# 2010-11
# Program Review

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|---|---|
| Name of Program: | ACEDD |
| Name of Unit: | Career Technical Education |
| Name of Area: | Academic Affairs |
| Date Completed: | 8/25/2010 |

## Program's Mission Statement

The mission of the Architecture, Civil, Engineering Design Drafting and CAD (Computer Assisted Drafting) program at Rio Hondo College is:

To provide innovative, challenging, and quality educational experiences in the technical field of Design Drafting. The Program meets the needs of the college's diverse student population and the community, by introducing, developing, and expanding lifelong understanding of drafting as it relates to the occupational fields of Architecture, Civil and Engineering Design Drafting.

## Program's Overarching Outcomes - SLOs / SAOs

Program Overarching Outcome

Given various visual communication technologies such as traditional drafting and CADD (Computer Assisted Drafting and Design) with industry standards, successful students should be able to effectively communicate, understand and interpret design concepts and criteria for industries such as manufacturing, architecture, engineering, construction, civil and other various applications. Upon completion of the program, successful students are prepared for industry employment and advancement within a variety of related professions. Further, students are prepared to transfer to advanced fields of study in a variety of interdisciplinary career paths.

In addition to the single overarching program outcome stated above, the program strives to facilitate the following additional outcomes. These program outcomes are units of knowledge which are to be accomplished throughout completion of the program for each of the areas of application; Architecture, Civil and Engineering Design Drafting.

1. Students will effectively communicate design concepts and solutions using technical,

graphical, oral and written formats.

2. Students will apply industry drawing standards and Computer-Aided Design techniques in the design of components, systems or processes of architectural, civil or mechanical design.

3. Students will conduct, analyze and interpret experiments using emerging applications of mathematics, science, engineering and technology to develop effective processes and procedures.

4. Students will participate and function effectively on teams to identify, analyze and solve technical problems of contemporary professional, societal and global issues while respecting diversity.

5. Students will exhibit professional, ethical and social responsibility and display a commitment to quality, timeliness, and continuous improvement in lifelong learning.

6. In the completion of class projects and with practical hands-on assessments students will demonstrate basic competence in the use of at least two CAD software applications.

7. In the completion of class projects and with practical hands-on assessments, students will display understanding of basic graphical literacy.

8. With comprehensive written assessments students will explain basic standard practices in architectural, mechanical and civil drafting.

9. Students will access information from public libraries, research libraries, online sources, appropriate codes and standards, professional organizations, and vendor catalogs.

10. Students will use graphic principles in the solution of problems relating to drafting and/or design.

11. Students will produce drawings in accordance with industry standards e.g., ANSI (American National Standards Institute) / ASME (American Society of Mechanical Engineers) , ISO (international Standards Institute) , A.I.A. (American Institute of Architects), Uniform Building Codes.

Program Degree Outcomes

Engineering Design Drafting A.S. Degree SLO

Given various visual communication technologies such as traditional drafting and CADD, with industry standards such as ANSI / ASME and ISO, successful students should be able to effectively communicate, understand and interpret design concepts and criteria for industries that design, engineer and manufacture products. Upon completion of the program, successful students are prepared for industry employment and advancement within a variety of related professions. Further, students are prepared to transfer to advanced fields of study in related fields.

Architectural Design and Drawing – A.S. Degree SLO

Given various visual communication technologies such as traditional drafting, CADD and BIM (Building Information Modeling) with industry standards such as AIA and AEC (Architectural, Engineering and Construction). Graphic Standards and the Building Code, successful students should be able to effectively communicate graphically and understand and interpret design concepts and criteria for various disciplines related to the AEC industry. Upon completion of the program successful students are prepared for industry employment and advancement within a variety of related AEC professions. Further, students are prepared to transfer to advanced fields of study in related fields.

Architecture A.S. Degree SLO

Given various visual communication technologies such as traditional drafting, CADD and BIM (Building Information Modeling) with industry standards such as AIA and AEC Graphic Standards and the Building Code, successful students should be able to effectively communicate graphically and understand and interpret design concepts and criteria for various disciplines related to the AEC industry (Architectural, Engineering and Construction). Upon completion of the program successful students are prepared for industry employment and advancement within a variety of related AEC professions. Further, students are prepared to transfer to advanced fields of study in related fields – specifically a four year School of Environmental Design with degree programs in Architecture, Landscape Architecture, Interior Design or Urban Planning.

Civil Design Technology

Given various visual communication technologies such as traditional drafting and CADD, with industry standards, such as AEC Graphic Standards, successful students should be able to effectively communicate, understand and interpret design concepts and criteria for the civil engineering field. Upon completion of the program, successful students are prepared for industry employment and advancement within a variety of related professions such as civil engineering, construction engineering, structural engineering, transportation engineering, and geotechnical engineering. Further, students are prepared to transfer to advanced fields of study in related fields.

All program courses have at least one SLO associated with the course. The SLO's are assessed every session the class is offered. Instructors who teach the same course collaborate and develop a single assessment for the course.

Each of the A.S. degrees that the program offers has an associated SLO. These SLO's reflect the overarching program SLO. The Degree SLO's are assessed annually based on student graduation, student entrance into the job market and advancement and retraining of existing workforce. Further, all of the program's SLOs are reviewed annually by the Industry Advisory committee.

In light of the new program specific student leaning outcomes for Engineering Design Drafting, Architecture AS Degree, Architectural Drawing and Design, and Civil Design Technology there are elements of the desired outcomes that require additional resources within the program. Further, as a result of assessing and updating our current individual course SLOs we are in the process of revising SLOs to reflect our Industry Advisory

Committee's latest recommendations. The committee's latest recommendations are focused on entry level employment skills that include the use of new parametric design software technology such as BIM (Building Information Modeling) and other parametric CAD (Computer Aided Design) software programs.

Such new resources include:

- Purchase new dedicated Server / Super Computer to support new parametric design software (BIM for Architecture / Energy Analysis, Cosmos for Engineering Design and Analysis, and "In-Roads" for Civil Design / Analysis. This supports one of the program goals (#4) to increase BIM and Engineering related course offerings and to enhance course content to meet industry needs and transfer requirements. (Cost $30K)

- Additional software licenses (24 ea.) for Revit (BIM) software and AutoCAD software. This supports one of the program goals (#4) to increase BIM applications (Structural and MEP) and Engineering Technology related course offerings. (Cost $22K onetime initial cost – subsequent annual upgrades already included in ACEDD (Architecture, Civil, Engineering, Design Drafting) software upgrade budget)

- Purchase additional computers starting with 25 new CAD/BIM computer workstations followed by an annual upgrade cycle for the "four to seven year old" CAD/GIS labs (S304, S305, S306, S310). This supports program goals (#4 and #8) to upgrade computer workstations to keep pace with the new parametric design software. (Cost $130K per lab of 25 workstations)

- New hire of full-time Engineering Technology / Design Instructor to support program expansion in the area of Engineering Technology transfer program. This supports one of the program goals (#3) for a new Engineering Technology Program and full-time instructor that would help the ACEDD program achieve new program level SLOs and revised course level SLO's. (Cost – see Goal 3 - objective #3.5 / Additional Personnel section)

## Program's Characteristics, Performance and Trends

The program introduces students to the vast occupational fields of Design Drafting and prepares them to enter the workplace as CAD technicians / designers. The program also prepares students to transfer to institutions of higher learning in the fields of Engineering , Architecture and Design. Another aspect of the program is to improve and up-grade job skills of individuals currently working as CAD technicians / designers or in the manufacturing or construction fields making them more marketable combining design drawing skills with their industry experience. Finally the program provides a venue for students to receive practical applications of academic concepts especially in the area of math and science.

The program provides instruction in three content areas under the larger heading of Design Drafting. The three areas are: Architecture, Civil and Engineering Design Drafting. The program consists of two full time professors (Gary Halvorson and Jay Sunyogh), one full time instructor (Ed Gonzalez)and fifteen adjunct instructors. The fifteen adjunct instructors

are either local content area high school Instructors or local industry professionals. In addition the program has one full time instructional assistant (Ruben Agus) and one part time instructional assistant/ tutor (Caesar Hernandez).

The program provides four A.S. degrees and four certificate of achievement through a wide variety of courses. The A. S. degrees include: Architecture, Architecture Design and Drawing, Civil Design Technology and Engineering Design Drafting. The four certificate programs include: Architecture Design and Drawing, Civil Design and Drawing, Engineering Design Drafting and Surveying, Mapping & Drawing. In addition to providing job skill education the program also provides students guidance and counseling in the related fields and job placement and referral assistance. The program supports local high school drafting programs with articulation agreements and instructor inservice events. Finally the program provides service to local business and industry by assisting them with identifying and hiring new employees, assisting with training of their existing workforce and student internships.

The program currently offers 31 sections with an average of 20 students per section. This number represents a gradual increase over the past five years attributed to many factors including the development of the new Civil Design degrees as well as industry demand. The students in the program are recent high school graduates exploring educational options and career pathways as well as adult students taking classes in order to change or improve their career. The program also hosts high school enrichment students taking classes to enhance their education.

The faculty and staff of the program are from diverse educational, economic and cultural backgrounds. Each faculty or staff member is aware of their role in recognizing the needs of the individual as well as the need to provide equitable cost effective educational opportunities for students.

The program has made many efforts to recruit and encourage all students. Approximately 22% of the programs students are female, an underrepresented population in the engineering design drafting career field. The program has also been of assistance to students with disabilities providing retraining and job placement assistance. Students receive advice from faculty and staff as to the correct sequence of courses to follow. A program specific counselor is provided through Perkins funds to assist students with their educational goals and plans. college transfer assistance and degree / certificate acquisition. Many of the program's courses use the same text to help reduce student expenditures. Program texts are in the library at the reference desk so students may utilize them without cost. The program provides open lab time to allow students to utilize hardware and software that they would not be able to afford on their own. A tutor and peer tutors are provided to assist student who need extra help. Courses are scheduled in the day, evening and on weekends to provide for the working student's schedule. CAD courses allow for student to repeat a course should they need to further enhance their education due to updates and revisions of software applications.

All three of the full time faculty members and six of the fifteen adjunct faculty have degrees in education and /or California teaching credentials. These credentials demonstrate that these faculty members have knowledge of educational practice and pedagogy in addition to course content knowledge. In addition, faculty members have or are currently working in industry fields directly related to course content. Teachers in the program have received local, state and national recognition for their contributions to the field of vocational education.

In addition to drafting related content, program students are taught about careers in the field, job opportunities and work place skills. Most program instructors have "professionalism" as a component of student evaluation.

The programs curriculum continually develops to meet industry standards and expectations. Courses are adjusted to accommodate new and upgraded software applications. Courses are also developed to meet employment trends. Over the past years new courses and

degrees have been developed for Civil Design Technology and for Pressure Piping Design. Courses have also been revised to include new BIM (Building Information Modeling) technology. Currently all courses have a revision date of 2005 or newer. All courses with dates 2005 / 2006 will be updated and submitted to curriculum committee before June 2010.

The program provides two yearly staff development events for adjunct faculty, one at the start of the fall semester and one at the start of the spring semester. These events are designed to keep the faculty aware of current events and organizational aspects of the program as well as provide training on pedagogical practices. The program hosts user group meetings to give opportunities for the staff to remain current in the use of software applications. Staff members keep current in their field by personal research and with online tutorial programs. They also attend industry and vendor based training events. Staff members also take advantage of campus wide staff development events though out the year. A number of the adjunct faculty members regularly attend campus FLEX days. This past year Perkins funds were utilized to send one staff member to intensive training in the use of BIM / Revit Software.

The program is doing well despite the countries recent economic situation. Since employment is down, workers are taking the opportunity to learn new skills and prepare themselves for new job opportunities. This has presented both a benefit to the program and a problem. The program is enjoying the influx of new students but has a concern that depending on the economy it may be more difficult to place students in jobs. To this end the new Civil program should help if the proposed economic stimulus plans for infrastructure improvements take place. The program is also aware of the increase in software and hardware costs strapped by the decrease in available funding. Efforts have been taken to utilize resources to their maximum.

**ARCHITECTURE**

**SECTION DELIVERY**

| GRADE | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 | Sum 09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Online | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 2 | 0 |
| Day | 17 | 16 | 3 | 17 | 0 | 20 | 3 | 17 | 0 | 22 | 3 | 23 | 2 | 22 | 3 | 29 | 2 | 28 | 5 |
| Evening | 9 | 13 | 0 | 12 | 0 | 12 | 0 | 9 | 0 | 10 | 2 | 10 | 0 | 9 | 0 | 10 | 0 | 10 | 0 |
| Hybrid | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 26 | 29 | 3 | 29 | 0 | 32 | 3 | 26 | 0 | 33 | 5 | 35 | 2 | 35 | 3 | 39 | 2 | 40 | 5 |

Day classes are classes with a regular start time before 4:30 pm.
Evening classes have a regular start time from 4:30 pm and later.

## ARCHITECTURE

### UNDUPLICATED ORIGINAL EDUCATIONAL GOAL*

| GOAL | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 | Sum 09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AA and Transfer to 4 Yr Institution | 138 | 140 | 15 | 146 | 0 | 143 | 18 | 141 | 0 | 157 | 26 | 154 | 19 | 151 | 16 | 168 | 17 | 166 | 18 |
| Transfer to 4 yr Institution w/o AA | 42 | 37 | 4 | 32 | 0 | 33 | 8 | 33 | 0 | 32 | 6 | 28 | 3 | 27 | 8 | 36 | 5 | 39 | 9 |
| Obtain AA w/o Transfer | 12 | 10 | 0 | 10 | 0 | 11 | 0 | 11 | 0 | 9 | 1 | 9 | 0 | 6 | 0 | 13 | 1 | 8 | 1 |
| 2 yr Vocational Degree w/o Transfer | 23 | 21 | 1 | 17 | 0 | 19 | 2 | 15 | 0 | 17 | 2 | 22 | 0 | 20 | 2 | 18 | 1 | 16 | 2 |
| Vocational Certificate w/o Transfer | 6 | 5 | 1 | 9 | 0 | 5 | 1 | 6 | 0 | 7 | 4 | 7 | 2 | 11 | 2 | 9 | 2 | 11 | 2 |
| Discover Career Interests, Plans,Goals | 50 | 46 | 3 | 48 | 0 | 50 | 7 | 42 | 0 | 40 | 6 | 40 | 7 | 47 | 8 | 60 | 7 | 49 | 5 |
| Prepare for New Career | 27 | 27 | 1 | 32 | 0 | 39 | 1 | 26 | 0 | 39 | 7 | 31 | 3 | 37 | 3 | 48 | 5 | 39 | 2 |
| Advance in Current Job/ Career | 2 | 2 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 4 | 2 | 5 | 0 | 6 | 2 | 5 | 0 | 5 | 1 |
| Maintain Certificate or License | 24 | 28 | 6 | 24 | 0 | 22 | 3 | 22 | 0 | 33 | 4 | 30 | 2 | 21 | 1 | 29 | 2 | 26 | 4 |
| Educational Development | 7 | 9 | 1 | 11 | 0 | 14 | 1 | 8 | 0 | 9 | 1 | 7 | 2 | 10 | 0 | 12 | 0 | 7 | 1 |
| Improve Basic Skills | 6 | 8 | 1 | 4 | 0 | 2 | 0 | 4 | 0 | 5 | 3 | 4 | 0 | 5 | 0 | 1 | 0 | 2 | 1 |
| Complete Credits for HS Diploma or GED | 3 | 7 | 1 | 6 | 0 | 3 | 2 | 5 | 0 | 8 | 0 | 5 | 0 | 7 | 1 | 11 | 0 | 1 | |
| Undecided on Goal | 39 | 36 | 5 | 40 | 0 | 35 | 1 | 37 | 0 | 32 | 4 | 36 | 1 | 38 | 4 | 303 | 5 | 28 | 6 |
| Uncollected/ Unreported | 35 | 38 | 1 | 37 | 0 | 29 | 11 | 39 | 0 | 29 | 4 | 37 | 4 | 29 | 4 | 20 | 2 | 294 | 117 |
| TOTAL | 414 | 414 | 40 | 416 | 0 | 409 | 55 | 391 | 0 | 421 | 70 | 415 | 43 | 415 | 51 | 733 | 47 | 691 | 169 |

*Ed goal is indicated by the student on the application submitted.

## ARCHITECTURE

### % UNDUPLICATED ORIGINAL EDUCATIONAL GOAL

| GOAL | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 | Sum 09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AA and Transfer to 4 Yr Institution | 33.3% | 33.8% | 37.5% | 35.1% | NA | 35.0% | 32.7% | 36.1% | NA | 37.3% | 37.1% | 37.1% | 44.2% | 36.4% | 31.4% | 22.9% | 36.2% | 24.0% | 10.7% |
| Transfer to 4 yr Institution w/o AA | 10.1% | 8.9% | 10.0% | 7.7% | NA | 8.1% | 14.5% | 8.4% | NA | 7.6% | 8.6% | 6.7% | 7.0% | 6.5% | 15.7% | 4.9% | 10.6% | 5.6% | 5.3% |
| Obtain AA w/o Transfer | 2.9% | 2.4% | 0.0% | 2.4% | NA | 2.7% | 0.0% | 2.8% | NA | 2.1% | 1.4% | 2.2% | 0.0% | 1.4% | 0.0% | 1.8% | 2.1% | 1.2% | 0.6% |
| 2 yr Vocational Degree w/o Transfer | 5.6% | 5.1% | 2.5% | 4.1% | NA | 4.6% | 3.6% | 3.8% | NA | 4.0% | 2.9% | 5.3% | 0.0% | 4.8% | 3.9% | 2.5% | 2.1% | 2.3% | 1.2% |
| Vocational Certificate w/o Transfer | 1.4% | 1.2% | 2.5% | 2.2% | NA | 1.2% | 1.8% | 1.5% | NA | 1.7% | 5.7% | 1.7% | 4.7% | 2.7% | 3.9% | 1.2% | 4.3% | 1.6% | 1.2% |
| Discover Career Interests, Plans,Goals | 12.1% | 11.1% | 7.5% | 11.5% | NA | 12.2% | 12.7% | 10.7% | NA | 9.5% | 8.6% | 9.6% | 16.3% | 11.3% | 15.7% | 8.2% | 14.9% | 7.1% | 3.0% |
| Prepare for New Career | 6.5% | 6.5% | 2.5% | 7.7% | NA | 9.5% | 1.8% | 6.6% | NA | 9.3% | 10.0% | 7.5% | 7.0% | 8.9% | 5.9% | 6.5% | 10.6% | 5.6% | 1.2% |
| Advance in Current Job/ Career | 0.5% | 0.5% | 0.0% | 0.0% | NA | 1.0% | 0.0% | 0.5% | NA | 1.0% | 2.9% | 1.2% | 0.0% | 1.4% | 3.9% | 0.7% | 0.0% | 0.7% | 0.6% |
| Maintain Certificate or License | 5.8% | 6.8% | 15.0% | 5.8% | NA | 5.4% | 5.5% | 5.6% | NA | 7.8% | 5.7% | 7.2% | 4.7% | 5.1% | 2.0% | 4.0% | 4.3% | 3.8% | 2.4% |
| Educational Development | 1.7% | 2.2% | 2.5% | 2.6% | NA | 3.4% | 1.8% | 2.0% | NA | 2.1% | 1.4% | 1.7% | 4.7% | 2.4% | 0.0% | 1.6% | 0.0% | 1.0% | 0.6% |
| Improve Basic Skills | 1.4% | 1.9% | 2.5% | 1.0% | NA | 0.5% | 0.0% | 1.0% | NA | 1.2% | 4.3% | 1.0% | 0.0% | 1.2% | 0.0% | 0.1% | 0.0% | 0.3% | 0.6% |
| Complete Credits for HS Diploma or GED | 0.7% | 1.7% | 2.5% | 1.4% | NA | 0.7% | 3.6% | 1.3% | NA | 1.9% | 0.0% | 1.2% | 0.0% | 1.7% | 2.0% | 1.5% | 0.0% | 0.1% | 0.0% |
| Undecided on Goal | 9.4% | 8.7% | 12.5% | 9.6% | NA | 8.6% | 1.8% | 9.5% | NA | 7.6% | 5.7% | 8.7% | 2.3% | 9.2% | 7.8% | 41.3% | 10.6% | 4.1% | 3.6% |
| Uncollected/ Unreported | 8.5% | 9.2% | 2.5% | 8.9% | NA | 7.1% | 20.0% | 10.0% | NA | 6.9% | 5.7% | 8.9% | 9.3% | 7.0% | 7.8% | 2.7% | 4.3% | 42.5% | 69.2% |
| TOTAL | 100.0% | 100.0% | 100.0% | 100.0% | NA | 100.0% | 100.0% | 100.0% | NA | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

## ARCHITECTURE

### GRADE DISTRIBUTION

| GRADE | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 232 | 258 | 30 | 233 | 0 | 197 | 29 | 224 | 0 | 256 | 42 | 250 | 27 | 230 | 27 | 341 | 34 | 322 |
| B | 145 | 155 | 7 | 108 | 0 | 152 | 15 | 126 | 0 | 126 | 16 | 117 | 13 | 131 | 11 | 147 | 13 | 198 |
| C | 69 | 72 | 4 | 73 | 0 | 66 | 11 | 58 | 0 | 65 | 9 | 70 | 0 | 66 | 9 | 198 | 2 | 214 |
| CR | 1 | 0 | 0 | 5 | 0 | 4 | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 |
| D | 21 | 23 | 2 | 18 | 0 | 23 | 0 | 15 | 0 | 17 | 1 | 12 | 1 | 21 | 2 | 31 | 0 | 22 |
| F | 39 | 46 | 2 | 59 | 0 | 41 | 2 | 42 | 0 | 49 | 8 | 62 | 0 | 52 | 1 | 74 | 0 | 68 |
| INC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| W | 110 | 100 | 4 | 98 | 0 | 131 | 7 | 83 | 0 | 119 | 6 | 93 | 3 | 97 | 5 | 126 | 2 | 86 |
| TOTAL | 617 | 654 | 49 | 594 | 0 | 614 | 65 | 550 | 0 | 634 | 82 | 608 | 44 | 600 | 55 | 918 | 51 | 911 |

## ARCHITECTURE

### % OF GRADE DISTRIBUTION

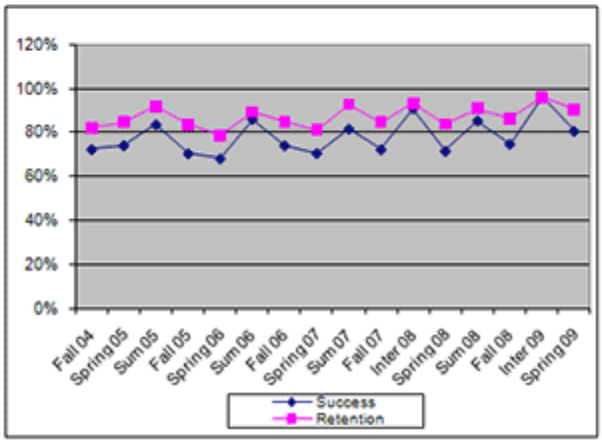
| GRADE | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 38% | 39% | 61% | 39% | NA | 32% | 45% | 41% | NA | 40% | 51% | 41% | 61% | 38% | 49% | 37% | 67% | 35% |
| B | 24% | 24% | 14% | 18% | NA | 25% | 23% | 23% | NA | 20% | 20% | 19% | 30% | 22% | 20% | 16% | 25% | 22% |
| C | 11% | 11% | 8% | 12% | NA | 11% | 17% | 11% | NA | 10% | 11% | 12% | 0% | 11% | 16% | 22% | 4% | 23% |
| CR | 0% | 0% | 0% | 1% | NA | 1% | 2% | 0% | NA | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% | 0% |
| D | 3% | 4% | 4% | 3% | NA | 4% | 0% | 3% | NA | 3% | 1% | 2% | 2% | 4% | 4% | 3% | 0% | 2% |
| F | 6% | 7% | 4% | 10% | NA | 7% | 3% | 8% | NA | 8% | 10% | 10% | 0% | 9% | 2% | 8% | 0% | 7% |
| INC | 0% | 0% | 0% | 0% | NA | 0% | 0% | 0% | NA | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| NC | 0% | 0% | 0% | 0% | NA | 0% | 0% | 0% | NA | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| W | 18% | 15% | 8% | 16% | NA | 21% | 11% | 15% | NA | 19% | 7% | 15% | 7% | 16% | 9% | 14% | 4% | 9% |
| TOTAL | 100% | 100% | 100% | 100% | NA | 100% | 100% | 100% | NA | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

| ARCHITECTURE | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUCCESS | | | | | | | | | | | | | | | | |
| | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Spring 06 | Sum 06 | Fall 06 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 |
| A,B,C,CR | 447 | 485 | 41 | 419 | 419 | 56 | 408 | 448 | 67 | 440 | 40 | 430 | 47 | 687 | 49 | 735 |
| % | 72% | 74% | 84% | 71% | 68% | 86% | 74% | 71% | 82% | 72% | 91% | 72% | 85% | 75% | 96% | 81% |

| ARCHITECTURE | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RETENTION | | | | | | | | | | | | | | | | |
| | Fall 04 | Spring 05 | Sum 05 | Fall 05 | Spring 06 | Sum 06 | Fall 06 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 |
| A,B,C,D,F,CR,NC,I | 507 | 554 | 45 | 496 | 483 | 58 | 467 | 515 | 76 | 515 | 41 | 503 | 50 | 792 | 49 | 825 |
| % | 82% | 85% | 92% | 84% | 79% | 89% | 85% | 81% | 93% | 85% | 93% | 84% | 91% | 86% | 96% | 91% |

Succes: A student succeeds in the course.
Numerator = Sum of A, B, C, CR
Denominator = Sum of A, B, C, D, F, CR, NC, I, W

Retention: A student is retained in the course to the end of a term.




| ARCHITECTURE | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSCH | | | | | | | | | | | | | | | | | | |
| Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 | Sum 09* |
| 3,545.32 | 3,852.56 | 190.00 | 3,639.47 | 0.00 | 4,085.63 | 250.19 | 3,826.04 | 0.00 | 4,392.67 | 288.54 | 4,355.60 | 116.41 | 4,792.23 | 195.80 | 4,908.64 | 36.49 | 4,834.38 | 312.123 |

| ARCHITECTURE | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FTES | | | | | | | | | | | | | | | | | | |
| Fall 04 | Spring 05 | Sum 05 | Fall 05 | Inter 06 | Spring 06 | Sum 06 | Fall 06 | Inter 07 | Spring 07 | Sum 07 | Fall 07 | Inter 08 | Spring 08 | Sum 08 | Fall 08 | Inter 09 | Spring 09 | Sum 09* |
| 118.18 | 128.42 | 10.86 | 121.32 | 0.00 | 129.96 | 14.98 | 121.70 | 0.00 | 141.29 | 17.28 | 138.55 | 6.97 | 132.01 | 11.73 | 169.91 | 2.19 | 167.38 | 18.69 |

* Estimation based on unfinalized data.

Chart 13 Graduation Data Degree and Certificate Awards

| Architecture | (AS)Architecture and (Cert)Engineering Related Technologies and Industrial Technologies | (AS)Engineering and Industrial Technologies | Cert) and Related Technologies |
|---|---|---|---|
| Year 2008-2009 | 19 | 19 | 9 |
| | 14 | | |

| | | | | |
|---|---|---|---|---|
| Year 2007-2008 | 14 | 17 | 12 | 16 |
| Year 2006-2007 | 14 | 18 | 12 | 7 |
| Year 2005-2006 | 12 | 10 | 7 | 12 |
| Year 2004-2005 | 18 | 21 | 10 | 9 |

Data Chart 1 – Architecture / Civil / Drafting - "Section Delivery"

- Over a period of 5 years there has been a 48% increase from 58 sections in '04-'05 to 86 sections in '08-'09. The majority of the increase took place during the day (prior to 4:30 pm) and weekend course offerings.

- The increase is an indication of good incremental program growth resulting from industry and student demand and new technology related to a Geo-spatial grant, the new Civil Design Drafting Program, and two new Piping Design courses recommended my the Industry Advisory Committee.

- Further, the increase is due to four new internship courses, the addition of intersession offerings and multiple Draf 105 sections offered off campus for the COMPAS "at risk" student.

Data Charts 2 & 3 – Architecture / Civil / Drafting - "Original Educational Goal"

(Data gathered from student application during registration reflecting their intended educational goals) – Chart 3 Shows percentage for each category for each term / semester based on Chart 2)

- During the past 5 years the largest group of students at 23.5% continues to be those pursuing an AA and transfer to a 4 year school. Over the past 5 years this group has decreased by 11.5% from 35%. – Average over 5 years is 33%

- Compared to a 6.6% average in'08-'09 that represents students who indicate they intend to pursue a transfer to a 4 year school without an AA – a decrease of 3% form 5 years ago. – Average over 5 years is 8%

- During the past 5 years the smallest group of students at .5% continues to be those who are indicating a desire to advance in their current job or career – an increase of .3% from 5 years ago. – Average over 5 years .9%

- Other 5 year averages:
  - Discover Career Interests / Goals – 10.5%
  - Undecided on Goal – 7.5%
  - Prepare for New Career – 6.5%
  - Maintain Certificate or License – 5.7%
  - 2 year Vocational Degree w/o Transfer – 3.5%
  - Vocational Certificate w/o Transfer – 2.5%
  - Obtain AA w/o Transfer – 1.5%

Data Chart 4 – Architecture / Civil / Drafting - "Faculty Classifications"

- In '05-'06 the program added an additional full time instructor bringing the total to 3 as a replacement for a retirement and to develop a new Civil Design Drafting Program.

- In '04-'05 the program included 13 adjunct non-tenured instructors. This continued to be the average until '06-'07 when there was an increase to 15 due to new sections of Civil Design Drafting and Land Surveying. (Does not include 3 or 4 COMPAS instructors teaching Draf 105 off campus)

Data Charts 5 and 6 – Architecture / Civil / Drafting – "Grade Distribution"
(Also shows enrollees per term and per year )

Chart 6 Shows percentage of grade distribution for each term / semester based on Chart 5 totals)

- Semester average enrollees in '04-'05 was 635
- 5 yeas later in '08-'09 the average enrollees was 914 – 44% increase
- The increase is due to new course offerings in Civil Design Drafting and COMPAS at risk students (approx. 200)
- Without COMPAS students the program enrollees is 714 for '08-'09 – 12% increase
- Over a 5 year period grade distribution has been fairly consistent with one exception – fewer "W", "F", and "D" grades "08-"09 resulting in an increase in the amount of "C" grades 22% - up from 11% the year before.
- The highest percentage of "A" grades occur during intersession and summer.

Data Charts 7, 8 and 9 – Architecture / Civil / Drafting – "Success and Retention"

- Program student success in 5 years has improved from an average of 75% to 84% - a 9% increase.
- Chart 9 shows the same increase of 9% but starting with Fall '04 at 72% and ending with Spring '09 at 81%.
- Highest success rate and retention continues to occur during Intersession and Summer sessions – as high as 96% and 93% respectively.
- Program student retention in 5 years has improved from an average of 84% in year one to 91% in year 5 – a 7% increase.
- Chart 9 shows an greater increase at 9% starting with Fall '04 at 82% and ending with Spring '09 at 91%.

Data Charts 10 and 11 – Architecture / Civil / Drafting – "WSCH and FTES"

- Approximately an 8% incremental increase in Weekly Student Contact Hours per year over a 5 year period. The total increase in 5 years was 33%, 7,588 in year one compared to 10,092 in year five.
- The WSCH increase reflects efficiency of courses offered based on enrollees and grade distribution.
- Throughout all 5 years most all of the Architecture courses and Draf 150 Basic AutoCAD courses were over enrolled by as many as seven students with minimal attrition.
- The FTES increase of 44% in the fall semester over the 5 year period and the 30% in the spring semester over the 5 year period are a reflection of the increased enrollees in the program related to Architecture and Animation course popularity.

- New course offerings in the Civil Design Drafting Program and the addition of intersession course offerings - Draf 105 and Draf 150 are also positive reasons for the increase.

Data Charts 12 – Architecture / Civil / Drafting - "Enrollment By Course"

- Enrollment was consistent during years 1, 2 and 3 (1.322, 1,286 and 1,278 respectively) with a significant increase in year 4 with 1,352 enrollees – a 6% increase.
- In year 5 the number of enrollees was 1,446 – not counting the 706 COMPAS students - representing a 7% increase from year 4. (The increase with COMPAS students was a 59%)
- Year 4 and 5 reflects the largest increase in program enrollment due to new courses and technology related to Civil Design Drafting and Land Surveying. Also due to the popularity of Architecture courses.
- In addition to the new Civil Program the ACEDD Program in year 5 began an agreement with COMPAS – off campus instruction for "at risk" students pursuing technical skills. COMPAS students continue to be enrolled in multiple sections of Draf 105 – Approximately 260 additional students in Fall 2008 and 112 in the Summer 2009.

Data Chart 13 - Graduation Data Degree and Certificate Awards

For Years 08-09; 07-08; 06-07; 05-06; 04-05 (refer to chart for actual number of students)

- Over a period of 5 years 270 awards (AS or Certificate) were issued.
- An average of 54 per year (58-year 1; 41-year 2; 51-year 3; 59-year 4; 61-year 5 in 08-09)
- A Total of 162 AS awards (60%) and 108 Certificate awards (40%)
- Yr. 1 = 62 AS awards and 38 Cert. awards; Yr. 2 = 53 AS and 47 Cert.; Yr. 3 = 63 AS and 37 Cert.; Yr. 4 = 54 AS and 46 Cert.; Yr. 5 = 67 AS and 33 Cert.
- A Total of 127 were Arch Students (47%) and 143 were Engr Drwg. Students (53%)
- 77 AS Arch Students (28.5%) and 50 Arch Certificate Students (18.5%)
- 85 AS Engr Drwg. Students (31.5%) and 58 Engr Drwg. Certificate students (21.5%)
- In year 5 (08-09) there were 19 AS Arch students (31%); 19 AS Engr. Drwg. Students (31%); 9 Cert. Arch Students (15%); and 14 Cert. Engr Drwg. students (23%)
- In year 4 (07-08) there were 14 AS Arch students (24%); 17 AS Engr. Drwg. Students (29%); 12 Cert. Arch Students (20%); and 16 Cert. Engr Drwg. students (27%)
- It is apparent there has been a steady incremental increase in the number of awards since year 2006-07 after a major decrease in 2005-06 from 2004-05.
- It is very apparent by year 5 twice as many student pursue an AS degree rather than a Certificate -This a good change in order to become more marketable and keep one's job in the long run and be in a position to continue with advance related studies at the 4 year level.
- There are more Engr. Drwg. Students achieving awards than Arch students - Possibility Arch students are transferring early before getting an AS
- The program has considered that the Technology counselor's involvement has had an impact in the positive increase in years 4 and 5 -

## Program's Strengths and Weaknesses

The program has many attributes.

- Three distinct yet related focus areas; Architecture, Civil and Engineering Design Drafting. Combining these three sub sets of the larger concept of visual communication/ drafting provides greater opportunities for students to expand and diversify their education and become more marketable.
- Utilizing traditional paper pencil drafting and design studio activities as well as CADD methods to teach the language of the design and construction Industry.
- Industry standards such as ANSI/ ASME, ISO, A.I.A, are emphasized throughout the program making students more employable and in demand.
- Advice from an industry advisory committee for direction with curriculum, equipment purchases, program improvements and overall planning. The committee meets as an entire group once a year and as specialized groups based upon content area as needed. Most recently a specialized group of industry professionals guided the program in a successful IDRC grant (industry driven regional coloration) in the content area of civil drafting and design and geospatial technology.
- Open and extended lab hours, including Saturdays provide student the opportunity to work on course projects beyond that of the regular class time and at times convenient to their personal schedule. With open lab hours, students do not need to afford expensive computer hardware, software or drafting workstations of their own.
- Each student in the program has their own workstation during class time.
- Emphasis on the mutually beneficial use of Peer tutors.
- Professors and instructors in the program have both teaching and professional experience.
- Professors with local, national and international recognition of their classroom effectiveness.
- Bentley systems, an international CAD and design software developer recently recognized the program as one of the best college programs that use Bentley products.
- Program advisors and counselors assist students with internships and transfer programs to four year schools.
- The program has one full time instructional assistant and one part instructional assistant / tutor. A primary responsibility of the instructional assistant is to take care of the labs. The program benefits greatly from these individuals because instruction is not hindered with hardware and software maintenance issues. In addition to maintaining the labs these individuals, who are both graduates of the program, work with and assist students during open lab time.
- The program has a state-of-the-art classrooms / labs and equipment, including a traditional and technologically advanced model / prototype shop facility.
- A well maintained infrastructure including a network and server configuration which supports over 100 CADD / GIS workstations
- The program utilizes the latest release of 2D and 3D CADD software available, including: AutoCAD, Inventor, SolidWorks, 3D AutoCAD, AutoCAD for Architecture, AutoDesk-Revit, MicroStation V8, Bentley Architecture, MicroStation Civil Draft and In-Roads, 3D Studio Max, Maya, Softimage and Sketch-up Professional.

- Every graduate of the program is required to know at least two of these software packages, most of the students are proficient in as many as four.
- Student versions of software applications are available for home use to enhance student's skill levels.
- Using "Learning Communities" the ACEDD program has been successfully linking Architecture and Drafting courses with general education courses. Students in the learning communities of Speech and Art make a meaningful connection between general education and their chosen content area.
- New computer hardware is purchased as "state of the art" equipment with the initial purchase exceeding current specifications so that the systems will last well into the future.
- Courses are scheduled to avoid overlapping software requirements helping to reduce the licensing fees.
- Good relationships are nurtured with software vendors.
- Vendors donate prizes regularly to the programs annual high school contest. An event held to recognize and recruit local high school drafting students.
- Software vendors use the program as a place to showcase new products. Recently Bentley Corporation unveiled its new line of CADD software to businesses and other agencies in the Southern California region at Rio Hondo College.

Weaknesses within program include:

- Software costs are rise every year thus limiting the number of course sessions that can be offered. Courses must be scheduled to avoid software licensing issues.
- Yearly updates of software makes it more demanding on existing computer workstations to operate properly, which means that existing workstations need to be upgraded constantly to accommodate software upgrade requirements, specifications and to operate within industry standards.
- There is a need for staff to constantly monitor both software and computer workstations and applications for proper functioning. Evening and weekend students / faculty do not have the benefit of an instructional assistant
- Computer hardware in two labs, S304 and S310 are below the minimum requirements of software applications.

The program is doing well and is recognized for its strengths and diversity by the Rio Hondo College community. Continued support of the program will need to include up-grades in funds to meet software and hardware demands. The program will also need an augmentation to the supply budget relative to increased number of students enrolled in new programs such as Civil Design technology, surveying and mapping, landscape architecture and GIS.

## Program's Opportunities and Threats

Looking at the future, the program has the opportunity to successfully maintain its current status and level of performance. The California job market indicates that the need for

employees skilled in drafting /visual technology will remain for the most part the same over the next ten years. The only area that shows a potential decline is in the area of architecture. The national job market indicates growth in all areas. The programs industry advisory committee has made a number of recommendations as well as the program has made its own efforts to anticipate and meet the needs of the community. In addition to maintaining its current level of success the program has emerging opportunities in the following areas:

- Partnering with Cal Trans to train employees is "Bentley In-Roads" Civil CAD software
- Development of an Engineering Transfer Degree
- Development of a Landscape Architecture component for the program
- Development of cross curricular program in electromechanical design / packaging
- Development of cross curricular program in computer animation, modeling and gaming
- Creation of a learning community with program courses and general education speech courses
- Incorporating new BIM technology into architecture program
- Develop Industrial Technology teacher preparation transfer path with CSULA (Cal State Univ. L.A)
- Develop Engineering Technician transfer degree.
- Collaboration with Fabrication program to meet job market need for welders and other fabrication / manufacturing positions
- Developing non-credit courses to attract individuals interested in retraining without the impact and implications of a graded courses
- Work with new MESA program to assist math and science / engineering students with necessary drafting and CAD skills
- Working with High School drafting instructors to further their knowledge and application of Civil drafting in their program
- Enhance existing Blue Print Reading for Construction course (ARCH 95) to include Cost Estimating and units of instruction in collaboration with new Energy and Green Technology program

There are a few threats or challenges that the program will need to overcome to successfully maintain its current level of accomplishment and to see to fruition the opportunities listed above. The following is a list of some potential concerns:

- Overall the programs enrollment is growing, however the civil component and its related classes are still low enrolled. This is largely due to the fact that the program is new. Students have not yet made the transition from the other areas (primarily architecture); High school drafting students are not familiar with Civil.
- Though it has improved recently the lack of cooperation from four year universities to develop articulation agreements makes the process difficult
- To proceed with the engineering transfer degree opportunity the program may need to obtain a faculty member with the appropriate educational background or certification.
- To proceed with collaboration with the fabrication program a faculty member will need to be hired to replace the former fabrication faculty member
- The cost of keeping up with changes in computer software and hardware has for years been a concern to the program's success as addressed in the strengths and weakness section of this report efforts are made to keep the program as affordable as possible
- Night and weekend students do not receive the same level of service as day students

due to the need for additional instructional assistant for night and weekend courses / students.

- The program's existing instructional supply budget has not been increased and currently provides for the Architecture, Civil and Engineering Design Drafting program as well as the GIS program. Over the years the program's enrollment has increased and new courses and degrees are now offered yet the supply budget has not been adjusted to reflect these changes.

## Program's Accomplishments and Recommendations for Improvement

As seen in the minutes and positive evaluation of the Industry Advisory Committee, the success rate as displayed in Student Learning Outcome Assessment reports and in the number of students graduating from the program, receiving degrees, certificates, jobs and retraining, the program is currently meeting and exceeding its mission. In addition, the program has both successfully meet its mission and enhanced its offerings. New courses and degrees in Civil drafting have been added to the program. As stated in the opportunities section above and based on recommendations made by the programs Industry Advisory Committee, new courses have been offered and new opportunities have emerged. The program has been recognized by a national CADD organization for its strong diversity and community outreach activities. The program is a strong viable component of Rio Hondo Community College.

The following list represents some of the accomplishments of the program over the past academic year:

- Annual Industry Advisory Committee meeting and recommendation for program enhancement
- Students have completed the requirements and obtained program A.S. degrees and certificates
- Students have obtained employment
- Students have entered paid internship positions
- Employees have received training and improved their job skills, including a one year sabbatical involving research and training related to BIM (Building Information Modeling) technology
- The program ran an active ASEA club (American Society of Engineers and Architects)
- The programs enrollment increased along with an increase in course sections for fall, intersession spring and summer.
- Program courses are offered through Comp-as, an off campus "on –sight" program for at risk students. Academic years "08-09" showed a major increase of 755 enrollees in DRAF 105 as a result.
- The program had a successful end to Civil IDRC grant with implementation and infusion of Civil Design Technology into the program.
- Program Civil courses have been successfully articulated with Cal Poly Pomona
- The program purchased and received training on a new Z-corp. 3D printer
- The program purchased and received training on Virtual Mill software for the CNC (Computer Numerical Control) router

- The program purchased new overhead/ digital projectors for each classroom
- The program hosted counseling 101 and 151 students for an orientation to the program
- The program hosted 270 High School students at the 33rd annual High School Drafting Contest
- Articulation agreements were developed with both local and surrounding area High Schools
- New courses were developed for Piping Drafting
- New courses and degrees were developed for Civil Drafting
- A new computer modeling and animation instructor hired in joint venture with the art program
- BIM technology has been successfully introduced into advance architectural CAD courses.
- Professional development by faculty and staff continued to take place with an emphasis on BIM technology.
- Classroom / labs S304 and S310 have been properly wired to allow access to the internet and CAD server allowing dual use of the facility for traditional pencil based drafting and CADD.
- Successes with Perkins grant opportunities each year continue to enhance the program with instructional materials, professional development opportunities for staff members, recruiting activities and equipment.

From the 2005 program review, Activities and Objectives, Goals and Recommendations:

The program has completed the following:

- Hired one new full-time instructor
- Upgraded CAD/GIS/Animation network server for more storage capacity
- Made improvements to air conditioning to server room and S307
- Hired a permanent replacement for Senior Instructional Assistant
- Replaced one ten year old wide-format engineering copier and one seven year old-wide format design jet ink plotter
- Revised current class size limits from 32 to 24 based on workstations and room size limitations.
- Installed chalkboards in two Drafting Labs
- Purchased GIS Survey Grade GPS (Global Position System) Equipment
- Completed course revisions and updates
- Implemented VTEA follow-up survey to track student transfer and employment
- Worked With Industry Advisory Committee to develop Student Learning Outcomes
- Worked with Industry and developed more partnerships for student internships and workplace learning (faculty and students)
- Created a new GIS Survey Grade course for civil engineering application.

The program is continuing / in the process of completing the following:

- Replacing fifty old Drafting Workstations (Bidding in the process)
- Purchasing Reverse Engineering Technology equipment and software; 3D Digitizer and Point Cloud System (small unit purchased funding is limiting ability to obtain more)
- Need two to three additional CAD/GIS Labs due to increased enrollment and

sections. (the technology building remodel will provide one lab, moving animation to the learning resource center has partially freed up another)

- Need to upgrade two of six CAD/GIS lab Computer workstations prior to Spring 2006 and two more prior to Spring 2007 (one was done but not the other due to funding)
- Work on University Articulation Agreements, Update ASSIST.org (always in process as courses are developed and revised)
- Continue Teaching Methods Workshops for Part Time Instructors (part of adjunct flex day meetings)
- Create an Alumni Association of former students currently working in the industry to help promote department and industry partnership activities (electronic networking site – facebook and blog- has been established and is being maintained to help promote Alumni Association)
- Create new Degree and Certificate curriculum for Civil Drafting and Design and possibly Landscape Architecture (civil done, landscape in process)

The program has not been able to complete the following:

- Establish a replacement cycle to meet the demands of technology and software
- Hire an additional instructional assistant half time (min.) to support evening and weekend instruction and course offerings
- Replace Flooring within facility which is wearing out (carpet and linoleum floors)

One of the concepts of a good design, taught in the program, is that with thought and planning any good design can still be improved. In this vein the program is constantly looking to maintain the quality of the existing program, remain current with the latest visual communication technologies while preparing for what will come next. The anticipated improvements line up with the opportunities as listed in the opportunities section above. The program is currently working to turn the opportunities into improvements.

The following list represents some of the anticipated improvements the program will be pursuing.

- Increase software site licenses to adequately meet the demand of high volume use of software.
- Provide an evening and weekend instructional assistant.
- Improve awareness of and participation in the new Civil technologies program strand.
- Development of new outreach and recruiting activities to involve a greater number of local High School Drafting and Architecture instructors
- Development of an Engineering Technician A.S. degree
- Develop Landscape Architecture Degree and Certificate
- Revise ARCH 95 to include construction estimating
- Develop Construction Management Degree and Certificate
- Offer all Architecture, Civil and Engineering Design Drafting and CADD course through continuing education
- Upgrade computer hardware / workstations to meet the demand of software applications
- Upgrade / replace rapid prototype 3D printing equipment

## Program's Strategic Direction

Over the next three to five years the program will work to successfully fulfill its current mission while endeavoring to follow the advice of the industry advisory board and keep up with changes in job requirements and industry needs. The program will continue to work with its peers at the K-12 and university levels to assure students are properly prepared and transit easily through their chosen paths. The program will also endeavor to pursue the opportunities as described in the opportunities section above. In three to five years the program will include more options and opportunities for students in the field of design drafting. New technology new upgraded software will prepare students to enter the job market, improve their existing employment or move on to more education properly prepared.

The ACEDD/GIS as a whole has identified a number of key areas for the future direction and expansion of the program over the next 3 to 5 years, they are as follows:

- Develop a Landscape Degree/Certificate with green sustainable emphasis.
- Revise and enhance ARCH 95 Blueprint Reading for Construction course to include construction estimating and green energy technology in collaboration with the Energy/Electronics Program.
- Develop an Engineering Technology Degree Transfer complete with courses to support that program.
- Develop a Construction Management Degree/Certificate in the ACEDD/GIS program in collaboration with Business Division and Fabrication Technology Program.
- Increase and strengthen existing Civil Technology Degree program by articulating with local universities and colleges that have Civil Engineering Programs and further developing surveying component of program.
- Offer all Architecture, Civil and Engineering courses through continuing education program.
- Develop a Building Information Modeling (BIM) non-credit certificate with the ACEDD/GIS program.
- Upgrade existing computer lab/workstations on a periodic/cycle basis to properly run yearly CADD software upgrades.
- Update rapid prototyping program to closely tie into Engineering Technology program which will include new equipment and software for model making.

We anticipate for the most part that the ACEDD/GIS program will expand based on the current economic status. While industry hiring is slowing at this time, this in turn is allowing more individuals time to take classes thru our program and thus gives us a higher enrollment count. Nevertheless, we anticipate when the economy starts to pickup, our enrollment count will be low. However, those students who are currently taking advantage of the economic slowdown by coming through our program and developing new skills, will be in a better position in the future for new job openings.

As for the skills of the faculty currently working in the program, those skills will constantly be evolving due to the nature of the industry and the advice of the industry advisory board to keep up with changes in job requirements and industry needs.

This means that current faculty/staff will need to be retrained in new software enhancements and new methods of construction/fabrication. In order to achieve this, they will have to rely on the use of Perkins IV funds for professional development on a year to year basis.

## Program's Staff Development

## Program Review - Additional Comments

## Program Review - Executive Summary

Program Review Committee: Ada Pullini Brown, Marie Eckstrom, Ygnacio 'Nash' Flores, Matt Koutroulis, Joshua Rosales
Program Guests: Ed Gonzalez, Gary Halverson, Mike Slavitch, Jay Sunyogh, Steve Tomory

Commendations
- Commendations for linking program degrees to SLOs and inclusion of an advisory board in the annual SLO review
- Good assessment of current program enrollment vis-à-vis industry need
- Good analysis and use of institutional data.
- Commendations for succinct Mission Statement and overarching SLOs.
- Commendations for working with other departments in learning communities.
- Commendations on plans to develop a Landscape Degree/Certificate, an Engineering Technology Degree Transfer, and a Construction Management Degree/Certificate in the ACEDD/GIS program, in collaboration with the Business Division and Fabrication Technology Program.

Recommendations
- Consider holding Advisory Committee meetings once per semester rather than once per year.
- Consider asking students who take Survey or Introductory courses to consult with the CTE-specific counselor as a co-requirement of the course.
- In order to provide the same level of instructional assistance to evening and weekend students, an assistant should be hired for those times.
- The District should hire technical staff/instructional assistants/application specialists to maintain and service the various labs throughout the campus.
- The District needs to incorporate specialized/designated budgets and planning cycles for all the labs on campus to ensure their proper maintenance, upgrades, and replacement.

- The District needs to provide for the possibility of unfunded requests for software, consumable equipment, etc. outside of the annual planning process.

## Program Review - Response to the Executive Summary

### Goal #1 Long term (2-5 years) Status: in progress

#### Description of Goal

Develop a Landscape Degree/Certificate with green sustainable emphasis in the ACEDD/GIS program.

#### Evaluation of Goal

Advisory committee recommended that this would be the next logical step in the expansion of the ACEDD/GIS program plus it would lead those students who are interested in field of architecture another pathway to a less heavily impacted university program.

### Objective #1.1 Status: in progress

Continue to develop courses for Landscape Degree/Certificate program.

### Objective #1.2 Status: in progress

Articulate those new courses with Cal Poly Pomona Landscape Architecture Program.

### Objective #1.3 Status: in progress

Create new Landscape Degree and certificate through the chancellor's office.

## Goal #2 Short term (1 year) Status: in progress

### Description of Goal

Revise and enhance ARCH 95 Blueprint Reading for Construction course to include construction estimating and green energy technology in collaboration with the Energy/Electronics Program.

### Evaluation of Goal

The course is an entry level course that helps develop a foundation for future Architecture and Construction Management courses. It is also to be designed for those who need to understand how to read a set of prints and prepare material estimates.
This course is also a part of the requirements for both the certificate and A.S. Degree in Architecture Drawing and Design.

### Objective #2.1 Status: in progress

Research other community colleges with similar courses that include both print reading and estimating.

### Objective #2.2 Status: in progress

Meet with Energy/Electronics instructor to collaborate development of courses.

### Objective #2.3 Status: in progress

Prepare revision forms needed and submit to curriculum committee for review.

### Objective #2.4 Status: in progress

Develop problems with solutions as well as handout material.

## Goal #3 Long term (2-5 years) Status: in progress

### Description of Goal

Develop an Engineering Technology Transfer Degree in the ACEDD/GIS program.

### Evaluation of Goal

The conditions that will be used to evaluate the success of the program will be number of completers at end of the 2012 academic year.

### Objective #3.1 Status: in progress

Revise existing courses as needed to articulate with local 4 year universities or colleges who have an Engineering Technology program and collaborate with math and science in developing degree.

### Objective #3.2 Status: in progress

Meet with Engineering Professors from Cal Poly Pomona and Cal State LA to discuss Engineering Technology, transfer requirements and student skill sets.

### Objective #3.3 Status: in progress

Prepare revision forms needed and submit to curriculum committee for review.

### Objective #3.4 Status: in progress

Submit necessary revision forms to chancellor's office for review.

## Objective #3.5

Status: in progress

Recruit, hire a full time instructor who possesses an Engineering Degree to straighten the ACEDD Program in it's pursuit of offering revised engineering design based drawing /CAD courses.

## Resources Needed: Additional Personnel

### Position Classification: Full Time Faculty

Position Title:

Basic Position/Job Description:

Licensed Engineer

Estimated Salary Excluding Benefits: $89,000.00

Supporting Rationale: What are your most compelling reasons for this request? Include recommendations and documentation from recent program review or program plans to support your rationale.

Professional licensed engineer will needed to teach intermedate and advanced level engineering drafting/design courses. This would also help the ACEDD program to achieve new program level SLO's and revised course level SLO's.

## Goal #4 Long term (2-5 years)

Status: in progress

## Description of Goal

Develop a Building Information Modeling (BIM) non-credit certificate within the ACEDD/GIS program and expand course offering to meet student and industry demand such as intermediate and advance classes as well as BIM for structural and MEP (Mechianical, Electrical and Plumbing) applications.

## Evaluation of Goal

With continuing software advancements in the area of architecture and demand in the AEC industry, construction documents can be better tied together thus leading to fewer mistakes in the actual construction of buildings or structures.

## Objective #4.1

Status: in progress

Revise all architecture courses to include a unit in BIM concepts.

## Objective #4.2

Status: in progress

Create new courses to for advanced BIM applications.

## Objective #4.3

Status: in progress

Submit all revisions and new courses to curriculum committee for review.

## Objective #4.4

Status: in progress

Purchase new dedicated server/ Super Computer to support new parametric design software (BIM for Architecture / Energy Analysis, Cosmos for Engineering Design and Analysis, and “In-Roads” for Civil Design / Analysis.

## Resources Needed: Additional Budget

**Requested Item:**
**Requested Amount:** $30,000.00
**Description:**

Server to help maintain software and computer.

**Supporting Rationale**

This supports one of the program goals ot upgrade computer workstations to keep pace with new parametric design software

## Resources Needed: Additional Technology

### Technology Classification: Computer Hardware

**Requested Amount:** $30,000.00
**Description:**

This supports one of the program goals (#4) to increase BIM and Engineering related course offerings and to enhance course content to meet industry needs and transfer requirements.

**Reason:**

To offer BIM for architecure and energy analysis as well as offering Cosmos for Engineering Design and Analysis as well as offeing In-Roads for Civil applications.

**Location:** S306
**New or Replacement:** New Installation
**Services Required:** Electricity, Internet Access, College Network Access, Software Support, Hardware Support

## Objective #4.5

Status: in progress

Purchase a lab of 25 enchanced CAD/BIM workstations to support new BIM software and advanced courses.

## Resources Needed: Additional Budget

**Requested Item:**
**Requested Amount:** $130,000.00
**Description:**

Revit software used to implement BIM.

**Supporting Rationale**

This supports one of the program goals ot upgrade computer workstations to keep pace with new parametric design software

## Resources Needed: Additional Technology

### Technology Classification: Computer Software

**Requested Amount:** $22,000.00
**Description:**

24 additional software licenses for Revit/BIM software and AutoCAD software.

**Reason:**

To increase BIM appliations for sturctural and MEP and Engineering Techonology courses.

**Location:** S306A

**New or Replacement:** New Installation
**Services Required:** Electricity, Internet Access, College Network Access, Software Support, Hardware Support

## Objective #4.6

Status: in progress

Purchase additional software licenses (24 ea.) for Revit (BIM) software and AutoCAD software.

## Resources Needed: Additional Budget

**Requested Item:**
**Requested Amount:** $22,000.00
**Description:**

Revit software used to implement BIM.

**Supporting Rationale**

This supports one of the program goals (#4) to increase BIM applications (Structural and MEP) and Engineering Technology related course offerings. (Cost $22K onetime initial cost – subsequent annual upgrades already included in ACEDD software upgrade budget)

## Resources Needed: Additional Technology

### Technology Classification: Computer Software

**Requested Amount:** $22,000.00
**Description:**

24 additional software licenses for Revit/BIM software and AutoCAD software.

**Reason:**

To increase BIM appliations for sturctural and MEP and Engineering Techonology courses.

**Location:** S306A
**New or Replacement:** New Installation
**Services Required:** Electricity, Internet Access, College Network Access, Software Support, Hardware Support

## Objective #4.7

Status: in progress

Hire additional adjunct faculty to teach advanced BIM course that possess experience in structural and MEP applicaitons.

## Goal #5 Long term (2-5 years)

Status: in progress

### Description of Goal

Develop a Construction Management Degree/Certificate in the ACEDD/GIS program in collaboration with Business Division and Fabrication Technology Program.

### Evaluation of Goal

Advisory committee recommended that this would be the next logical step in the expansion of the ACEDD/GIS program.

### Objective #5.1

Status: in progress

Examine courses in both Business and Architecture programs to see if any courses from both departments can be used in the development of the new Construction Management program.

### Objective #5.2

Status: in progress

Meet with local 4 year university representatives to discuss revising existing courses as needed to articulate with Construction Management program and also collaborate with Business Division in developing degree.

### Objective #5.3

Status: in progress

Prepare revision forms needed and submit to curriculum committee for review.

### Objective #5.4

Status: in progress

Create new Construction Management Degree and certificate through the chancellor's office.

## Goal #6 Long term (2-5 years)

Status: in progress

### Description of Goal

Increase and strengthen existing Civil Technology Degree program by articulating with local universities and colleges that have Civil Engineering Programs and further develop the surveying component of program.

### Evaluation of Goal

With the new articulation officer in place, all courses related to the civil degree program can be articulated with those 4 year universities or colleges that have Civil Engineering Programs.

### Objective #6.1

Status: in progress

Review existing articulation agreements between local universities and Rio Hondo College.

### Objective #6.2

Status: in progress

Revise courses as needed to meet articulation criteria for universities or colleges.

### Objective #6.3

Status: in progress

Develop additional advanced surveying courses that assist those who are interested in a career path in land surveying.

### Objective #6.4

Status: in progress

Submit new and revised courses to curriculum committee for review.

### Objective #6.5

Status: in progress

Purchase new surveying equipment.

## Resources Needed: Additional Budget

**Requested Item:**
**Requested Amount:** $70,000.00
**Description:**

Additional surveying equipment will be needed to prepare those students who will be taking the licensing examination for becoming a licensed surveyor.

**Supporting Rationale**

Existing surveying equipment will need to be replaced due to high use and overall age.

**Requested Item:**
**Requested Amount:** $70,000.00
**Description:**

Additonal surveying equipment will be nede dot prepare those students who will be taking the licencing examination for becoming a licensed surveyor.

**Supporting Rationale**

Existing surveying equipment will need to be replaced due to high use and overall age.

## Goal #7 Long term (2-5 years) Status: in progress

## Description of Goal

Offer all Architecture, Civil and Engineering courses through continuing education program.

## Evaluation of Goal

With the constant CADD software upgrade every year, there is a need for students and industry to repeat advanced CADD courses offered in the ACEDD program in order to remain competitive in the industry.

## Objective #7.1

Status: in progress

Revise courses as needed to meet requirements for continuing education.

## Objective #7.2

Status: in progress

Submit packaged modules (career paths) to chancellor's office for review.

## Objective #7.3

Status: in progress

Advertise and market courses/modules (career paths) through continuing education.

## Goal #8 Long term (2-5 years)

Status: in progress

### Description of Goal

Upgrade existing computer lab/workstations on a periodic/cycle basis to properly run yearly CADD/BIM software upgrades.

### Evaluation of Goal

With the yearly CADD software upgrade, this places a heavy demand on the computers to run the software upgrades efficiently. Without the computer upgrades, the demand of the new software causes in many instances the computer to slow down and crash.

## Objective #8.1

Status: in progress

Establish annual or two year replacement cycle for CAD workstations and hardware to keep pace with current parametric CADD/BIM/Engineering software and their annual software upgrades.

### Resources Needed: Additional Budget

**Requested Item:**
**Requested Amount:** $130,000.00

**Description:**

Regular cycle of hardware replacement

**Supporting Rationale**

To keep pace with current parametric CADD/BIM/Engineering software and their annual software upgrades.

**Requested Item:**
**Requested Amount:** $130,000.00
**Description:**

Upgrade existing computer labs and software.

**Supporting Rationale**

Yearly software upgrades/enhancements and industry demand based on minimum entry level skill sets. Also supported, recommended and agreed upon by our industry advisory committee.

**Requested Item:**
**Requested Amount:** $130,000.00
**Description:**

Upgrade existing computer labs and software.

**Supporting Rationale**

Yearly software upgrades/enhancements and industry demand based on minimum entry level skill sets. Also supported, recommended and agreed upon by our industry advisory committee.

## Resources Needed: Additional Technology

### Technology Classification: Computer Hardware

**Requested Amount:** $130,000.00
**Description:**

New computer workstations to properly run advanced architecutral and engineering design software.

**Reason:**

To offer additional courses pertaining to BIM and MEP analysis.

**Location:** S307, S306, S305, S304, S310
**New or Replacement:** Replace Existing
**Services Required:** Electricity, Internet Access, College Network Access, Software Support, Hardware Support

## Goal #9 Long term (2-5 years) Status: in progress

### Description of Goal

Update rapid prototyping program to closely tie into Engineering Technology program which will include new equipment and software for model making.

### Evaluation of Goal

The need for this upgrade is to stay abreast of industry standards in the area of rapid prototyping. The current equipment in place is outdated and is no longer serviceable by the manufacturer as well as the software needed to operate the equipment.

## Objective #9.1 Status: in progress

Review the possibility of leasing rapid prototyping equipment rather than owning it, which might help in keeping in pace with industry standards.

### Impact of Objective on Other Programs, Units,and/or Areas

**Impact on the Arts & Cultural Programs Program: Art**

The rapid prototyping program would tie into the animation program in terms of developing characters and model making.

### Resources Needed: Additional Budget

**Requested Item:**
**Requested Amount:** $6,000.00
**Description:**

Leasing rapid prototype equipment on a yearly basis which includes maintenance.

**Supporting Rationale**

Instead of purchasing the rapid protoype equipment outright ($35,000) and purchasing a

maintenance agreement ($5000 per year), it would be cheaper in the long run to lease the equipment which includes maintenance for approximately $6000 per year.

## Individuals Who Participated in Developing this Plan

The following people acknowledge that they participated in the development of or reviewed this plan.

| | Name | Role |
|---|---|---|
| 1. | Halvorson, Gary | Review Manager |
| 2. | Sunyogh, Jay | Participant |
| 3. | Gonzalez, Ed | Participant |