



OAKLAND  
COMMUNITY  
COLLEGE

Auburn Hills Campus  
2900 Featherstone Road, Auburn Hills, MI 48326-2845

(810) 340-6500 Fax: (810) 340-6507

## DRAFTING

### ADVISORY COMMITTEE MEETING

April 11, 1997

9:30 a.m. - 12:00 noon

Room T-6

### AGENDA

1. Welcome and Introductions
2. Tour of Drafting Lab
3. Validity of Curriculum: learning materials, work, learning experiences, related experience
4. Evaluation of Lab Equipment
5. OCC Mission and Purposes
6. Assessment of Graduates
7. Job Outlook: pay, promotion, growth, migration
8. Potential for Growth of Profession in Oakland County/Southeast Michigan
9. Student Membership in Professional Organization
10. Open Discussion
11. Lunch

# Drafting (DRA)

## Certificate Program

Auburn Hills

This program, leading to a Certificate in Drafting, prepares the student to enter the occupational area of mechanical or industrial drafting. The greatest portion of the student's time is spent learning to draw for the technical-industrial field. The student receives related instruction in manufacturing and fabrication processes and practices necessary to understand the required drawing. A graduate may be employed in either a large industrial establishment or a small business drawing parts and products.

### Major Requirements

Credits

DDT 100	Fundamentals for the Drafting Industry .....	3
DDT 105	Product Drafting .....	3
DDT 115	Descriptive Geometry .....	3
DDT 125	Advanced Descriptive Geometry Applications .....	3

### Required Supportive Courses

ELT 101	Applied Electricity .....	3
ENG 151	Composition I .....	3
MAT 154	College Algebra .....	4
MAT 156	Trigonometry .....	3
MEC 101	Introduction to Manufacturing Processes .....	3
MEC 102	Manufacturing and Fabrication Processes .....	3

Students are responsible for all prerequisites and/or corequisites—see course descriptions.

## DRAFTING

### COURSE DESCRIPTIONS

**DDT 100      Fundamentals for the Drafting Industry      3 Credits**

A course which introduces the student to the drafting industry. Emphasis is placed on the fundamentals so as to help students in their chosen technical program and/or for those who wish to pursue other classes in drafting and design. The course will focus on geometric construction, view interpretation, scales, orthographic and pictorial projection. The basics of dimensioning, lettering, first auxiliary, and sectional views, identification and classification of lines and planes will also be covered. Students will be required to do both freehand and instrument drawings.

**DDT 105      Product Drafting      3 Credits**

Prerequisite: DDT 100

Corequisite: DDT 115

Students will utilize preferred drafting techniques and conventions for the purpose of making detail and small assemble working drawings. Areas of study will include ANSI & ISO standards for dimensioning, basics of surface characteristics and texture symbols, geometric tolerance fundamentals, threaded fasteners, welding symbols, second auxiliary views as well as related shop terminology. Emphasis on problem solving and design considerations for casting, forging, plastic, composite, and other manufacturing requirements will be covered with selected assignments. Line quality, neatness and accuracy will be stressed throughout the course.

**DDT 115      Descriptive Geometry      3 Credits**

Prerequisite: DDT 100

Corequisite: DDT 105

Descriptive geometry is a course that focuses on using orthographic projection, auxiliary views, and standard drawing conventions for the two-dimensional graphic solutions to three-dimensional spatial problems. First, second and third auxiliary views will be used for solving typical applied projection problems. Some of the topics covered will be the defining of planes, parallelism, perpendicularity, cutting planes, piercing points, and the intersection of solids as required on layout drawings. Projection accuracy and problem solving will be stressed during the course.

**DDT 125      Advanced Descriptive Geometry Applications      3 Credits**

Prerequisite: DDT 115

Using advanced projections concept such as revolution, developments, and vector diagrams students will solve typical problems in mechanical design. Projection conventions and design considerations, for metal forming and blanking will be some of the topics covered. Emphasis will not be placed on problem solving by analyzing reasoning, and visualizing the desired outcome.

**ELT 101      Applied Electricity      3 Credits**

Students will identify and define basic electronic theory and circuits. They will define basic terms and explain and apply laws to the solution of problems in direct and alternating current circuits. In the laboratory, the student will perform selected laboratory experiments involving Ohm's Law, resistance

capacitance, inductance, sine wave values, direct and alternating current and functional and effective circuits. The student will use properly and effectively such instrumentation as the VOM and VTVM.

**ENG 151    Composition I**

**3 Credits**

Prerequisite: Satisfactory score on Placement Test.

The student will write compositions of various kinds, applying the rules of straight thinking and the basic principles of rhetoric and language structure.

**MAT 154    College Algebra**

**4 Credits**

Prerequisite: Two years of secondary college-prep algebra or MAT 115 with a C or better.

Brief review of algebra fundamentals; equations quadratic in form; rational inequalities; graphing polynomials and rational functions; algebra of functions; including composition; inverse functions; theory of equations, Rational Root Theorem and Descartes' Rule; exponential and logarithmic functions; matrices, determinants and linear programming; partial fractions; mathematical induction; sequences and series; permutations and combinations; Binomial Theorem.

**MEC 101    Introduction to Manufacturing Processes**

**3 Credits**

Prerequisites: Secondary school algebra and geometry or MAT 110.

The student will explain basic manufacturing procedures in terms of materials tooling, machines, molding, measurements, gaging, automation and selected machine operations.

**MEC 102    Manufacturing and Fabrication Practices**

**3 Credits**

The student will identify and define the equipment and procedures used in welding, metal casting, forging, heat treatment extrusions, rolling and selected operations in welding and changing the shape of metals.



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### DRAFTING ADVISORY COMMITTEE

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#### OCC Members

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Chair, Technology Department  
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Apprentice Coordinator  
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OCC Guests

Dr. David Doidge  
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810-471-7707

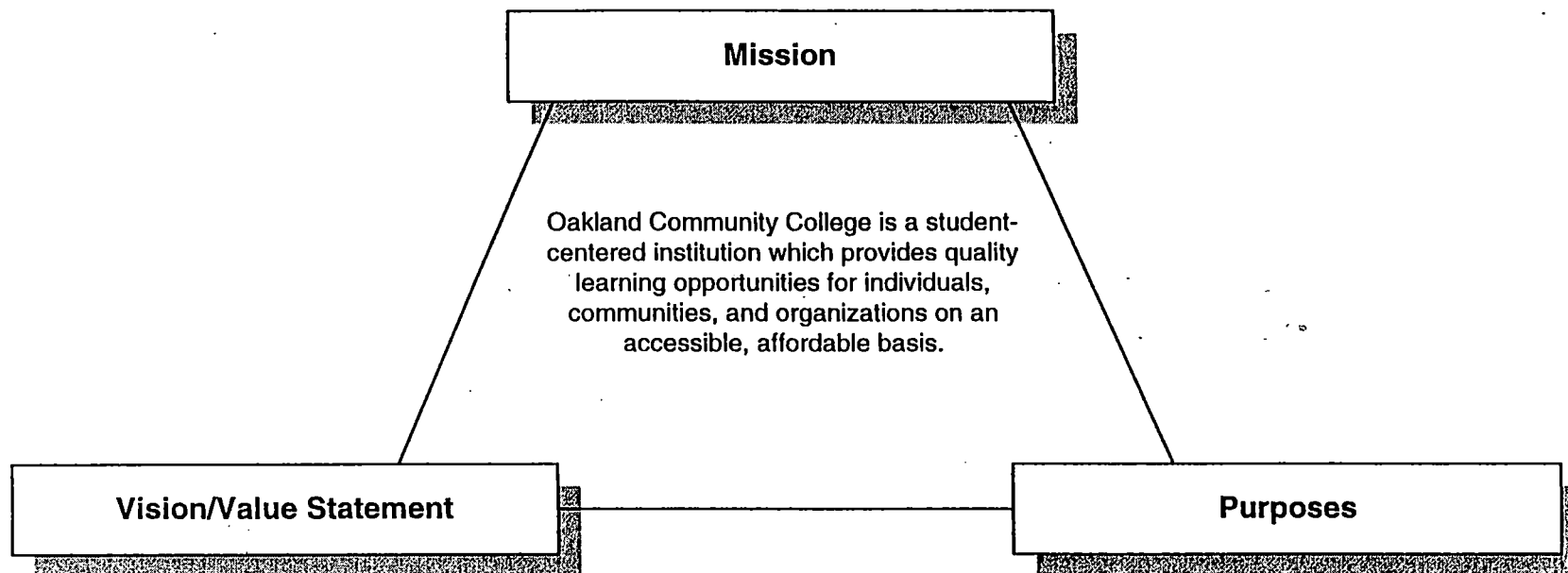
Martin Orłowski  
Director, Institutional Planning & Analysis  
810-471-7746

3/20/97  
(advw97:ddt.lst)



OAKLAND  
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## Oakland Community College



Oakland Community College is a dynamic, accessible, learning-centered community dedicated to excellence. This community values:

- \* Shared responsibility, open communication, collaboration;
- \* Personal empowerment, integrity, ethical commitment;
- \* Diversity, global awareness, responsiveness to community needs.

OCC provides quality:

- \* Educational experiences enabling students to transfer to other institutions of higher education.
- \* Occupational and technical learning opportunities to improve student's employability.
- \* Community services, including cultural, social, and enrichment opportunities for lifelong learning.
- \* Opportunities in development education to prepare students for college-level studies.
- \* Workforce development training and learning opportunities to meet the needs of business and industry.
- \* General Education opportunities enabling students to learn independently and develop skills for personal and career success.

GRADUATED FOLLOW-UP SURVEY  
NAME AND LOCATION OF DRA GRADUATES EMPLOYERS  
(8-88 through 8-91)

8/91

Farmington Cabinet co. Inc  
30797 W. Eight Mile  
Livonia, MI 48152

6/90

Redwood Reliance Traylor Manf.  
7911 Redwood Dr.  
Cotati, CA 94928



This procedure was completed at 13:53:22

SELECT IF (RESPONSE NE 'N').

FREQUENCIES VARIABLES=SSN.

The raw data or transformation pass is proceeding

3 cases are written to the compressed active file.

\*\*\*\*\* Memory allows a total of 7065 Values, accumulated across all Variables.  
 There also may be up to 883 Value Labels for each Variable.

-----  
 SSN RESPONDENTS SOCIAL SECURITY NUMBER

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	369888757	1	33.3	33.3	33.3
	377848933	1	33.3	33.3	66.7
	380567154	1	33.3	33.3	100.0
	Total	3	100.0	100.0	
Valid cases	3	Missing cases	0		

GET FILE='GFS.SYS'.

The SPSS/PC+ system file is read from  
file GFS.SYS

The file was created on 9/29/92 at 7:45:46  
and is titled GFS COMMAND FILE

The SPSS/PC+ system file contains

6535 cases, each consisting of

81 variables (including system variables).

81 variables will be used in this session.

This procedure was completed at 13:51:02

SELECT IF (SSN GT 000000001).

SELECT IF (SSN LT 999999999).

SELECT IF (PROGRAM EQ 'DRA').

RECODE COLLEGE(8888=9999).

RECODE MAJOR(888=999).

RECODE LOOK(88=99).

RECODE TITLE(888=999).

RECODE RELATED USING TO MORE(8=9).

RECODE SALARY(99998=99999).

FREQUENCIES VARIABLES=SCHOOL COLLEGE MAJOR EMPLOYED LOOK TITLE RELATED USING

The raw data or transformation pass is proceeding

9 cases are written to the compressed active file.

DO MORE.

\*\*\*\*\* Memory allows a total of 7065 Values, accumulated across all Variables.  
 There also may be up to 883 Value Labels for each Variable.

-----  
 SCHOOL EDUCATIONAL STATUS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
CURRENTLY ATTENDING	1	2	22.2	66.7	66.7
NOT CURRENTLY ATTEND	5	1	11.1	33.3	100.0
NO RESPONSE/UNKNOWN	9	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	

Valid cases 3 Missing cases 6

-----  
 COLLEGE COLLEGE NAME

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Lawrence Technologic	1399	1	11.1	100.0	100.0
Unknown	9999	8	88.9	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	

Valid cases 1 Missing cases 8

## MAJOR CURRENT MAJOR FIELD

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Construction	128	1	11.1	100.0	100.0
Unknown/No Response	999	8	88.9	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	
Valid cases	1	Missing cases	8		

## EMPLOYED EMPLOYMENT STATUS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
FULL TIME	1	3	33.3	100.0	100.0
UNKNOWN/NO RESPONSE	9	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	
Valid cases	3	Missing cases	6		

## LOOK MONTHS LOOKING FOR JOB

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
HAD A JOB	0	2	22.2	66.7	66.7
	3	1	11.1	33.3	100.0
UNKNOWN/NO RESPONSE	99	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	
Valid cases	3	Missing cases	6		

TITLE JOB TITLE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Drafter	143	3	33.3	100.0	100.0
Unknown	999	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	
Valid cases	3	Missing cases	6		

RELATED JOB RELATED TO PROGRAM

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	1	11.1	50.0	50.0
NO	5	1	11.1	50.0	100.0
UNKNOWN/NO RESPONSE	9	7	77.8	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	
Valid cases	2	Missing cases	7		

USING USING KNOWLEDGE AND SKILLS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	3	33.3	100.0	100.0
UNKNOWN/NO RESPONSE	9	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	
Valid cases	3	Missing cases	6		

DO HELPED ME DO THE JOB

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	2	22.2	66.7	66.7
NO	5	1	11.1	33.3	100.0
UNKNOWN/NO RESPONSE	9	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	

Valid cases 3 Missing cases 6

MORE MORE TRAINING WAS REQUIRED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	1	11.1	33.3	33.3
NO	5	2	22.2	66.7	100.0
UNKNOWN/NO RESPONSE	9	6	66.7	Missing	
		-----	-----	-----	
	Total	9	100.0	100.0	

Valid cases 3 Missing cases 6

This procedure was completed at 13:53:21  
MEANS LOOK BY RELATED.

\*\*\*\*\* Given WORKSPACE allows for 4317 Cells with 1 Dimensions for MEANS.

Summaries of LOOK MONTHS LOOKING FOR JOB  
 By levels of RELATED JOB RELATED TO PROGRAM

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			1.5000	2.1213	2
RELATED	1	YES	3.0000	.0000	1
RELATED	5	NO	.0000	.0000	1
Total Cases =		9			
Missing Cases =		7 OR 77.8 PCT.			



This procedure was completed at 13:53:22  
MEANS SALARY BY RELATED.

\*\*\*\*\* Given WORKSPACE allows for 4317 Cells with 1 Dimensions for MEANS.

Summaries of SALARY YEARLY SALARY  
 By levels of RELATED JOB RELATED TO PROGRAM

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			23060.0000	2743.5743	2
RELATED	1	YES	21120.0000	.0000	1
RELATED	5	NO	25000.0000	.0000	1
Total Cases =		9			
Missing Cases =		7 OR 77.8 PCT.			

This procedure was completed at 13:53:22

SELECT IF (RESPONSE NE 'N').

FREQUENCIES VARIABLES=SSN.

The raw data or transformation pass is proceeding

3 cases are written to the compressed active file.

\*\*\*\*\* Memory allows a total of 7065 Values, accumulated across all Variables.  
 There also may be up to 883 Value Labels for each Variable.

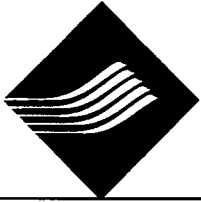
-----  
 SSN RESPONDENTS SOCIAL SECURITY NUMBER

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	369888757	1	33.3	33.3	33.3
	377848933	1	33.3	33.3	66.7
	380567154	1	33.3	33.3	100.0
		-----	-----	-----	
	Total	3	100.0	100.0	

Valid cases 3 Missing cases 0

This procedure was completed at 13:53:23  
FINISH.

End of Include file.



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## DRAFTING ADVISORY COMMITTEE MEETING

April 11, 1997

Present: Linda Casenhiser, Manufacturing & Technological Services, OCC  
Sally Kalson, Coordinator of Cooperative Education, OCC  
Tahir Khan, Chair, Technology Department, OCC  
Pat May, Counselor, OCC  
Margaret McNeal, Adjunct Faculty, OCC  
Dr. Carlos Olivarez, Dean, Academic and Student Services, OCC  
Charles Rondeau, Saturn Corporation  
Tom Sawasky, Faculty, OCC  
Grant Sherman, General Motors Die Management Group  
Henry Sommerstorfer, General Motors Truck Group  
Ruth Springer, Secretary, OCC  
Robin Stewart, Universal Flow Monitors, Inc.  
Bruce Sutton, North Farmington High School  
Clifton E. Tally, Jr., MSX International  
Donald P. Tinsley, Hawtal Whiting Inc.

### 1. Welcome and Introductions

Dr. Carlos Olivarez welcomed the group and thanked them for their willingness to assist OCC as members of the advisory committee. He asked those present to introduce themselves. The group then toured the Board Drafting Lab, the Computer Aided Design Lab, and the lab used in teaching the Manufacturing Processes (MEC) classes.

### 2. Importance of Instruction in Board Drafting

Following the tour, Dr. Olivarez asked the group for their comments regarding the labs they had visited. Mr. Charles Rondeau stated that he was impressed with the number of stations and the variety of software.

Mr. Donald Tinsley commented that the focus on the manual side of the business is good. He stressed the importance of visualization in order to be successful on the job. Many people coming into the workplace today are good at operating the computer, but are poor designers.

Mr. Grant Sherman agreed, stating that visualization is the biggest problem that he sees. He finds that the best designers are those who excel in drafting.

Mr. Bruce Sutton commented that the college has to work with the students it receives from the high schools. Parents and industry leaders need to take a look at the training students are receiving in the high schools. High school administrators are emphasizing computers and saying that students do not need to work on drafting boards. However, industry knows that students must have the knowledge gained working on the boards in order to use the computer effectively. Industry needs to make statements that are quoted in the newspapers emphasizing that board drafting skills are essential for industry. That would help get the message to parents and high school administrators. Mr. Sutton stated that he has always emphasized drawing on boards, and he will continue to do so. He believes that what OCC is doing in this area is good. He has worked with Mr. Tom Sawasky and Mr. Tahir Khan on the Tech Prep curriculum which coordinates the training students receive in high school with what is offered at OCC. He stated that, if high school students do not receive the training they need on the drafting board, then the college must provide it.

Mr. Khan raised the question of how much training OCC can give students within the credit hour limits of an associate degree program. Ideally, students should be taught manual skills in high school, and then OCC would provide them with more advanced training. However, some high schools do not put the proper emphasis on drafting classes, having them taught by someone who is primarily an instructor in another area. Therefore, OCC makes sure students take manual drafting courses as a part of the Computer Aided Design Program.

Dr. Olivarez asked whether OCC really needs to teach board drafting when we have computers to do the job now. He has heard arguments on both sides of the question and wondered how industry would respond to this question.

The entire group agreed that training in board drafting is definitely needed, at least until a way is found to teach basic descriptive geometry on a computer.

Mr. Clifton Tally stated that manual drafting is needed because it gives students time to acquire the skills they need to go on and use the CAD system effectively. He would like OCC to be able to teach no manual drafting classes because students coming out of high school are already trained in manual drafting. He believes students should begin to take drafting classes in the seventh grade.

Mr. Sutton emphasized that industry needs to communicate with the parents and school boards about this issue. Parents must be convinced that this instruction is needed in the lower grades.

Mr. Henry Sommerstorfer mentioned that many schools are eliminating shop and drafting classes because not many students want to take them. He believes it would be beneficial to require every seventh and eighth grader to take a drafting class. The best designer is someone who has done the work manually and now uses a computer as a tool. The designer needs to understand the process, why things are done a certain way, rather than just moving things around on the computer screen.

Mr. Khan reported that OCC is attempting to set up a 2+2 agreement with the University of Michigan Dearborn so CAD students can earn an associate degree at OCC and then continue their studies at U of M Dearborn to earn a bachelors degree in mechanical engineering. OCC already has 2+2 agreements with Wayne State University and with Lawrence Technological University. He stressed that students will continue to take manual drafting at OCC until there is a way to teach descriptive geometry on the computer. He wondered whether we are defining the skills taught in the Drafting classes as they are needed today in industry. For example, is there a need for an emphasis on lettering? What kind of visualization techniques are needed before working on the computer?

Mr. Rondeau stated that the reason we have drafting is to communicate an idea to other users all down the line. There is still a need for a good knowledge of drafting and visualization. The important thing in industry is how fast something can be done for a minimum of expense. The strategy that should be taken at OCC depends on the industry or company toward which students are aiming. Some companies want students to be able to work immediately without additional company training.

Mr. Tally commented that there is an image problem in regard to the need for drafting instruction. Parents think of drafting as a blue-collar occupation, and they want their children to become engineers. We must change the concept of what is being taught in drafting classes, so people see it as a positive stepping stone to their children's future. We need to tell people that students need to have an understanding of spatial concepts in order to go on to become engineers. Drafting classes are then presented as tools which provide students with an understanding of spatial concepts.

### 3. Review of Curriculum

Dr. Olivarez asked Mr. Sawasky to provide the group with an overview of the curriculum. Mr. Sawasky asked the group to consider whether the Drafting Program as it currently exists would make a student employable in their organizations, and at what level. He also expressed the need for a definition of basic skills needed to prepare students to work efficiently in a CAD system.

Mr. Sawasky explained that the Drafting Program leads to a certificate, not an associate degree. He reviewed the courses included in the program, mentioning that DDT 125, Advanced Descriptive Geometry Applications, is no longer offered due to lack of enrollment. In regard to MAT 154, College Algebra, and MAT 156, Trigonometry, OCC has received feedback from students and employers that these courses are not relevant to the industrial world. The College does have other math courses listed under the APM course code in which math is taught as it is applied to industry. Math courses listed under the MAT course code are more theoretical. Mr. Sawasky asked the group whether the math courses included in the program should be theoretical or practical.

Mr. Sawasky reported on a phone conversation he had with Mr. Dave Barran, a member of the advisory committee who was unable to attend this meeting. Mr. Barran expressed the view that, in his organization, a graduate of this program would only be employable for shuffling blueprints. He does not believe this certificate program alone prepares students for a good career future.

Dr. Olivarez asked Ms. Robin Stewart, a recent graduate of the program, for her opinion. She reported that she has taken all the Drafting and Mechanical Technology classes required in the Drafting Program. The instruction she received in those classes helped her obtain the job she has now as a draftsman. Her supervisor was looking for someone who understood the basics of drafting. The person she replaced was good at using AutoCAD, but Ms. Stewart has spent a great deal of time fixing the drawings done by that person. Her knowledge of the little things that make a drawing look good and be correct has been important and useful in her current job. Ms. Stewart wishes that OCC had provided her with the opportunity to make a drawing of an actual part, including measuring it herself and working out a plan for setting up the drawing. She also feels there should be more instruction in stacking tolerances. She had to be taught on the job how to take the different tolerances of the pieces being put together to come up with the overall tolerance.

Dr. Olivarez asked the group whether the four Drafting courses currently included in the program are the courses that OCC should be teaching.

The group responded that those courses cover the fundamentals and must be included in the curriculum. It is probably not possible to include all the skills needed in industry in a single program. The industry is changing all the time. Students should receive instruction in the fundamentals, along with some exposure to CAD systems. Then, as an employer begins to use a new level of a certain software, employees can return and receive training on that particular CAD system. CAD systems are changing all the time. If students have the fundamentals of descriptive geometry and drafting, as well as an awareness of CAD systems, they will be able to move on to the particular software needed by their company.



Mr. Khan agreed, stating that OCC attempts to focus on the concepts of body design, using CAD software as the tool. The focus of the program is not to have the students become experts on a particular software package.

Mr. Rondeau commented that there is good value in having these Drafting requirements in the curriculum. They can teach the students discipline and help them get in line with the way industry works. However, industry is heading as soon as possible away from drawings. The amount of time spent in lettering and setting up drawings will be reduced. In the attempt to become more efficient, attention is being called to the fact that as much or more time is spent doing the drawing as is spent in producing the part. This may be changing to achieve greater efficiency. OCC will need to stay close to industry in order to stay abreast of this trend.

A question was raised as to whether the four Drafting courses cover the basic skills needed in industry.

Mr. Sommerstorfer responded that lettering and line work could be ignored. The important thing is that students understand the process, not just the mechanics of drawing. They need to understand why they are doing things. An applied drafting class is needed to emphasize these things. Ideally students should get this type of training in high school. If they have had it in high school, they should not be required to take it again at OCC. However, many students have never taken drafting before coming to OCC. The course descriptions of the four Drafting classes look great, as long as they are providing students with the application side of drafting. If students have not learned the fundamentals, they can be taught to use a CAD system, but they will not understand why things must be done in a certain way. They will just be manipulating things, so they look good on the computer screen, but are not workable in the real world.

Mr. Sawasky reported that a curriculum is being developed for use in 32 high schools across Oakland County. This curriculum is based on the content of OCC's DDT 100 and DDT 105 courses. Students coming to OCC may receive advanced standing of 4 credits for AutoCAD and 6 credits for the two Drafting classes. Mr. Sawasky asked whether we should set program prerequisites, such as these basic courses, which students must complete before being admitted to the program. In addition, what should we consider to be the fundamentals which students must have to be prepared for success on a CAD system?

Mr. Tinsley stressed the importance of visualization. Students must also understand manufacturing and assembly processes. He suggested that perhaps MEC 101 and MEC 102 should be prerequisites to the Drafting Program.

Mr. Tally stressed the need for an understanding of spatial concepts. He believes that this is covered in the four Drafting classes. He does not believe there is a need to teach lettering anymore.

Drafting Advisory Committee

April 11, 1997

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Mr. Rondeau suggested adding instruction in freehand sketching, to be used in sketching ideas and concepts. This could be included in the current courses by eliminating instruction currently being given which is not needed in industry today.

Mr. Tally agreed, stating that sketching is a tool that can be used to convey an idea, to help people see the model which is in your mind.

Mr. Khan asked whether we should begin instructing students directly in 3D design, rather than beginning in 2D. He has found that some students do well right away in 3D, but others are lost if they don't have the basic 2D concepts.

Mr. Rondeau responded that 2D should be forgotten, as it is just a way of doing board drafting on the computer. If students have already learned the basic concepts of drafting, they should be able to go straight on to 3D.

Mr. Sawasky asked the group whether the Drafting Certificate Program as it currently exists is a viable end in itself. Much has been said by the group about the fundamentals being needed for a person to become a good designer in CAD. But is the Drafting Certificate Program with no CAD included doing the students a service, or is it just taking up space in the catalog, since very few students are actually enrolled in it? Is this a viable program as it is?

Mr. Sommerstorfer responded that the program needs to include more than it does at present. Students must have the instruction included in the program, but even with this background, they are still not up to the level needed to be productive in industry. Perhaps a simulation class could be added, using real industry problems, rather than just blocks in a textbook.

Mr. Khan commented that many companies do their own CAD training on their own software. The Drafting Program would be useful for those companies, as it provides the fundamentals needed by students before they begin learning to work on a CAD system.

The question of applied versus theoretical math classes was raised. It was pointed out that the applied math classes are not recognized by universities if a student wants to go on to a four-year degree program.

Dr. Olivarez asked the group how soon they would like to meet again. Mr. Sawasky responded that he would like to see the committee meet more often than the required minimum of two times per year. He expressed the need to complete the discussion begun here by meeting again in the near future. He would like further direction as to how to include such things as visualization skills and freehand sketching in the program. He would like to see the group meet again in late May or early June.

Mr. Tally suggested that a way needs to be found to delete ENG 151, Composition I, from the program without losing the instruction which it provides. He reported on a program at another college in which every engineering report submitted by an engineering student is also checked by a member of the English Department. He wonders whether a similar system could be developed at OCC, in which an English emphasis could be incorporated into other classes required in the student's program of study.

Dr. Olivarez responded that a number of the advisory committees have made similar suggestions. He will contact the English Department Chair to arrange a meeting with Mr. Sawasky and Mr. Khan to see how this might be done.

The group agreed to meet again in May or June, preferably on a Friday morning.

#### Committee Recommendations

1. That OCC continue to provide the instruction in manual drafting which is essential to successful work on a CAD system.
2. That OCC attempt to provide students with the opportunity to make a drawing of an actual part as it would be done in industry.
3. That OCC provide more instruction in stacking tolerances.
4. That OCC consider deleting instruction in lettering and line work from the Drafting curriculum.
5. That instruction in the application side of drafting be included in the Drafting curriculum.
6. That visualization skills be emphasized in the Drafting curriculum.
7. That instruction in freehand sketching be included in the Drafting curriculum.
8. That a simulation class be added to the curriculum, using real industry problems.
9. That ENG 151 be deleted from the program, and that the English Department work with program instructors to include English instruction in the other courses which students are required to take.
10. That the advisory committee meet again in May or June, preferably on a Friday morning.

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Remaining Unanswered Questions

1. Is the Drafting Certificate Program as it currently exists a viable program? Would it alone prepare a student for employment, and at what level?
2. Should theoretical or applied math courses be included in the Drafting curriculum?
3. Should program prerequisites, such as the basic drafting classes, be required for admission to the program?
4. How should visualization skills be included in the program?
5. How should freehand sketching be included in the program?

Respectfully submitted,



Ruth Springer