DEPARTMENT OR PROGRAM: Drafting Technology

DIVISION: Technology

I. DESCRIPTION OF PROGRAM

Drafting Technology is the basic language of all design work, be it industrial, architectural, interior design, automotive, aerospace, structural and mechanical engineering. Our drafting program touches all of these areas thus giving students insight to a myriad of job possibilities as well as instruction on the latest industry software programs and standards.

II. STUDENT LEARNING OUTCOMES (SLOs)

a. Briefly describe the department's assessment of SLOs. Which courses or programs were assessed? How were they assessed? What are the findings of the assessments?

We currently have three classes being offered (Draf 110, 121 – two sections, & 122). In these courses, SLOs are assessed via quizzes. Specific items such as a student's ability to use ANSI standards in dimensioning are analyzed. We have found that students who have not taken the previously required Draf 120 course Principles of Technical Drawing, have more difficulty with understanding dimensioning standards. Thus, we will be including more of the Draf 120 course as homework assignments.

b. Briefly evaluate the department's assessment of SLOs. If applicable, based on past SLO assessments, 1) what changes will the department consider or implement in future assessment cycles; and 2) what, if any, resources will the department or program require to implement these changes? (Please itemize these resources in section VII of this document.)

Changes: Recommendations from the 2009 Drafting PIV was to incorporate DRAF 120 Principles of Technical Drawing into each computer based class. Various segments of Draf 120 have been included as homework assignments. Unfortunately this has reduced the time the students have to work with the software program. It might be advantageous to offer a shorter version of DRAF 120 either during the summer or as a 1 unit class and as a prerequisite for either DRAF 121 (AutoCAD) or DRAF 110 (SolidWorks).

c. Below please update the program's SLO Alignment Grid below. The column headings identify the General Education (GE) SLOs. In the row headings (down the left-most column), input the course numbers (e.g. ENGL 100); add or remove rows as necessary. Then mark the corresponding boxes for each GE-SLO with which each course aligns.

If this *Program Review and Planning* report refers to a vocational program or a certificate program that aligns with alternative institutional-level SLOs, please replace the GE-SLOs with the appropriate corresponding SLOs.

GE-SLOs→ Program Courses ↓	Effective Communication	Quantitative Skills	Critical Thinking	Ethical Responsibility
DRAF 110	X	X	X	X
DRAF 121	X	X	X	X
DRAF 122	X	X	X	X

III. DATA EVALUATION

a. Referring to the Enrollment and WSCH data, evaluate the current data and projections. If applicable, what programmatic, course offering or scheduling changes do trends in these areas suggest? Will any major changes being implemented in the program (e.g. changes in prerequisites, hours by arrangement, lab components) require significant adjustments to the Enrollment and WSCH projections?

We are seeing a stead rise in WSCH indicating that job requirements beget enrollment in our industry standard courses. There will not be any changes in prerequisites or hours by arrangement since students have access to free software for home use thus do not need extra lab time.

Revit, an architectural rendering program that is being requested by architectural firms is being offered at San Francisco City College. They are turning students away. Revit is a program that is included in our AutoDesk Legacy software bundle thus, we could easily add this course to our program. In addition, we also have Maya, an animation program that is used throughout industry and could also be an additional course offering.

b. Referring to the Classroom Teaching FTEF data, evaluate the current data and projections. If applicable, how does the full-time and part-time FTE affect program action steps and outcomes? What programmatic changes do trends in this area suggest?

Currently we have one adjunct teaching one class and one full time instructor teaching three courses (FTES 67%). If we are to add courses as suggested by the 2009 Drafting PIV, we will need an additional adjunct instructor thus decreasing our Fulltime / Adjunct ratio.

c. Referring to the Productivity [LOAD] data, discuss and evaluate the program's productivity relative to its target number. If applicable, what programmatic changes or other measures will the department consider or implement in order to reach its productivity target? If the productivity target needs to be adjusted, please provide a rationale.

We are limited by the amount of our individual software seats as well as having only one computer lab. Currently we are borrowing time in the CIS Forensics lab (19-104) that used to be one of the two drafting labs until student services used it during the swing time era. In order to reach the state measure of 525 we will need to:

1. Change the name of the program and courses from drafting to something that captures CAD and design.
2. Develop a new brochure and marketing strategy.
3. Pursue concurrent enrollment students.
4. Develop transfer articulation agreements with CSU and local colleges and universities.
5. Possibly add more software licensed seats.

6. Obtain funding for new computers that can accomodate the current software requirements.

IV. STUDENT SUCCESS EVALUATION AND ANALYSIS

a. Considering the overall "Success" and "Retention" data, briefly discuss how effectively the program addresses students' needs relative to current, past, and projected program and college student success rates. If applicable, identify unmet student needs related to student success and describe programmatic changes or other measures the department will consider or implement in order to improve student success. (*Note that item IV b, below, specifically addresses equity, diversity, age, and gender.*)

We now have the latest versions of AutoCAD and SolidWorks. Both programs are industry standards, and serve a large portion of our community both in industry as well as individuals and small businesses.

In our software agreement with AutoDesk (AutoCad supplier) we also have two other programs that would benefit the community: Revit (architectural rendering program) and Maya (animation program). Since we have the latest versions of these programs, it would be advantageous to consider adding these popular courses to our program to further our reach into the community.

b. Briefly discuss how effectively the program addresses students' needs specifically relative to equity, diversity, age, and gender. If applicable, identify unmet student needs and describe programmatic changes or other measures the department will consider or implement in order to improve student success with specific regard to equity, diversity, age, and gender.

The majority of our students are updating their software skills for job placement and/or job requirements. It is interesting to note that the gender ratio favors males. This is an industry norm and could very well be a marketing strategy, that is, attracting females into a discipline that is not physically demanding yet is related to male dominated fields. Varied ethnic backgrounds are prominent and add to the class flavor. The majority of students come from the 20-29 and 50+ age groups signifying job hunting as well as career changes.

V. REFLECTIVE ASSESSMENT OF INTERNAL AND EXTERNAL FACTORS AND PROGRAM/STUDENT

a. Using the matrix provided below and reflecting on the program relative to students' needs, briefly analyze the program's strengths and weaknesses and identify opportunities for and possible threats to the program (SWOT). Consider both external and internal factors. For example, if applicable, consider changes in our community and beyond (demographic, educational, social, economic, workforce, and, perhaps, global trends); look at the demand for the program; program review links to other campus and District programs and services; look at similar programs at other area colleges; and investigate auxiliary funding.

	INTERNAL FACTORS	EXTERNAL FACTORS
Strengths	Current Software	Need for training in various industries: engineering, industrial design, architecture, construction, aerospace,
Weaknesses	Outdated computer lab Minus one computer lab (now CIS Forensics lab) Minimal software seats Little marketing being done	Student frustration with equipment
Opportunities	We have two software packages that are in demand that we are not offering as courses.	Demand for Revit and Maya training
Threats	Cost of software updates Cost of computer stations	Projected funding cuts

b. If applicable, discuss how new positions, other resources, and equipment granted in previous years have contributed towards reaching program action steps and towards overall programmatic health. If new positions have been requested but not granted, discuss how this has impacted overall programmatic health. (You might reflect on data from Core Program and Student Success Indicators for this section.)

We obtained computer stations from another program when they replaced their lab. Meanwhile we lost a computer lab to swing space and are currently borrowing computer lab time from the 19-104 CIS Forensics lab that used to be our second computer lab. With out two computer labs we would not be able to offer courses concurrently since each course we offer is two three hour blocks (MW or TTH). Consequently, we are limited to course offerings based on lab availability.

VI. Goals, Action Steps, and Outcomes

a. Identify the program's goals. Goals should be broad issues and concerns that incorporate some sort of measurable action and should connect to CSM's *Institutional Priorities 2008-2011*, *Educational Master Plan, 2008*, the Division work plan, and GE- or certificate SLOs.

We are currently restructuring the program based on the Drafting PIV. That is we will be offering four courses that will complete a drafting certificate. Because of the previous years downsizing and loss of the day program after a full time professor retired, we will have to reconsider the AS and AA degree requirements.

b. Identify the action steps your program will undertake to meet the goals you have identified.

Modify the curriculum:

- Reorganize DRAF 120 (Technical Drawing) to be a one unit course. Also create programmed tutorials that can be used as homework for the software based courses

- Add an application level course that would be offered occasionally when there is the demand.
- Add a second semester SolidWorks class (Fall 2011)

c. Briefly explain, specifically, how the program's goals and their actions steps relate to the *Educational Master Plan*.

The Drafting Technology program accommodates:

- Workforce preparation
- Occupational preparation for certification based-training
- Re-entry students
- Dislocated workers
- Seniors leaving retirement
- Underemployed

d. Identify and explain the program's outcomes, the measurable "mileposts" which will allow you to determine when the goals are reached.

The major issue this program faces is the lack of a second computer lab (that we once had) and funding for new computers as well as new software updates. This situation has put the program in jeopardy since with out these needs, the goals of providing students with up to date variety of courses would be impossible.

VII. SUMMARY OF RESOURCES NEEDED TO REACH PROGRAM ACTION STEPS

a. In the matrices below, itemize the resources needed to reach program action steps and describe the expected outcomes for program improvement.***** Specifically, describe the potential outcomes of receiving these resources and the programmatic impact if the requested resources cannot be granted.

***** *Note:* Whenever possible, requests should stem from assessment of SLOs and the resulting program changes or plans. Ideally, SLOs are assessed, the assessments lead to planning, and the resources requested link directly to those plans.

Full-Time Faculty Positions Requested	**Expected Outcomes if Granted and Expected Impact if Not Granted**	**If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.**
Not requested at this time.	NA	NA

Classified Positions Requested	**Expected Outcomes if Granted and Expected Impact if Not Granted**	**If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.**
Not requested at this time.	NA	NA

b. For instructional resources including equipment and materials, please list the exact items you want to acquire and the total costs, including tax, shipping, and handling. Include items used for instruction (such as computers, furniture for labs and centers) and all materials designed for use by students and instructors as a learning resource (such as lab equipment, books, CDs, technology-based materials, educational software, tests, non-printed materials). Add rows to the tables as necessary. If you have questions as to the specificity required, please consult with your division dean. Please list by priority.

Resources Requested	**Expected Outcomes if Granted and Expected Impact if Not Granted**	**If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.**
Item: 21 Computer stations **Number:** Inspiron **Vendor:** Dell **Unit price:** $1952.00 **Total Cost:** $42,000.00 **Status*:** Replacement	Software is currently crashing on existing computers because of elderly video cards and minimal ram.	Input text here.

***Status = New, Upgrade, Replacement, Maintenance or Repair.*

VIII. Course Outlines

a. By course number (e.g. CHEM 210), please list all department or program courses included in the most recent college catalog, the date of the current Course Outline for each course, and the due date of each course's next update.

Course Number	Last Update Date	Six-year Update Due Date
DRAF 121	Fall 2009	Fall 2015
DRAF 122	Fall 2009	Fall 2015
DRAF 110	Fall 2009	Fall 2015
DRAF 111	Spring 2010	Spring 2016

IX. Advisory and Consultation Team (ACT)

a. Please list non-program faculty who have participated on the program's Advisory and Consultation Team. Their charge is to review the *Program Review and Planning* report before its submission and to provide a brief written report with comments, commendations, and suggestions to the Program Review team. Provided that they come from outside the program's department, ACT members may be solicited from faculty at CSM, our two sister colleges, other community colleges, colleges or universities, and professionals in relevant fields. The ACT report should be attached to this document upon submission.

Will Whitted, Designer, Google

"My recommendations after our site visit would be to obtain a donation of a desktop CNC machine since you have space limitations. The Torchmate CNC machine that you have could be downsized to a 4' x 4' bed. Although, if you are able gain a room to use as a model shop, the benefits of having students make final projects for their portfolios would be more advantageous for them when they are job hunting. Providing digital portfolios of teacher-driven projects is commonplace."
" See if you can offer more diverse software guidance. Since you have the Legacy AutoDesk contract, offering Maya, Revit and Inventor may be something to consider in the next few years."

Summary of Recommendations of the PIV Review of Drafting
April 14, 2009 Laura Demsetz, Chair

DRAFTING
The committee recommends that the drafting program be continued with programmatic changes as outlined below. Though minor in terms of the complete program curriculum, these changes require faculty time for the reorganization of courses, the return of a second computer lab, and the use of up-to-date software. Thus, the programmatic changes necessitate a major institutional commitment.

Modify Curriculum
- Reorganize DRAF120 and the AutoCAD courses so that the drafting content of the current DRAF120 is incorporated into computer-based courses. Possible sequence would be (with appropriate numbers)
    - DRAF A, 4 units (3 hours lecture; 3 hours lab): 2-D (incorporates much from DRAF120)
    - DRAF B, 4 units (3 hours lecture; 3 hours lab): 2-D transitioning to 3-D (incorporates some of DRAF120)
    - DRAF C, 4 units (3 hours lecture; 3 hours lab): 3-D
- Select one or more standard text/workbook/software-guide packages to facilitate instruction of some sections by adjuncts as needed. Use of workbook allows material in current DRAF120 to be spread into AutoCad classes.
- Add an "applications" level of courses (not all of which would be offered in any one semester or year). Most of these would have DRAF A, B, and C as prerequisite, but some (2-D focus) might require only DRAF A and DRAF B or one or two courses in Solidworks.
    - DRAF D-?, 1-4 units: applications (e.g. civil, landscape, mechanical, changes from previous software version, architecture, interior design, renovation, advanced visualization tools)
- Add a second Solidworks class to extend content beyond geometry and into physical properties.

Ensure adequate access to hardware and software
- Obtain institutional commitment to fund software updates and sufficient seats for an increase in load.

Integrate model-making into the drafting curriculum

- Obtain funding for a small, table-top, "clean" manufacturing unit for each lab to allow CAD/CAM demonstrations in the classroom in each course.

Increase efforts in marketing, recruitment, and placement

- Change the name of the program and courses from drafting to something that captures (and will be captured by searches on) CAD and design.
- Emphasize the AutoCAD and Solidworks brands in the marketing and recruitment effort.
- Update the program website to reflect current courses and certificates.
- Develop an attractive brochure that reflects the (to be) modified course offerings.
- Consider promoting the program (with new name) on KCSM, Peninsula TV, and elsewhere.
- Pursue concurrent enrollment students, especially at high schools without drafting/CAD programs.
- Consider scheduling of classes to promote concurrent enrollment.
- Develop transfer articulation agreements with CSU schools offering CAD/Drafting/Document Control concentrations as part of an Industrial Technology or Industrial Design major.

b. Briefly describe the program's response to and intended incorporation of the ACT report recommendations.

We have already begun by adding an advanced SolidWorks class. The priorities of the program are to obtain funding for new computers, maintain and our software license upgrades, and market the program to high school students as well as companies in the area needing update software information.

X. PROGRAM REVIEW PARTICIPANTS AND SIGNATURES

Date of Program Review evaluation:

Please list the department's *Program Review and Planning* report team:

Primary program contact person: Lilya Vorobey
Phone and email address: 650.358.6758
Full-time faculty: Lilya Vorobey
Part-time faculty: Jeff Payne
Administrators : Kathy Ross

Primary Program Contact Person's Signature *Lilya Vorobey*	*Date 3/23/11*
Full-time Faculty's Signature *Lilya Vorobey*	*Date 3/23/11*
Part-time Faculty's Signature *Jeff Payne*	*Date 3/23/11*
Administrator's Signature	*Date*
Classified Staff Person's Signature	*Date*
Student's Signature	*Date*
Dean's Signature	*Date*