



Instructional Program Review Saddleback College Physics

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Program: Physics

Division: Math, Science and Engineering

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Table of Contents

1.0 Overview	3
1.1 College Mission and Goals	3
1.1.1 Mission Statement	3
1.1.2 Goals	3
1.2 Math, Science, and Engineering Division Goals	4
1.3 Physics Program Goals.....	5
1.4 Unique Characteristics	5
1.5 Program Statistics.....	6
1.6 Recommendations	6
2.0 Program Review	7
2.1 Curriculum.....	7
2.2 Instruction.....	9
2.3 Student Success	11
2.4 Staffing and Resources.....	12
2.5 Staff Development.....	13
2.6 Community Outreach and Articulation.....	14
2.7 Accreditation	15
3.0 Physics Program Statistics	16

1.0 Overview

The mission of the South Orange County Community College District requires a systematic review of the Physics Program to ensure quality and relevance, and the effective use of resources. This program review is used for making judgments about the effectiveness of the program and to improve student learning. It is a means of ensuring that the Physics Program is effective and responsive to the local college community.

The results of the Physics Program review will be incorporated into the strategic planning process. This program review will also support the WASC accreditation standards, interface with the college Enrollment Management Plan and most importantly, provide information for program planning and improvement

This document includes an overview of the Physics Program and key recommendations. The overview starts with the mission and goals of Saddleback College, the Math, Science and Engineering (MSE) Division, and the Physics Department. The main document describes and provides recommendations for the: curriculum, instruction, student success, staffing and resources, staff development, community outreach, and articulation and accreditation.

1.1 College Mission and Goals

1.1.1 Mission Statement

To provide access to learning opportunities that promote student success; to foster intellectual growth, individual expression, and character development; and support a dynamic environment of innovation and collegiality

1.1.2 Goals

The primary goal of Saddleback College is to provide a comprehensive post secondary education and a full range of student services. Emphasis is placed on open access to all students, including a changing and diverse student population. Academic success and student achievement are joint responsibilities of the students, the staff, and the college. To this end, the college will:

- 1.1.2.1 Provide educational programs leading to the Associate in Arts and Associates in Science Degrees.
- 1.1.2.2. Provide a comprehensive, broad range of high quality courses and programs to enable students to pursue their educational objectives and career goals.
- 1.1.2.3. Provide a meaningful general education program including baccalaureate-level transfer and occupational curricula.
- 1.1.2.4. Provide necessary developmental, remedial, and basic skills instruction so that students may be successful in their chosen course of study.

- 1.1.2.5. Provide access for the community to the educational, cultural, and recreational resources of the college.
- 1.1.2.6. Provide counseling and other support services which are responsive to the needs of students.
- 1.1.2.7. Provide opportunities in continuing education and community services, including courses for skill upgrading, retraining for professionals, and life long learning for older adults.

1.2 Math, Science, and Engineering Division Goals

To instruct and inspire all students in rigorous, high quality post-secondary education in lower division courses in mathematics, science and engineering with a vision for tomorrow.

- 1.2.1 Review and revise, as necessary, the division Mission Statement.
- 1.2.2 Facilitate and implement retention and enrollment management with a focus on outreach, student success, access, increased productivity, growth, higher WSCH/FTEF and sound course management.
- 1.2.3 Increase student enrollment and retention in distance education classes, including classes offered in a hybrid instructional mode where appropriate.
- 1.2.4 Initiate program review per established process, instrument(s) and timeline with a focus on improving student learning outcomes, persistence, retention and student success.
- 1.2.5 Increase student transfer rate.
- 1.2.6 Provide division resources for the completion and submission of the accreditation self-study.
- 1.2.7 Improve internal and external communication.
- 1.2.8 Recommend, monitor and complete new construction and renovation of college facilities per the Five-Year Facilities and Master Plan including a new Science-Math Building.
- 1.2.9 Participate in needs assessments and discussions of programs, services and uses for new educational sites.
- 1.2.10 Provide increased administrative, technological and maintenance support and services to students and the departments by prioritizing expenditures.
- 1.2.11 Improve respect, consideration of and sensitivity for diverse groups and perspectives.
- 1.2.12 Manage and maintain board-approved budget to reach division and college goals.

1.3 Physics Program Goals

- 1.3.1 Provide quality lower-division lecture/laboratory calculus based courses for transfer students in Physics, Chemistry, Engineering, Math, Computer Science, Biology, Pre-Med. and related fields. We offer three calculus based physics courses: Physics 4A – Classical Mechanics, Physics 4B – Electricity and Magnetism, and Physics 4C – Waves, Thermodynamics, Optics, Quantum Mechanics, Special Theory of Relativity, Nuclear and Particle Physics. Related to College goals 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.2.7.
- 1.3.2 Provide quality lower-division lecture/laboratory trigonometry and algebra based physics courses for major programs in Biology, Chiropractic, Physical Therapy, and all other majors requiring a one semester or one year sequence of a trigonometry/algebra based physics course. Related to College goals 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.2.7.
- 1.3.3 Provide general education courses in conceptual physics for students of all majors. We offer a Physics 20 (Ideas and Events in Physics) course that can be taken by any student; the course has no prerequisite requirements. Related to College goals 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.2.7.
- 1.3.4 Increase student retention rate and transfer rate to universities by offering quality instruction with a diverse schedule. Related to College goals 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.2.5, 1.1.2.7.

1.4 Unique Characteristics

The Saddleback College Physics Program is structured after programs offered at universities and 4 year colleges (i.e. University of California and California State Universities). A large majority of our students transfer to the UC or California State University (CSU) systems. The Physics Program must be compatible with programs offered at the aforementioned institutions.

However, unlike the courses offered at major universities and other local 2-year colleges, Saddleback College offers small class sizes. As an example, the physics courses offered at the UC and CSU campuses are large lectures with several smaller laboratory sections. The lecture sections, which can have up to 200 students, are given by professors. In many cases, the laboratory sections are administered by graduate students. At Saddleback College, we offer small lecture/laboratory sections. Our maximum enrollment is 32 students per section. Furthermore, accredited instructors teach both the laboratory and lecture portion of the course. The smaller class sizes allow the faculty members to focus on the individual learning objectives of the students. Many of our transfer students praise the quality of education they received at Saddleback.

The Physics Program has state-of-the-art equipment available to the students. Equipment is used by instructors for demonstrations and by students for hands-on instruction during the laboratory sessions.

1.5 Program Statistics

The Physics Program statistics (year 2006 to 2009) are summarized at the end of this document

1.6 Recommendations

Staffing - The Physics Program is staffed by highly competent professional full-time and adjunct faculty. A majority (8 out of 11) of the courses are taught by full-time faculty. Approximately three to four courses per semester are taught by adjunct faculty. Recruiting competent adjunct faculty is important and challenging (especially for day classes). We recommend continuing to interview and recruit adjunct faculty to facilitate near-term and potential long term growth in the program.

One new full time instructor will be required if growth continues at the current rate. In addition, one faculty member is eligible for retirement. Immediate replacement (tenure track or sabbatical replacement) will be required in the event of a sabbatical leave or retirement.

Facility Improvements - The physics course lectures and laboratories are taught in Science Math (SM) 101 and 102. These two laboratories require some renovation. Storage cabinets must be added to SM 101 and the older cabinets painted to match the balance of the room.

To facilitate future growth, an additional room (for laboratories) will be required or the current schedule modified to maximize the utility of SM 101 and 102. We recommend performing surveys of other 2-year colleges to determine how they manage growth and offer lecture/laboratory sections. In addition, we propose (in the event growth mandates such action) converting one other room on the first floor (SM 122 or 123) of the SM building to accommodate physics laboratories.

Our current supply budget is adequate because we transfer student help and repair funds into the supply account. Now that the college (equipment committee) no longer provides non-competitive funds for minor equipment items in the \$200-\$2000 range, we will have to use our supply budget to buy such items. This is having a substantial impact on our restocking purchases this year. We need reliable funding for purchases of minor equipment which is separate from our supply account.

Course Improvements – We increased the lecture hours in Physics 2 and 4 from 3 to 4 hours per week per course. Currently, the lecture portion of the Physics 2 and 4 courses is 4 hours and the laboratory instruction is 3 hours.

The enrollment in Physics 2B has been very low (9-11 students) in the past 4 years. Physics 2B is a majors course; students require the course for transfer and graduation. When the course is offered, it cannot be cancelled. Therefore, we recommend offering Physics 2B every other year and coordinating our efforts with Irvine Valley College. The Dean of Instruction and MSE Division must commit to offering Physics 2B even though the enrollment figures are between 8 to 12 students.

We propose adding Math 3B as a prerequisite to Physics 4B. This is in addition to the Physics 4A prerequisite. Both Physics 4A and Math 3B should be automatically enforced during registration.

2.0 Program Review

2.1 Curriculum

Courses - Table 2-1 lists the courses offered in physics, the date of the most recent course outline update, and the transferability of the courses to the UC and California State University systems. Saddleback College offers an Associate of Science Degree in Physics.

Physics 20 is a general education course that satisfies the Saddleback AA breadth requirement, IGETC and CSU (area B1) transfer requirements. The Physics 2 and 4 courses support specific Baccalaureate and AA Degree programs. Physics 2A and 4A also satisfy the Saddleback AA breadth requirements and CSU transfer requirements. Physics 2A, 2B, 4A, 4B satisfy the IGETC area 5 requirements. The transferability of the physics courses are detailed in the Catalog of Classes.

Table 2-1 Physics courses offered at Saddleback College

Course	Course Outline Update Date	Degree Support and Transferability
Physics 20	Fall 2000	<ul style="list-style-type: none"> • AA General Education breadth requirement • IGETC area 5 • CSU Area B1
Physics 2A	Fall 2000	<ul style="list-style-type: none"> • AA General Education breadth requirement • IGETC area 5 • CSU Area B1 • Majors support
Physics 2B	Spring 2001	<ul style="list-style-type: none"> • Majors support • IGETC area 5
Physics 4A	Fall 2000	<ul style="list-style-type: none"> • AA General Education breadth requirement • IGETC area 5 • CSU Area B1 • Majors support
Physics 4B	Fall 2000	<ul style="list-style-type: none"> • Majors support • IGETC area 5
Physics 4C	Fall 2000	<ul style="list-style-type: none"> • Majors support

Course Evaluation - The contents of each course are evaluated every five years and on an as needed basis. The curriculum is revised and sent to the curriculum committee for approval. Table 2-2 summarizes when each course was last reviewed.

Table 2-2 Physics Courses Review Dates

Course	Review Date
Physics 20	Fall 2006
Physics 2A	Fall 2006
Physics 2B	Spring 2007
Physics 4A	Fall 2006
Physics 4B	Fall 2006
Physics 4C	Fall 2006

Over the past five years, the physics course outlines were updated to reflect the Title V guidelines. The prerequisites are enforced during registration. Students who have taken prerequisites at other institutions must fill out a matriculation form which is then reviewed and signed by faculty, the Chair of the Physics and Astronomy Department or the Division Dean. The prerequisites and corequisites for the physics courses are summarized in Table 2-3.

Table 2-3 Physics Courses Prerequisites

Course	Corequisite	Prerequisite
Physics 20	None	None
Physics 2A	None	Math 124
Physics 2B	None	Physics 2A
Physics 4A	None	Math 3A
Physics 4B	None	Physics 4A
Physics 4C	None	Physics 4A

The Physics courses offered at Saddleback support other programs (Table 2-4). Several non-physical science majors (Baccalaureate level) must take the Physics 2 and 4 courses. As an example: biology majors must take either Physics 2 or 4; engineering majors must take the Physics 4 sequence; geology majors must take Physics 4A and in some cases Physics 4B (depending on the university the student is transferring too). The Physics 20 course is a general education course which also serves as a technical elective for some majors and K-12 teachers.

Table 2-4 An Example of Programs Supported by the Physics Program

Physics Course	Other program support at Saddleback	Examples of majors supported at Universities ¹
Physics 4	- AA degrees in Astronomy, Geology, and Oceanography - Physics 4A meets the general education breadth laboratory science requirement	All physical science majors, Biology, Pre-Medical degrees, Architecture, all Engineering majors, Computer Science, and Math (this is not a complete list)
Physics 2	- Meets the general education laboratory science requirement - AA degrees in Geology	Physical Therapy, some Biology, Veterinarian, Zoology, and Chiropractor (this is not a complete list)
Physics 20	- Meets the general education laboratory science requirement	Breadth course for general education

1. Not a comprehensive list.

The faculty and chair of the Physics and Astronomy Department review the programs at the CSU and UC Universities. Saddleback College programs must be compatible with university undergraduate programs. In addition, the chair is in contact with the chairs of various related

schools at UCLA, UCI, CSU Fullerton, CSU Northridge, CSU Long Beach, UC San Diego and CSU San Diego. Furthermore, the department chair works closely with the Saddleback College counselors.

The physics courses have been articulated with all of the UC and CSU campuses. All accredited universities in the United States accept our physics courses.

Recommendations - The enrollment in Physics 2B has been very low (9-11 students) in the past 4 years. Physics 2B is a majors course; students require the course for transfer and graduation. When the course is offered, it cannot be cancelled. Therefore, we recommend offering Physics 2B every other year and coordinating our efforts with Irvine Valley College. The Dean of Instruction and MSE Division must be committed to offering Physics 2B even though the enrollment figures are between 8 to 12 students.

We propose adding Math 3B as a prerequisite to Physics 4B. This is in addition to the Physics 4A prerequisite. Completion of both Physics 4A and Math 3B should be automatically enforced during the registration process.

2.2 Instruction

Learning goals and objectives are documented in the course curriculum. In addition, each instructor lists learning objectives and goals in the course syllabus handed out the first day of class. The physics faculty use a variety of methods to assess students and determine if learning objectives/goals are met. The methods include: weekly quizzes, exams, homework assignments, oral presentations, keeping of laboratory notebooks, and formal laboratory write-ups. Further details of our assessment methods are furnished in Section 2.3, Student Success.

The Physics Program strives to maintain the integrity of Saddleback College academic standards and achieve consistency in instruction amongst courses offered. The methods used to maintain academic integrity include:

- All faculty members follow the course outline as documented in the curriculum. The department chair and division dean have the responsibility of insuring that all faculty follow the curriculum.
- All same-section courses use the same textbook. Physics 4A, 4B and 4C use Universiy Physics; Physics 2A and 2B use Physics by Cutnell and Johnson; Physics 20 uses Conceptual Physics by Hewitt. The Physics 20 web based course uses modules adopted from Hewitt's Conceptual Physics.
- The same-course sections perform comparable laboratory experiments. Physics laboratory packets (online or paper) are assembled for each physics section. As an example, the Physics 4A laboratory assignments are posted on the physics web page. Each Physics 4A class performs similar laboratory experiments.
- For the most part, all of the physics faculty members use the same assessment tools. The student grades are based on three to four multi-chapter exams, weekly quizzes, formal laboratory write-ups, a laboratory notebook and homework problems assigned from the textbook.

Physics faculty members are encouraged to use and experiment with new and innovative teaching methods. Faculty members have the opportunity to attend various conferences and workshops on physics education. In addition, new teaching tools are obtained from the textbook publisher. New and innovative teaching methods are discussed at the department meetings or via conversations between faculty members.

Technology is widely used in all of our physics courses. The most abundant use of technology is in the laboratory section of the course. Students have access to laptop computers and state-of-the-art laboratory equipment. As an example, students use newly purchased PASCO multi-use sensors that interface directly with laptop computers. The laptop computers are also used by students for data entry and analysis. The laptop computers are primarily used in our Physics 2 and Physics 4 courses.

Technology is used as an instructional aid in the lecture portion of the physics courses. The two physics lecture and laboratory rooms (SM 101 and 102) are equipped with a computer, overhead projector, laser disc players, SmartBoard(s) and VCRs. The computers are used to: 1) display Power Point presentations, 2) demonstrate various physics concepts by using animation software available from the publishers, 3) demonstrate the use of common data analysis software like Excel, and 4) access and display various interactive web sites available for physics instructors.

The Internet is used extensively. Laboratory write-ups and material is posted on the Physics web page for students to access. The web page is updated frequently by the department instructional assistant.

Enrollment and productivity have increased over the past three years as evidenced by the data presented in Table 1. There has been an increase in the WSCH over the last three years. Overall enrollment has increased over the last three years.

The physics class schedule is adjusted to maximize enrollment and productivity within the constraints of available laboratory classrooms (Table 2-5). First, the Physics 4 course schedule is coordinated with math and chemistry courses. Students taking Physics 4 are also taking Math 3 and /or chemistry. In the case where there is only one section of a course offered, a physics and math class must not be offered at the same time. Second, every attempt is made to offer courses during the most desirable time slots. As an example, the optimum time during the week to offer the lecture portion of the course is between 9 a.m. and 12 noon. However, due to room limitations, we are unable to offer all courses in the prime time slots.

Night and Saturday courses are offered to accommodate students with daytime jobs. A Physics 4A/4B sequence is offered at night and a Physics 4A/4B sequence is offered on Saturdays. To further accommodate students, we offer a hybrid (lecture is taught online and the laboratory section is held in the classroom) distance education Physics 20 course.

To facilitate learning outside the classroom, physics students are encouraged to join the Astronomy and Physics Club and attend club functions. The club meets once every month during the semester. At each club meeting, a physics or astronomy talk is given by an invited speaker. In addition, the club takes trips to various observatories and industrial laboratories. In 2003/2004, the club visited the Palomar Observatory, General Atomics, Mt. Wilson Observatory, and the Jet Propulsion Laboratory.

Table 2-5 Physics Program Scheduling Strategy

Course	Schedule	Comments
Physics 4	- Primetime day slots (9-12 a.m. for lecture) - Nights (4A and B only) - Saturday (4A and B only)	- Facilitate mainstream students and students with daytime jobs - 4A/4B sections usually close - Enrollment exists for additional classes
Physics 2	- Prime time slots (9-12 a.m. for lectures)	- Enrollment available for only 1-section - Due to small class size, 2B is offered every other year
Physic 20	- Prime day slots (9-12 a.m. for lectures) - Nights - Web based course	- Sections close every semester - Enrollment exists for additional classes.

Recommendations – the following recommendations are made to improve the Physics Program instruction:

- Add courses to facilitate enrollment growth. In order to add courses we may need additional classrooms. In the short term, we recommend adding a Physics 4A and 20 course.
- Purchase-34 more new laptop computers. The current supply of laptop computers are antiquated. We need to ensure that all of our students have access to technology.
- Continue the same quality of instruction which has allowed the Physics Program here at Saddleback to excel.

2.3 Student Success

The Physics Program has higher than average retention and course completion rates (see Table 1), even though physics 2 and 4 are comparatively difficult courses. The better than average completion and retention rates are due to the above average physics faculty.

We strive to improve the retention and completion rates. Math is the primary tool of physics. Without strong math skills students will have a difficult time completing the course. The lack of math skills is most evident in Physics 2A. Therefore, physics faculty use a variety of strategies and assessment tools to help students successfully complete the course. These strategies and tools are summarized below:

- Several assessment tools are used to monitor the progress of the students. These assessment tools include: weekly quizzes, exams, homework assignments, and laboratory write-ups. The weekly quizzes are especially helpful in tracking student success.
- Faculty actively counsel students to seek outside help when it is necessary. Other than seeking help during office hours, faculty encourage the students to seek additional help

from the Learning Assistance Program (LAP). At the beginning of each semester, a representative from the LAP talks to each Physics 2 and 4 class.

- Some math and physics prerequisites are automatically enforced during registration (see Table 2-3). The enforcement of these prerequisites screens students. However, additional prerequisites for Physics 4B must be enforced during registration.

The Physics Program meets the needs of matriculating full and part-time students. All necessary lower division courses are offered to meet the requirements of most majors. Students have had no problem transferring our courses to other universities. Our program is compatible with all universities in the United States. Furthermore, to accommodate part-time students who have full-time jobs during the day, we offer night and Saturday courses.

Professor Bob Parsons tracks Saddleback College Physics alumni. As evidenced by his data, most alumni complete a four year baccalaureate degree and/or move on to graduate school. Professor Parsons will continue to update this data.

Recommendations:

- Increase the number of quality tutors at the LAP. The LAP is a vital resource used by physics students.
- Add Math 3B as a prerequisite to Physics 4B. This is in addition to the Physics 4A prerequisite. Both Physics 4A and Math 3B should be automatically enforced during the registration process.

2.4 Staffing and Resources

The Physics Program has an adequate number of full-time instructors to support the current level of course offerings. There are currently 3.5 full-time physics instructors. The load of one instructor, Dr. Mitch Haeri, is split between astronomy and physics. Eight of our courses are taught by full-time faculty. Three to four (depending on the semester and course offerings) of our courses are taught by adjunct faculty. In 2009, we hired one full-time faculty to teach both Physics and Astronomy courses.

One faculty member is eligible for retirement.

The Physics and Astronomy Department is supported by two classified staff members: a physics and astronomy senior technician. The astronomy position is a part time position (20 hours per week) supporting all of the astronomy courses. The astronomy technician maintains the astronomy and physics web pages. The physics senior laboratory technician is a full time position. The physics laboratory technician's responsibilities are: 1) ordering new equipment and supplies, 2) managing the physics supply and equipment budgets, 3) setting up demonstrations, 4) supporting the laboratories, and 5) maintaining the equipment. The physics laboratory technician may occasionally use student help.

All of the physics courses are taught in SM 101 and 102. Both of these classrooms are set-up as physics laboratories. To increase course offerings, we have scheduled classes on Saturday. To increase the number of sections offered, we will need to schedule classes in other rooms that can be used to conduct physics laboratories (SM 122 or 123).

The department has acquired new equipment through capital expenditures over the past three years. We are currently in the process of incorporating this new equipment into our laboratories. Currently, we have adequate equipment to support our laboratories. However, we require new laptop computers.

Our supply budget is adequate because we transfer student help and repair funds into the supply account. Now that the College (equipment committee) no longer provides non-competitive funds for minor equipment items in the \$200-\$2000 range, we will have to use our supply budget to buy such items. This is having a substantial impact on our restocking purchases this year. We need reliable funding for purchases of minor equipment which is separate from our supply account.

The learning assistance program (LAP) supports the Physics Program. Physics instructors routinely send students to the LAP for additional help. The LAP also conducts scheduled study groups for Physics 2 and 4 students.

The Physics students occasionally form study groups. The study groups meet in the library, in the SM foyer, LAP or other available rooms on campus.

Recommendations

- Hire one full time faculty if the day program experiences growth. The hiring of a full time faculty member is contingent on sustainable growth in the department.
- Immediately hire new faculty members in the event of retirements or sabbaticals.
- Increase the supply budget over the next five years. Except for an inflationary increase, this recommendation is contingent on sustainable growth. Provide additional funding for equipment replacement.
- Actively recruit and hire new qualified adjunct faculty.
- Purchase 34 new laptop computers. These computers are required to support two simultaneous laboratory sections.
- Purchase SmartBoards for SM 102 and 104.

2.5 Staff Development

The full-time faculty stay current in their respective disciplines and instructional methodologies. Faculty members read the latest technical journals (e.q. Physics Today, Physics Teacher, Popular Science, Nature, and the American Physics Journal) to keep current on recent discoveries in physics. Additionally, faculty members attend conference to keep current on state-of-the-art teaching techniques. As an example, Dr. Haeri subscribes to Physics Teacher, a journal dedicated to the teaching of physics. The physics faculty are in contact with textbook publishers who furnish us with new books and software for review.

The Physics Program is enriched by the outside activities of full-time and adjunct faculty. Expertise obtained from the aerospace industry is introduced into the classroom. Over the past 19

years, Dr. Haeri has also worked for a major aerospace corporation. Dr. Haeri has published over 42 papers in the fields of Engineering and Physics. In addition, he has over five patents. Dr. Haeri's experience has enabled him to reflect on real-world pragmatic engineering problems in the classroom.

Professor Bob Parsons was awarded "Teacher of the Year" for his longtime teaching career here at Saddleback. Professor Parsons received numerous letters and phone calls from previous students thanking him for an exceptional education at Saddleback College.

Professor Katherine Meyer-Canales has attended the Chautauqua Short Course on Teaching Physics at the University of Oregon, an AAPT meeting in Colorado and a Center for Astronomy Education conference in Northern California which have introduced her to numerous pedagogical techniques for teaching Physics and Astronomy. She currently implements many of these techniques into her teaching. Professor Meyer-Canales has also taken enrichment courses here at Saddleback College and elsewhere.

Our adjunct faculty also introduce new ideas from other colleges and industries. Joel Levine, an adjunct faculty for over 15 years, is a full-time instructor at Orange Coast Community College. He routinely introduces new ideas and teaching methods to the full-time faculty. Dr. Bill Hubbard, an adjunct faculty, just retired from Lucent Technologies (formerly Bell Laboratories). Dr. Hubbard brings a wealth of industrial laboratory experience to the students.

Recommendations

- Most professional development conferences are held in other states for about one week. The travel costs can exceed \$1000. To encourage faculty to attend these worthwhile conferences and workshops, the college needs to provide adequate funding.

2.6 Community Outreach and Articulation

The Physics Program offers courses suitable to majors in various fields. Our program must be commensurate with programs offered at universities. The department chair communicates with the engineering chairs at UCI, CSU Long Beach, CSU Fullerton, and UCLA to make sure our program is compatible with that offered at the aforementioned universities. In addition, the department chair, when possible, sends flyers to universities advertising our program as an alternative for students wishing smaller sections and more personal interaction.

The Physics and Astronomy Department participates in Saddleback's yearly high school recruitment events (senior day and family night). At senior day, the department hosts a table, sets up demonstrations, and answers questions from local high school students.

The department has produced a brochure describing the program. The brochure is handed out at senior day and sent to the local universities and high schools.

Recommendations

- Update the Physics Program brochure.
- Encourage faculty members to visit local high schools and give presentations on the Physics Program offered at Saddleback College.

- Continue communication with the local universities.

2.7 Accreditation

The recommendations shown below were extracted from the accreditation 2001 mid-term report. Only a few of the recommendations are tangentially applicable to the Physics Program

- Academic Honor Code and Dishonesty Policy and the Recommended Range of Sanctions and Disciplinary Actions will be published on the College's Web site.

- All physics faculty refer students to the published Academic Honor Code and Dishonesty Policy.

- The college will conduct program reviews following the schedule established by the Academic Senate.

- The Physics Program is currently under review.

- The college will recommend to division deans that division meetings regarding financial decisions include classified staff.

- All classified staff are invited to and regularly attend Physics Program reviews.

3.0 Physics Program Statistics

Section count for Physics courses by semester																
Status Code	(Multiple Items) <input type="text" value="3"/>															
Section Count																
	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Spring 2006	Spring 2007	Spring 2008	Spring 2009	Spring 2010	Summer 2005	Summer 2006	Summer 2007	Summer 2008	Summer 2009	Grand Total
Saddleback College	11	11	10	11	11	12	12	12	12	12	2	2	2	2	2	124
Math, Science, and Engineering	11	11	10	11	11	12	12	12	12	12	2	2	2	2	2	124
Physics	11	11	10	11	11	12	12	12	12	12	2	2	2	2	2	124
Physics	11	11	10	11	11	12	12	12	12	12	2	2	2	2	2	124
Physics	11	11	10	11	11	12	12	12	12	12	2	2	2	2	2	124
PHYS 2 A	1	1	1	1	1	1	1	1	1	1						10
PHYS 2 B						1	1	1	1	1						5
PHYS 20	4	4	3	4	4	4	4	4	4	4	1	1	1	1	1	44
PHYS 4 A	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	35
PHYS 4 B	2	2	2	2	2	2	2	2	2	2						20
PHYS 4 C	1	1	1	1	1	1	1	1	1	1						10
Grand Total	11	11	10	11	11	12	12	12	12	12	2	2	2	2	2	124

Census enrollment for Physics courses by semester

Census enrollment for Physics courses by semester																
Status Code	(Multiple Items) <input type="checkbox"/>															
Section Census Enrollment Count																
	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Spring 2006	Spring 2007	Spring 2008	Spring 2009	Spring 2010	Summer 2005	Summer 2006	Summer 2007	Summer 2008	Summer 2009	Grand Total
Saddleback College	290	281	246	302	339	309	294	267	315	351	58	51	57	42	60	3,262
Math, Science, and Engineering	290	281	246	302	339	309	294	267	315	351	58	51	57	42	60	3,262
Physics	290	281	246	302	339	309	294	267	315	351	58	51	57	42	60	3,262
Physics	290	281	246	302	339	309	294	267	315	351	58	51	57	42	60	3,262
Physics	290	281	246	302	339	309	294	267	315	351	58	51	57	42	60	3,262
PHYS 2 A	25	34	29	35	28	18	28	28	32	31						288
PHYS 2 B						13	12	14	15	14						68
PHYS 20	111	81	67	112	130	101	102	87	108	122	26	22	25	19	28	1,141
PHYS 4 A	67	74	80	73	95	82	65	60	74	98	32	29	32	23	32	916
PHYS 4 B	64	62	52	63	63	57	52	47	48	49						557
PHYS 4 C	23	30	18	19	23	38	35	31	38	37						292
Grand Total	290	281	246	302	339	309	294	267	315	351	58	51	57	42	60	3,262

End of Term enrollment for Physics courses by semester

Status Code (Multiple Items) <input type="text"/>																
Section End Enrollment Count																
	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Spring 2006	Spring 2007	Spring 2008	Spring 2009	Spring 2010	Summer 2005	Summer 2006	Summer 2007	Summer 2008	Summer 2009	Grand Total
Saddleback College	228	224	210	259	285	260	237	227	267	307	49	42	42	31	45	2,713
Math, Science, and Engineering	228	224	210	259	285	260	237	227	267	307	49	42	42	31	45	2,713
Physics	228	224	210	259	285	260	237	227	267	307	49	42	42	31	45	2,713
Physics	228	224	210	259	285	260	237	227	267	307	49	42	42	31	45	2,713
Physics	228	224	210	259	285	260	237	227	267	307	49	42	42	31	45	2,713
PHYS 2 A	21	24	25	28	17	10	20	25	26	26						222
PHYS 2 B						9	12	12	9	10						52
PHYS 20	91	73	60	98	114	87	87	74	92	110	25	20	23	16	27	997
PHYS 4 A	47	52	61	57	75	64	44	46	62	80	24	22	19	15	18	686
PHYS 4 B	50	48	49	57	58	52	41	40	41	46						482
PHYS 4 C	19	27	15	19	21	38	33	30	37	35						274
Grand Total	228	224	210	259	285	260	237	227	267	307	49	42	42	31	45	2,713