300-level course there, *Geology of Oregon and the Pacific Northwest,* had enrollment of 77 students last fall and last winter's course was filled, with a cap of 75 students.

Several of the part-time faculty members in EES have taught these courses in a lecture format and are qualified to develop the lab/lecture format needed at Lane.

What would be the campus location of this request/project?
These courses will be taught in the Earth and Environmental Sciences discipline, Science Division, main campus.

How many students (per year) will benefit?
We initially envision offering the sequence with one-section per term, reaching about 75 students. These courses will also be excellent summer term options. We intend to replace one existing 100-level sequence with the new course sequence in order to not increase our part-time to full-time FTE ratio which is already very high. If the courses prove popular, we will expand to two sections per term. At that time we will decide if adding new sections or replacing existing sections is the best plan.

How will students benefit?
Students who need a science requirement will benefit by having more choices. Students who wish to travel to national parks will see a tremendous increase in their appreciation of the experience by being more aware of the geology around them after taking *Geology of the National Parks*. The primary benefits of *Introduction to Pacific Northwest Geology* are to offer wider variety, to teach students about their local environment and to impart geologic knowledge at the same time. A *Natural Disasters* course benefits students because every member of society needs to understand the causes and consequences of natural disasters so disasters can be avoided, mitigated or survived.

4. Describe the resources needed

100 hours of curriculum development for *Introduction to Pacific Northwest Geology*
$2644 Salary, $1047 OPE, Total = $3691

100 hours of curriculum development for *Natural Disasters*
$2644 Salary, $1047 OPE, Total = $3691

100 hours of curriculum development for *Geology of the National Parks*
$2644 Salary, $1047 OPE, Total = $3691

TOTAL: $11,073

5. List the possible funding sources

General fund, curriculum development

Funding a portion of this initiative will enable us to begin the process of developing the new sequence. Any one or more courses could be funded without funding the other courses. However, creating at least a two-course sequence will be necessary to make the courses useful for AAOT requirements.

6. Provide ORG & PROG codes

ORG=691500; PROG=111000

7. How does this project articulate with the college's vision, mission & goals and contribute toward meeting the President's/Board's approved goals?

This initiative meets numerous elements of the college's vision, mission and goals, as well as contributing to the college's strategic plan:

- recognize and respect the unique needs and potential of each learner
- support creativity, experimentation and institutional transformation
- develop and expand the learning experiences available to students
- enhance lifelong personal development for members of the community as a community service
- promote responsible stewardship of natural systems

Science Division, Unit Planning 2004-05

Chapter 5: Expected Unit/Program Outcomes for 2004-2005

What program outcomes do you expect to achieve in 2004-2005?

Additional information from Life Science, Chemistry, and Physics is being considered, but the text in chapters 3 and 4 discusses expected outcomes, so most in the division consider this part of unit planning to be especially redundant.

Anatomy and Physiology Discipline Unit Expected Outcomes for 2004-2005

What program outcomes do you expect to achieve in 2004-2005?

1. **What program level outcomes do you expect to achieve?**

What goals do you wish to set for 2004-2005? How will your program grow, change or adapt?

- Our first priority will be to develop and begin implementation of a mentoring manual. In the past three years the number of students our unit serves has increased by approximately 25%. We have adapted to this increase through the hiring of adjunct instructors and the procurement of additional laboratory materials and models. We have integrated the additional laboratory materials and models into our curriculum, but have not had the time necessary to properly mentor new faculty. This is our highest priority.

- We will also develop a standardized lab manual ready for incorporation into our curriculum the following year (this will be made possible through curriculum development funds). Again, due to the fast growth of our program we want to standardize the laboratory experience between classes so that all of our students have the same foundation.

- We will begin investigating the impact of changing our classes from 4-5 credits. This will require assessment and articulation with Family and Health Career divisions before a recommendation can be made.

- If our Perkins request is funded we will purchase the materials requested (laboratory support materials). The models purchased for our Science Resource room will be made immediately available for out of class use by students and the new models and laboratory materials will be incorporated into our classroom activities.

- The development of a hybrid Anatomy and Physiology 3 class would provide an excellent opportunity for students, however this is a lower priority because it would meet the needs of fewer students than our first 3 goals. However if this class is developed and offered it could serve as a template for our hybrid classes in the BI231-234 sequence.

2. **How will your program enhance your students' abilities to meet Core Abilities outcomes?**

Our classes currently meet the core abilities of the college; any improvements that we make to our curriculum will thus enhance students' abilities to meet such outcomes. Next year we expect to implement the mentoring manual which will hopefully create a comparable learning experience for all of our students. Purchase and implementation of the requested laboratory materials will provide the opportunity for hands -on and small group work which will further develop the ability to communicate effectively and provide opportunities for critical thinking and problem solving.

3. **What course level outcomes do you expect to achieve?**

What goals due you wish to set for 2004-2005?

- APDU will continue to make progress on meeting the learning outcomes listed below by developing a standard laboratory manual for BI231-233 (to be implemented the following year),

updating the laboratory manual for BI234 (implemented in 04-05) and by purchasing and incorporating laboratory materials such as models into our classes.

- Communicate using appropriate clinically oriented anatomical and physiological terminology.
- Apply an understanding of cell structure and function to the multiple body systems.
- Utilize microscopy in evaluating tissue structure and function.
- Discuss the homeostatic mechanisms, relevant anatomy, and physiological function of different body systems, and provide examples of the interdependence of these systems.
- Evaluate clinical data pertaining to common laboratory testing methodologies (i.e. CBCs, Urinalysis, PFTs)
- Identify the names of assigned bones/bone markings and names/actions of assigned muscles.
- Communicate an understanding of genetics and their relationship to heredity.
- Demonstrate knowledge of infection control and the principles and practices of sterilization, disinfections, and antisepsis.
- Apply common laboratory techniques for culturing and observing microbes

How will your courses grow, change or adapt?

If development of the hybrid class is funded, the class would be created and offered next year. This would allow our instructional methods to move to a partially on-line environment.

What goals do you have for your instructional environment (classrooms and/or technologies and equipment)?

Transitioning from 4 credit courses to 5 credit courses will allow for enhanced in-class utilization of current anatomy and physiology software and provide opportunities to problem solving and critical thinking.

4. **What plans do you have for enhancing your use of current technologies?**

Addition of a credit to our classes will add extra time to utilize in room computer software programs.

5. **What plans do you have for working more effectively with your Advisory Committee?**

Not applicable

6. **How will you set faculty and staff goals?**

We will continue to hold regular bimonthly discipline meetings to equally distribute workload and track our progress.

Earth and Environmental Science Discipline

1) <u>What program level outcomes do you expect to achieve?</u>

These outcomes are drawn from our Program Analysis and additional goals that Sarah Ulerick, lead faculty in EES, set for herself for this year.

- Hire another full-time faculty to support quality instruction and growth in EES.
- Plan a multi-purpose GIS curriculum and seek funding and resources to initiate elements of the program in 05-06.
- Expand our non-majors geology courses to provide more topics for students that will meet their AAOT transfer needs; offer these initially as 199 courses and get them through the curriculum process in 05-06.
- Enhance the EES webpage, with links to courses, homework and assessments, instructors, and informative sites.
- Strengthen lab activities in ENVS sequence with updated lab activities including GIS; and field equipment.
- Improve the classroom facilities in Rm 140 and Rm 142 [we got new chairs and are scheduled for remodeling of Rm 140 this summer].
- Support the EES Stockroom with a dedicated part-time stockroom coordinator.
- Encourage new and returning part-time faculty to participate in Division activities and in professional development opportunities.
- *Continue to evaluate portfolio style assessments, incorporating students' demonstrations of their constructed knowledge.*
- Continue to improve and upgrade Geology 200-level course.
- Continue to develop a supportive atmosphere and sense of program identity for geology majors.
- Provide in-depth learning opportunities in geology for science majors by developing a seminar course in geology for advanced students; offer this Spring 05 for an initial trial.
- Expand distance learning opportunities.

2) <u>How will your program enhance your students' abilities to meet Core Abilities outcomes?</u>

No criteria are set for these outcomes. Further, they are so broad as to be meaningless. We are assured that all courses require students to:

- communicate effectively
- think critically and solve problems effectively
- explore academic disciplines

Incorporating GIS skills and problem solving into our existing courses and adding specific GIS courses may help students to:

- increase understanding of the relationship between self and community, including self-awareness, personal responsibility, and the development of cultural competence

EES may develop a plan to assess some outcomes over the remainder of the 04-05 year. However, it is unclear how this work will guide us in developing new programs or courses. Within existing courses, curricular assessment and change are daily activities undertaken by all faculty as a part of quality instruction. The Learning College guidelines offer a better chance for designing a relevant and doable assessment of learning.

3) What course level outcomes do you expect to achieve?

EES will make progress on meeting the following learning outcomes by developing and incorporating GIS methods for problem solving into our courses and developing new GIS courses. This goal may take several years to achieve and we hope to start the process of developing the multi-purpose curriculum this year with the bulk of work in 05-06.

Ability to describe natural phenomena, and interpret and express scientific information, in symbolic format (e.g. equations, graphs, tables, mathematical notation, maps).

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.

Be able to demonstrate the use of Earth/environmental-science tools such as maps, graphs, aerial photos, mathematical relationships, Geographic Information Systems (GIS) and/or spreadsheets.

EES part-time faculty will develop and teach the new courses for our new course sequence.

Instructors in EES set their own course goals as part of their ongoing curriculum improvement efforts. I have numerous ideas for improving the courses I teach. However, I see no need to detail my ideas in this document. I will set my goals as always, and track them through the year.

4) What plans do you have for enhancing your use of current technologies?

- Replace the classroom Macs with newer, possibly wireless computers.
- Incorporate GIS curriculum into our program and courses.
- Work toward getting our projection system mounted rather than on a cart.
- Explore using WebCT as a course supplement in more EES courses.
- Enhance our EES website.

5) What plans do you have for working more effectively with your Advisory Committee?
Not applicable

6) How will you set faculty and staff goals?

This question appears to be micro-managing or just plain nosey. I make annual goals and evaluate them at year-end. I use my evaluation to set next year's goals. I share my goals and evaluation annually with my Division Chair. I have done this every year. There is no requirement for part-time faculty to state goals or evaluate them. Asking them to do so is a workload burden.

The following information applies to the Science Division:

7) Enrollment Data
Please provide your projected goals for 2004-2005:
Our enrollment goals are qualitative; we plan to maintain capacity at the highest levels, i.e., continue to register 24 students per section, advertising courses and programs such as organic chemistry and physics, and continue working to maintain course and program currency.

8) Student Success Data
Please provide your projected goals for 2004-2005:

The Energy Management Program seeks to maintain its current level of student success as measured by the number of enrolled students entering the job market.

9) Facilities and Equipment

What facilities or equipment goals do you wish to set for 2004-2005?

We need the cooperation of Facilities and Information Technology departments to repair leaking roof sections, stained ceiling tiles, structural beams with rot, and to emplace and maintain computers and network infrastructure. Each unit in the division has stated its facilities and equipment needs and goals in chapters 3 and 4.

10) Budget

Please provide projected goals for 2004-2005:

THIS INFOMRATION IS REDUNDANT. IT IS PROVIDED IN CHAPTERS 3 AND 4.

- **General Fund:**

  a) We need to increase current levels of funding to keep pace with bargained increases in personnel costs and inflation, and

  b) to correct inequities in reimbursement of moneys formerly received as student fees. The division chair urges that a dynamic formula for fee replacement be adopted rather than a fixed amount. Depending on enrollment, a fixed amount may give more to this division than was generated by student tuition dollars. At present levels of enrollment the amount is approximately correct.

  c) We need to add two full time technology support personnel at an estimated cost of $92,800. Funding these positions would result in recurring savings to the TACT technology fund of $43,239.

  d) Several of the units in this division are requesting additional faculty members at additional cost of approximately $73,000 each, but with savings to the part time budget of approximately $48,000 per added full time position.

  e) The division chair also urges that fee replacement and tuition-supported class revenues be moved into the division's budget in a more flexible fashion. Currently, fee replacement is added at the beginning of the fiscal year. That's good! However, TB revenues are not received until the very end of the fiscal year, making informed planning impossible. Perhaps such revenues could be moved into our budget near the end of a quarter. In addition, once added courses "prove" themselves, they should be moved to GF, with concomitant increase to the part time GF budget.

_____ _____

Division Chair Date