PLASTICS TECHNOLOGY (AAS DEGREE) AND PLASTICS ENGINEERING TECHNOLOGY (BS DEGREE)

SELF STUDY

FOR

ACADEMIC PROGRAM REVIEW

Ferris State University
College of Technology
Plastics and Rubber Engineering Technology Department

August, 2008

PLASTICS
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AND

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PROGRAM
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College of Technology
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INTRODUCTION

The format of this report follows the guidelines set by the university and the Academic Senate in respect to being goal-oriented. The report reflects on the previous goals of the last program review completed in 2002 as well as the goals set by this Academic Review Panel for the 2008 review cycle.

The narrative portions of the report are found in the appropriate sections within this notebook, while some supporting data has been housed within the appendices at the rear of the notebook, being referred to within the narrative.

Based on the information attained and the data collected as a result of this study, the industry as well as this program will remain stable and strong for many years ahead. A current *State of the Plastics Industry* overview is contained within the appendices (Appendix “A”). Review of this set of documents supports the above statement.

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Section 1

PROGRAM OVERVIEW

A. *Program Goals*

Both the Plastics AAS Degree and BS Degree Programs have developed the following goals:
1 – Maintain incoming student numbers consistent with the program capacity.
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using the most appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expanded degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry Engineers.

B. *Program Visibility and Distinctiveness*

The execution of plastics education here at Ferris State University has been in existence for the following length of time: AAS Degree – first awarded in 1971 and the BS Degree – added in 1983. As such, the numbers of graduates from these programs who are within the industry have long proclaimed its existence and accolades for its quality. Specific segments of and the companies within those segments of the industry have experienced the successes of our graduates. However, as company management and ownership changes, and as the media focuses on downturns in manufacturing industry and the economy, the degree of our visibility has reduced over the past decade. Having a high number of students who wanted to be in the programs in the 70s, 80s, and 90s, there wasn't a recruiting effort developed since a waiting list existed.

Today, the need for appropriately educated plastics professionals remains very high. However, the demographic base is shifting the need into other areas of the country/world (and segments of the industry) due to the nature of manufacturing today. As such, we need to increase our visibility in two ways: 1 – stronger and at an earlier time in a student's academic life within our state and surrounding states, and 2 – across the nation and world within different industry segments that are developing or expanding today.

The Ferris State University Plastics Programs remain unique, as there is only a handful of engineering technology based curriculums for plastics professionals across the nation. On the following page is a listing of current bachelor plastics degree offerings (by institution) across the nation with a notation (*) of those programs similar to the Ferris ones in focus, content, offerings, facilities, and degree. There are also several community colleges with plastics related coursework or degrees (AAS) that feed into our bachelor degree or are possible sources for the feed of future students. We have an established articulation agreement to transition Grand Rapids Community College transfer plastics curriculum students directly into our bachelor degree program.

Plastics related Bachelor of Science Degree programs across the country:

Eastern Michigan University	Chemistry (polymers/coatings) focus
Western Michigan University	Manufacturing focus – plastics option
*Penn State-Erie	Plastics
*Penn State Tech	Modeled off of FSU degree
*Pittsburg State (KS)	Plastics – Design/Process options
Shawnee State (OH)	Plastics
U of MA – Lowell	Oldest in USA – MS & PHD
*Western Washington	Plastics - composites focus
U of WI – Plattville	MFGT Mgmt concentration
*U of WI – Stout	MFGT Technology – heavy plastics
CA State – Chico	Manufacturing – plastics option
CA State – Pomona	Manufacturing – limited plastics
Univ. of Akron	Polymer Science – MS/PHD
Univ. of DE	Material Science – polymer focus

Another specific area of uniqueness is the program curriculum. The students receive coursework in every key aspect of the Plastics industry, making the degree and knowledge base very well rounded. As alumni exhibit, the
graduates successfully end up in many different industry segments. As such, they have many Plastics Industry opportunities to focus their career goals on. Plastics is a *material*, used on many things in many ways. The number of different markets of use alone provides a wide range of opportunities.

The nation-wide visibility of the program is currently very limited. As stated previously, the State of Michigan has been the main customer base for our graduates since the degrees began. However, today's manufacturing base is different. In response to this, the program needs to shift efforts to increase visibility on multiple markets in positive growth areas across the nation and on an international basis. Currently, the program holds 2 high school career days per year, one each semester. We are also connected to several other off-campus secondary educational programs as well as having ongoing communications with and presentations to on-campus groups and classes to solicit students. We are quite visible within the State of Michigan (due to location and number of former graduates within the state) but need to address increased visibility both here in Michigan as well as an expanded effort in other states/areas.

The ranking of top states for plastics industry concentration are as follows:

#1 - Indiana	19.4 thousand plastics employees per 1,000 non-agricultural employees
#2 - Michigan	17.9 thousand plastics employees per 1,000 non-agricultural employees
#3 - Ohio	16.6 thousand plastics employees per 1,000 non-agricultural employees
#4 - Wisconsin	13.9 thousand plastics employees per 1,000 non-agricultural employees
#5 - Kentucky	13.5 thousand plastics employees per 1,000 non-agricultural employees
#6 - South Carolina	12.6 thousand plastics employees per 1,000 non-agricultural employees
#7 - Illinois	12.o thousand plastics employees per 1,000 non-agricultural employees

(See Appendix "B")

C. *Program Relevance*

The extent of employment opportunities for graduates can be realized by looking at an analysis of the Plastics Industry from data and information gathered from governmental agency reports and key professional organizations within the industry. The Society of the Plastics Industry (SPI) is one of those key professional organizations that publish reliable and accurate data about the Plastics Industry. Two governmental agencies used for additional insight into the program's relevance are the U.S. Department of Labor and the U.S. Bureau of Census. Another source to use for evaluation would be the tracking of job offers that come into the program office which directly solicit our graduates.

These sources can be used to highlight current industry trends and to analyze the relevance of continuing plastics education within the university. The key concern for students is the availability of jobs upon graduation and that their education has prepared them for success within that job position. The recent decline in direct manufacturing jobs that the United States has experienced has affected many job classifications within our industrial base across manufactured goods and is not centralized to any one industry. Yet, there are those segments and markets that remain untouched by this downturn. One big factor regarding the extent to which businesses and industries have been affected is their specialization and focus of the manufacturing that they do, and the type of materials they deal with. As a material, plastics continue to be a very dynamic, widely successful, and heavily sought after commodity within the world today. There are very few (if any) areas of life that do not deal with plastics either in a direct or indirect manner.

If one considers the diversity of an industry - the number of different operational segments and the range of career opportunities within it - the Plastics Industry ranks among the highest in diversity both nationally and internationally. (See appendix A) As an example, within the 2002 national census, the Plastics Industry Product and Manufacturing section data is divided into 13 different product codes, which includes the “All Other Plastics Product Manufacturing” code. The “All Other” code contains 9 major goods manufacturing categories itself. The Plastics Technology and Plastics Engineering Technology Programs prepare the student for a successful career which may take him or her into any number of these areas of employment. This is due to the teaching of plastics material, design, testing, processing, and managerial *fundamentals* that cross many Plastics Industry segmental lines.
(See the section below entitled “Program Value” for more specific supportive information to program relevance.)

D. *Program Value*

Students choose the Plastics Technology and Plastics Engineering Technology Programs today due to the high ongoing number of placement opportunities and the high wage return for their education.

From the student’s perspective, the ongoing placement rate remains at 100% as reported from the university graduate follow-up studies. As of the most recent survey (2005/2006) 72% of the Associate Degree earning students responded. They all had a 100% employment rate. The 53% of reporting Bachelor Degree earning students reported the same 100% employment rate.

If we look at the number of full time job solicitations that come directly in to the program office (who may or may not also contact Career Services) the opportunities are vast. A summary of typical industry solicitation is given here: From August 2007 to March 2008 – 72 jobs from 19 states:

MI	27
IL	2
OH	8
WI	8
IN	3
KY	5
SC	3
MA	2
CA	2
NY	2
NE	2
PA	2
TX	1
TN	1
AZ	1
NC	1
CO	1
MO	1

If we look back to the previous year, from August 2006 to August 2007 there were 106 total jobs in 23 states and are broken down as follows:

MI	41
IL	12
OH	10
WI	6
IN	5
AZ	5
TX	5
KY	3
WA	2
GA	2
OR	2
CA	2
IA	1
MD	1
NY	1
MA	1
CT	1
PA	1
FL	1
MN	1
NC	1
NJ	1
TN	1

In response to salary for graduates, as of the 2005/2006 survey, the average annual salary for plastics 4 year engineering technology degree (B.S.) respondents was $56,900.00. In comparison to other programs within the College of Technology, that number ranks

One asset of the program that substantiates the issue of value is one that follows FSU's philosophy of hands-on education. Like other successful programs, our graduating students are able to be productive from virtually the first day of their employment.

Section 2

COLLECTION OF PERCEPTIONS

The development of, summary of, and interpretation of the perceptions for this report were done in light of the goals for the program which were set in the previous review cycle as well as set for this review cycle and report. The Academic Program Review Guidelines request that the report be goal oriented and this report follows that request. Section 5 of this report will address the conclusions of how the program has done compared to the current program review goals. The goals from the last review cycle are very close to the current ones, and will be summarized in ancillary remarks at the end of Section 5 also. Found below are the two sets of goals:

Previous (2002) Program Review Goals

Both the Plastics AAS Degree and BS Degree Programs had developed the following goals:

1- Develop technical electives for the newly created flexibility within the check sheet.
2- Improve the quantity and quality (academic preparation) of incoming students by understanding retention motivation, and improving recruiting strategies.
3- Develop program model information including facilities, schedules, class/laboratory size, program growth, and equipment needs.
4- Increase/broaden program visibility
5- Establish a defined relationship between the rubber and plastics programs.

Current Program Review Goals

Both the Plastics AAS Degree and BS Degree Programs have developed the following goals:

1 – Maintain incoming student numbers consistent with the program capacity.
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using the most appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expanded degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry Engineers.

Each of the following sections contains the actual survey given, the frequencies of the responses, charts of the date, and a summary of the significant response relative to both sets of goals mentioned above, organized by goal. It is relevant to keep in mind the perspective of those who were polled in relation to time, current status within or outside of the program, and other outside influencing factors such as position within the plastics industry and FSU Plastics Program. The number of respondents to the surveys in this section is as follows:

Graduate (Alumni) Survey – 50 respondents approximately of 400
Employer Survey – 35 respondents out of 367
Student Survey – 91 respondents out of approximately 110
Faculty Survey – 6 respondents out of 6
Advisory Committee – 11 respondents out of 11

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Alumni

As part of the Academic Program Review (APR) process, the Plastics Department is asking graduates of Ferris State University Plastics program to please take a few minutes to complete this survey. Your responses will help us evaluate the program, see where the strengths are and show us where changes need to be made. Thank you for your feedback in this important process.

Q1 When did you receive your Plastics A.A.S. from Ferris?

Q2 When did you receive your Plastics B.S. from Ferris?

Q3 Which of the following is the highest degree you have earned?

- AAS
- BS
- MBA
- MS/MA
- Doc. Sci.
- PhD

Q4 From what institution and in what year did you earn your highest degree?

Q5 Are you currently employed in the Plastics industry?

- Yes
- No

Q6 Why did you leave?

Q7 How many years have you been/were you employed in the Plastics industry?

Q8 How many job changes have you made since graduating from FSU?

Q9 Which of the following *best* describes the function you perform? *(Please select only one.)*

- Sales & Marketing
- Process/Production Engineer
- Management Title
- Product Design & Development
- Technical Service
- Education & Training
- Project Management
- Quality Control/Quality Assurance
- Cost Estimating
- Purchasing
- Mold Design
- Mold Making
- Mold Repair & Maintenance
- Partner/Owner
- Contract Engineer
- Other

Please Specify:

Q10 If you indicated "Management Title" in the above question, please provide your title here.

Q11 Which title is the closest to yours?

- Engineer
- Senior Engineer
- Eng. Supervisor/Mgr
- Engineering Consultant
- Sales/Marketing Rep
- Sales/Marketing Mgmt
- Production Manager
- Plant Manager
- Vice President
- President
- Owner
- Other

Please Specify:

Q12 Which of the following processes does your company have in-house? *(Please select all that apply.)*

- Injection Molding
- Compression Molding
- Transfer Molding
- Thermoforming
- RIM
- Decorating
- Assembly
- Blow Molding
- Composite Constr.
- Extrusion
- Other

Please Specify:

Q13 Which of the following processes does your company use (external) to satisfy its customers? *(Please select all that apply.)*

- ☐ Injection Molding
- ☐ Compression Molding
- ☐ Transfer Molding
- ☐ Thermoforming
- ☐ RIM
- ☐ Decorating
- ☐ Assembly
- ☐ Blow Molding
- ☐ Composite Constr.
- ☐ Extrusion
- ☐ Other

Please Specify:

Q14 In what city & state do you work?

Q15 In which industry segment do you currently work? *(Please select all that apply.)*

- ☐ Automotive
- ☐ Furniture
- ☐ Medical
- ☐ Computers/Electronics
- ☐ Recreational products
- ☐ Household goods
- ☐ Packaging
- ☐ Other

Please Specify:

Q16 Have you attended additional courses or seminars since leaving FSU?

- ◯ Yes
- ◯ No

Q17 Please use this space to indicate the title of the course(s)/seminar(s).

Q18 Would you be interested in a "refresher" course offered by FSU Plastics?

- ◯ Yes
- ◯ No

Q19 Which course(s) would you be interested in?

Q20 **Please indicate your opinion of each of the following.**

	Poor/Terrible	OK, worsening	OK, improving	Good/Very Good
The economy	◌	◌	◌	◌
Environmental issues affecting your company	◌	◌	◌	◌
Ability to hire additional technical employees	◌	◌	◌	◌
Salaries	◌	◌	◌	◌
Benefits	◌	◌	◌	◌
Career choice	◌	◌	◌	◌
Health of the Plastics industry	◌	◌	◌	◌
Job change opportunities within the industry	◌	◌	◌	◌
Career growth opportunities	◌	◌	◌	◌

Q21 **Please indicate your level of satisfaction regarding the treatment you received at FSU in each of the following areas.**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied
Advisor availability & interest	◌	◌	◌	◌
Preparation for leadership & advancement	◌	◌	◌	◌
Quality of classroom instruction	◌	◌	◌	◌
Number of students in Plastics lectures	◌	◌	◌	◌
Number of students in Plastics labs	◌	◌	◌	◌
Number of students in other courses attended	◌	◌	◌	◌
Plastics faculty availability for extra help	◌	◌	◌	◌
Understanding of the internship program	◌	◌	◌	◌
Availability of internship positions	◌	◌	◌	◌

Q22 **Please indicate your level of agreement as to whether the following issues would be good changes at FSU.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Increase the global focus of the curriculum	◌	◌	◌	◌
Increase the entrance requirement for all incoming freshmen	◌	◌	◌	◌
Increase the entrance requirements for all Plastics freshmen	◌	◌	◌	◌
Reduce the entrance requirements for all Plastics freshmen	◌	◌	◌	◌
Reduce/eliminate the GPA requirements to advance from AAS to BS	◌	◌	◌	◌
Increase leadership development	◌	◌	◌	◌

Q23 Please indicate with which of the following you would be willing to assist us. ***(Please select all that apply.)***

- [ ] Influence employer to make a financial donation
- [ ] Influence employer to make an equipment donation
- [ ] Assist in developing student scholarships
- [ ] Assist in recruiting local prospective students
- [ ] Improve increased Plastics program visibility on campus
- [ ] Improve increased Plastics program visibility in your region
- [ ] Make video recording to be used in classrooms/promotions

We have seen a declining enrollment for the past 2 years. Most of our students choose Plastics because of personal referrals. Therefore, we are asking you to respond to this question:

Q24 Are you less likely to recommend the FSU Plastics program than you were 2 years ago?

- ○ Yes
- ○ No

Q25 If yes, why? ***(Please indicate all that apply.)***

- [ ] Lack of employment security
- [ ] Too much stress in this industry
- [ ] Concerns regarding the quality of the FSU Plastics program
- [ ] Other

Please Specify:

If you indicated a willingness to help in any of the areas listed in Q23 or if you would just like us to have your contact information, please fill in your information below.

Q26 Name

Q27 Address (Please include City, State, Zip Code)

Q28 Valid e-mail address

Q29 Telephone

Q30 Company name and address

Thank you for your time and input.

Frequency Table

q1 When receive PLTS AAS from FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		5	10.0	10.0	10.0
	1978	1	2.0	2.0	12.0
	1979	1	2.0	2.0	14.0
	1983	1	2.0	2.0	16.0
	1988	2	4.0	4.0	20.0
	1989	1	2.0	2.0	22.0
	1990	1	2.0	2.0	24.0
	1991	1	2.0	2.0	26.0
	1992	3	6.0	6.0	32.0
	1993	3	6.0	6.0	38.0
	1994	1	2.0	2.0	40.0
	1995	4	8.0	8.0	48.0
	1996	4	8.0	8.0	56.0
	1997	2	4.0	4.0	60.0
	1998	2	4.0	4.0	64.0
	1999	1	2.0	2.0	66.0
	2000	2	4.0	4.0	70.0
	2001	3	6.0	6.0	76.0
	2002	5	10.0	10.0	86.0
	2003	2	4.0	4.0	90.0
	2004	2	4.0	4.0	94.0
	2005	2	4.0	4.0	98.0
	2006	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q2 When receive PLTS BS from FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	4.0	4.0	4.0
	1990	2	4.0	4.0	8.0
	1991	3	6.0	6.0	14.0
	1992	2	4.0	4.0	18.0
	1993	1	2.0	2.0	20.0
	1993 (Product Designs)	1	2.0	2.0	22.0
	1994	1	2.0	2.0	24.0
	1995	3	6.0	6.0	30.0
	1996	4	8.0	8.0	38.0
	1998	5	10.0	10.0	48.0
	1999	5	10.0	10.0	58.0
	2000	2	4.0	4.0	62.0
	2001	1	2.0	2.0	64.0
	2002	1	2.0	2.0	66.0
	2003	4	8.0	8.0	74.0
	2004	7	14.0	14.0	88.0
	2005	1	2.0	2.0	90.0
	2006	2	4.0	4.0	94.0
	2007	2	4.0	4.0	98.0
	N/A	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q3 Your highest degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BS	39	78.0	79.6	79.6
	MBA	3	6.0	6.1	85.7
	MS/MA	6	12.0	12.2	98.0
	PhD	1	2.0	2.0	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q4 Institution & year earned highest degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	4.0	4.0	4.0
	CMU 2001	1	2.0	2.0	6.0
	FSU	13	26.0	26.0	32.0
	FSU 1992	1	2.0	2.0	34.0
	FSU 1991	1	2.0	2.0	36.0
	FSU 1993	1	2.0	2.0	38.0
	FSU 1994	1	2.0	2.0	40.0
	FSU 1995	1	2.0	2.0	42.0
	FSU 1996	3	6.0	6.0	48.0
	FSU 1998	1	2.0	2.0	50.0
	FSU 1999	2	4.0	4.0	54.0
	FSU 2000	1	2.0	2.0	56.0
	FSU 2003	2	4.0	4.0	60.0
	FSU 2004	6	12.0	12.0	72.0
	FSU 2006	2	4.0	4.0	76.0
	FSU 2007	1	2.0	2.0	78.0
	FSU, 2000	1	2.0	2.0	80.0
	MSU 2001	1	2.0	2.0	82.0
	North Carolina A&T State University	1	2.0	2.0	84.0
	U-M 2003	1	2.0	2.0	86.0
	University of Tulsa 1990	1	2.0	2.0	88.0
	Wayne State 2004	1	2.0	2.0	90.0
	Wayne State 2007	1	2.0	2.0	92.0
	WMU	1	2.0	2.0	94.0
	WMU 1994	1	2.0	2.0	96.0
	WMU 2002	1	2.0	2.0	98.0
	WMU 2006	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q5 Currently employed in Plastics industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	84.0	84.0	84.0
	No	8	16.0	16.0	100.0
	Total	50	100.0	100.0	

q6 Why did you leave

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		42	84.0	84.0	84.0
	Degree	1	2.0	2.0	86.0
	I took a teaching position.	1	2.0	2.0	88.0
	It was the best job offer that I had at the time	1	2.0	2.0	90.0
	Leave school? Finalized degree; Leave industry? Took job a GM (Plastics related)	1	2.0	2.0	92.0
	New job opportunity.	1	2.0	2.0	94.0
	No, as defined here. Leadership opportunity within company (packaging with several plastic components).	1	2.0	2.0	96.0
	Opportunity to become partner & future owner of a company.	1	2.0	2.0	98.0
	To pursue a different career.	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q7 Number of yrs employed in Plastics industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 1 yr	1	2.0	2.0	2.0
	0	1	2.0	2.0	4.0
	1	2	4.0	4.0	8.0
	1.5	1	2.0	2.0	10.0
	10	3	6.0	6.0	16.0
	12	3	6.0	6.0	22.0
	13	3	6.0	6.0	28.0
	14	1	2.0	2.0	30.0
	15	2	4.0	4.0	34.0
	16	1	2.0	2.0	36.0
	16.5	1	2.0	2.0	38.0
	17	1	2.0	2.0	40.0
	18	1	2.0	2.0	42.0
	2	2	4.0	4.0	46.0
	22	1	2.0	2.0	48.0
	25	1	2.0	2.0	50.0
	3	2	4.0	4.0	54.0
	4	3	6.0	6.0	60.0
	4 full time/10 part time previous	1	2.0	2.0	62.0
	4.5	1	2.0	2.0	64.0
	5	3	6.0	6.0	70.0
	6	2	4.0	4.0	74.0
	7	3	6.0	6.0	80.0
	8	5	10.0	10.0	90.0
	8.5	2	4.0	4.0	94.0
	9	2	4.0	4.0	98.0
	Mayco Plastics 5 years/GM 8 years	1	2.0	2.0	100.0

	Total	50	100.0	100.0	

q8 Number of job changes since graduating from FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	15	30.0	30.0	30.0
	1	5	10.0	10.0	40.0
	2	11	22.0	22.0	62.0
	3	9	18.0	18.0	80.0
	3 (still with same company)	1	2.0	2.0	82.0
	4	5	10.0	10.0	92.0
	5	1	2.0	2.0	94.0
	6	2	4.0	4.0	98.0
	Several within same company	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q9 Best describes the function you perform

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sales & Marketing	2	4.0	4.1	4.1
	Process/Production Engineer	8	16.0	16.3	20.4
	Management Title	13	26.0	26.5	46.9
	Product Design & Development	4	8.0	8.2	55.1
	Technical Service	2	4.0	4.1	59.2
	Education & Training	1	2.0	2.0	61.2
	Project Management	9	18.0	18.4	79.6
	Quality Control/Quality Assurance	1	2.0	2.0	81.6
	Cost Estimating	1	2.0	2.0	83.7
	Mold Design	1	2.0	2.0	85.7
	Other	7	14.0	14.3	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q9a Job function Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		*42*	*84.0*	*84.0*	*84.0*
	Asst. Dept Chair, Math	*1*	*2.0*	*2.0*	*86.0*
	Education	*1*	*2.0*	*2.0*	*88.0*
	Engineer (running my own small business as part of a larger company)	*1*	*2.0*	*2.0*	*90.0*
	Liaison Engineer (work out of Sales & Marketing office to offer technical support to customers)	*1*	*2.0*	*2.0*	*92.0*
	Project Engineering/Project Mgmt	*1*	*2.0*	*2.0*	*94.0*
	Research & Development	*1*	*2.0*	*2.0*	*96.0*
	Surveying & Engineering	*1*	*2.0*	*2.0*	*98.0*
	Tooling Engineer	*1*	*2.0*	*2.0*	*100.0*
	Total	*50*	*100.0*	*100.0*	

q10 "Management Title" title

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		*33*	*66.0*	*66.0*	*66.0*
	Business Development Manager	*1*	*2.0*	*2.0*	*68.0*
	Director of Manufacturing	*1*	*2.0*	*2.0*	*70.0*
	Director of Manufacturing Engineering	*1*	*2.0*	*2.0*	*72.0*
	Engineering Coordinator	*1*	*2.0*	*2.0*	*74.0*
	Engineering Manager	*2*	*4.0*	*4.0*	*78.0*
	Liaison Engineering Supervisor	*1*	*2.0*	*2.0*	*80.0*
	Product Manager	*1*	*2.0*	*2.0*	*82.0*
	Production Manager	*1*	*2.0*	*2.0*	*84.0*
	Proposal & Cost Estimating Manager	*1*	*2.0*	*2.0*	*86.0*
	Regional Continuous Improvement Manager	*1*	*2.0*	*2.0*	*88.0*
	Supply Chain Team Leader	*1*	*2.0*	*2.0*	*90.0*
	Surveyor	*1*	*2.0*	*2.0*	*92.0*
	Technical Manager	*2*	*4.0*	*4.0*	*96.0*
	Tooling Supervisor/ Project Manager	*1*	*2.0*	*2.0*	*98.0*
	Used to be Program Manager	*1*	*2.0*	*2.0*	*100.0*
	Total	*50*	*100.0*	*100.0*	

q11 Title closest to yours

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Engineer	20	40.0	40.0	40.0
	Senior Engineer	5	10.0	10.0	50.0
	Eng. Supervisor/Mgr	6	12.0	12.0	62.0
	Sales/Marketing Rep	1	2.0	2.0	64.0
	Sales/Marketing Mgmt	2	4.0	4.0	68.0
	Production Manager	5	10.0	10.0	78.0
	Vice President	2	4.0	4.0	82.0
	Other	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

q11a Title Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		39	78.0	78.0	78.0
	Educator	1	2.0	2.0	80.0
	Instructor	1	2.0	2.0	82.0
	Manage business segment	1	2.0	2.0	84.0
	Process Development Specialist	1	2.0	2.0	86.0
	Process Engineer	1	2.0	2.0	88.0
	Professor	1	2.0	2.0	90.0
	Program Manager	1	2.0	2.0	92.0
	Sr. Project Engineer	1	2.0	2.0	94.0
	Supply Chain Leader	1	2.0	2.0	96.0
	Surveyor	1	2.0	2.0	98.0
	Technical Manager	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q12a In-house Process: Injection Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	6	12.0	13.6	13.6
	Selected	38	76.0	86.4	100.0
	Total	44	88.0	100.0	
Missing	System	6	12.0		
Total		50	100.0		

q12b In-house Process: Compression Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*40*	*80.0*	*90.9*	*90.9*
	Selected	*4*	*8.0*	*9.1*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12c In-house Process: Transfer Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*42*	*84.0*	*95.5*	*95.5*
	Selected	*2*	*4.0*	*4.5*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12d In-house Process: Thermoforming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*40*	*80.0*	*90.9*	*90.9*
	Selected	*4*	*8.0*	*9.1*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12e In-house Process: RIM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*41*	*82.0*	*93.2*	*93.2*
	Selected	*3*	*6.0*	*6.8*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12f In-house Process: Decorating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*26*	*52.0*	*59.1*	*59.1*
	Selected	*18*	*36.0*	*40.9*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12g In-house Process: Assembly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*13*	*26.0*	*29.5*	*29.5*
	Selected	*31*	*62.0*	*70.5*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12h In-house Process: Blow Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*37*	*74.0*	*84.1*	*84.1*
	Selected	*7*	*14.0*	*15.9*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12i In-house Process: Composite Constr.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*42*	*84.0*	*95.5*	*95.5*
	Selected	*2*	*4.0*	*4.5*	*100.0*
	Total	*44*	*88.0*	*100.0*	
Missing	System	*6*	*12.0*		
Total		*50*	*100.0*		

q12j In-house Process: Extrusion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	30	60.0	68.2	68.2
	Selected	14	28.0	31.8	100.0
	Total	44	88.0	100.0	
Missing	System	6	12.0		
Total		50	100.0		

q12k In-house Process: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	30	60.0	68.2	68.2
	Selected	14	28.0	31.8	100.0
	Total	44	88.0	100.0	
Missing	System	6	12.0		
Total		50	100.0		

q12l In-house Process: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		33	66.0	66.0	66.0
	Aluminum Die Casting	1	2.0	2.0	68.0
	Blown Film	1	2.0	2.0	70.0
	Compounding	1	2.0	2.0	72.0
	Compounding, Packaging, LSR's	1	2.0	2.0	74.0
	Dow Chemical & Dow Automotive make & distribute raw materials & parts to several customers	1	2.0	2.0	76.0
	HS Plastics Course	1	2.0	2.0	78.0
	IML	1	2.0	2.0	80.0
	Injection-Compression Molding, Polyurethane Foam Gasket	1	2.0	2.0	82.0
	Lost Foam	1	2.0	2.0	84.0
	Mainly outsourced	1	2.0	2.0	86.0
	None	1	2.0	2.0	88.0
	Pad Printing & Ultrasonic Welding	1	2.0	2.0	90.0
	Polymerisation & compounder	1	2.0	2.0	92.0
	Polyurethane Foam	1	2.0	2.0	94.0
	Rotational Molding	1	2.0	2.0	96.0
	Runnerless Molding Systems	1	2.0	2.0	98.0
	Structural Foam Low Pressure Injection Molding	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q13a External Process: Injection Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*13*	*26.0*	*32.5*	*32.5*
	Selected	*27*	*54.0*	*67.5*	*100.0*
	Total	*40*	*80.0*	*100.0*	
Missing	System	*10*	*20.0*		
Total		*50*	*100.0*		

q13b External Process: Compression Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*35*	*70.0*	*87.5*	*87.5*
	Selected	*5*	*10.0*	*12.5*	*100.0*
	Total	*40*	*80.0*	*100.0*	
Missing	System	*10*	*20.0*		
Total		*50*	*100.0*		

q13c External Process: Transfer Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*35*	*70.0*	*87.5*	*87.5*
	Selected	*5*	*10.0*	*12.5*	*100.0*
	Total	*40*	*80.0*	*100.0*	
Missing	System	*10*	*20.0*		
Total		*50*	*100.0*		

q13d External Process: Thermoforming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*30*	*60.0*	*75.0*	*75.0*
	Selected	*10*	*20.0*	*25.0*	*100.0*
	Total	*40*	*80.0*	*100.0*	
Missing	System	*10*	*20.0*		
Total		*50*	*100.0*		

q13e External Process: RIM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	35	70.0	87.5	87.5
	Selected	5	10.0	12.5	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13f External Process: Decorating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	21	42.0	52.5	52.5
	Selected	19	38.0	47.5	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13g External Process: Assembly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	24	48.0	60.0	60.0
	Selected	16	32.0	40.0	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13h External Process: Blow Molding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	32	64.0	80.0	80.0
	Selected	8	16.0	20.0	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13i External Process: Composite Constr.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	35	70.0	87.5	87.5
	Selected	5	10.0	12.5	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13j External Process: Extrusion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	28	56.0	70.0	70.0
	Selected	12	24.0	30.0	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13k External Process: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	30	60.0	75.0	75.0
	Selected	10	20.0	25.0	100.0
	Total	40	80.0	100.0	
Missing	System	10	20.0		
Total		50	100.0		

q13l External Process: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		38	76.0	76.0	76.0
	Compounding	1	2.0	2.0	78.0
	Dow Automotive using die cut & low pressure foam molding for strucutral, acoustical, & impact....	1	2.0	2.0	80.0
	Lost Foam	1	2.0	2.0	82.0
	None	1	2.0	2.0	84.0
	Packaging	1	2.0	2.0	86.0
	Paint	1	2.0	2.0	88.0
	Polyurethane Foam	1	2.0	2.0	90.0
	Rotational Molding	1	2.0	2.0	92.0
	Runnerless Molding Systems	1	2.0	2.0	94.0
	Silicone Molding	1	2.0	2.0	96.0
	Surveyor	1	2.0	2.0	98.0

		Frequency	Percent	Valid Percent	Cumulative Percent
	Vacuum metalising	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q14 City & state of employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	6.0	6.0	6.0
	Auburn Hills, MI	1	2.0	2.0	8.0
	Battle Creek, MI	2	4.0	4.0	12.0
	Charleston, SC	1	2.0	2.0	14.0
	Coldwater, MI	1	2.0	2.0	16.0
	Coopersville, MI	1	2.0	2.0	18.0
	Dearborn, MI	2	4.0	4.0	22.0
	Elkhart, IN	1	2.0	2.0	24.0
	Elkton, MD	1	2.0	2.0	26.0
	Flagstaff, AZ	1	2.0	2.0	28.0
	Grand Rapids, MI	6	12.0	12.0	40.0
	Greensboro, NC	1	2.0	2.0	42.0
	Holland, MI	3	6.0	6.0	48.0
	Hudsonville, MI	1	2.0	2.0	50.0
	Huntsville, AL	1	2.0	2.0	52.0
	Indianapolis, IN	1	2.0	2.0	54.0
	Jonesville, MI	1	2.0	2.0	56.0
	Juarez, Mexico---State of Confusion	1	2.0	2.0	58.0
	Kentwood, MI	1	2.0	2.0	60.0
	Martin, MI	1	2.0	2.0	62.0
	Metro Detroit	1	2.0	2.0	64.0
	Michigan	1	2.0	2.0	66.0
	Minneapolis, MN	1	2.0	2.0	68.0
	Murfreesboro, TN	1	2.0	2.0	70.0
	Owosso, MI	1	2.0	2.0	72.0
	Pennsylvania	1	2.0	2.0	74.0
	Rockford, MI	1	2.0	2.0	76.0
	Saginaw, MI	1	2.0	2.0	78.0
	South Lyon, MI	1	2.0	2.0	80.0
	Southfield, MI	1	2.0	2.0	82.0
	St. Louis, MO	1	2.0	2.0	84.0
	St. Paul, MN	1	2.0	2.0	86.0
	Troy, MI	2	4.0	4.0	90.0
	Warren, MI	2	4.0	4.0	94.0
	White Lake, MI	1	2.0	2.0	96.0
	Zeeland, MI	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

q15a Industry segment: Automotive

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Not Selected	*16*	*32.0*	*34.0*	*34.0*
	Selected	*31*	*62.0*	*66.0*	*100.0*
	Total	*47*	*94.0*	*100.0*	
Missing	System	*3*	*6.0*		
Total		*50*	*100.0*		

q15b Industry segment: Furniture

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*43*	*86.0*	*91.5*	*91.5*
	Selected	*4*	*8.0*	*8.5*	*100.0*
	Total	*47*	*94.0*	*100.0*	
Missing	System	*3*	*6.0*		
Total		*50*	*100.0*		

q15c Industry segment: Medical

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*36*	*72.0*	*76.6*	*76.6*
	Selected	*11*	*22.0*	*23.4*	*100.0*
	Total	*47*	*94.0*	*100.0*	
Missing	System	*3*	*6.0*		
Total		*50*	*100.0*		

q15d Industry segment: Computers/Electronics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*43*	*86.0*	*91.5*	*91.5*
	Selected	*4*	*8.0*	*8.5*	*100.0*
	Total	*47*	*94.0*	*100.0*	
Missing	System	*3*	*6.0*		
Total		*50*	*100.0*		

q15e Industry segment: Recreational products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	44	88.0	93.6	93.6
	Selected	3	6.0	6.4	100.0
	Total	47	94.0	100.0	
Missing	System	3	6.0		
Total		50	100.0		

q15f Industry segment: Household goods

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	43	86.0	91.5	91.5
	Selected	4	8.0	8.5	100.0
	Total	47	94.0	100.0	
Missing	System	3	6.0		
Total		50	100.0		

q15g Industry segment: Packaging

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	40	80.0	85.1	85.1
	Selected	7	14.0	14.9	100.0
	Total	47	94.0	100.0	
Missing	System	3	6.0		
Total		50	100.0		

q15h Industry segment: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	37	74.0	78.7	78.7
	Selected	10	20.0	21.3	100.0
	Total	47	94.0	100.0	
Missing	System	3	6.0		
Total		50	100.0		

q15i Industry segment: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		41	82.0	82.0	82.0
	Agricultural supplies, industrial supplies	1	2.0	2.0	84.0
	Appliance	1	2.0	2.0	86.0
	Business	1	2.0	2.0	88.0
	Constuction products (plumbing)	1	2.0	2.0	90.0
	Education	3	6.0	6.0	96.0
	Heavy equipment, construction	1	2.0	2.0	98.0
	Military	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q16 Attended courses/seminars since leaving FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	22	44.0	47.8	47.8
	No	24	48.0	52.2	100.0
	Total	46	92.0	100.0	
Missing	System	4	8.0		
Total		50	100.0		

q17 Title of course/seminar

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		30	60.0	60.0	60.0
	BS in Surveying Engineering	1	2.0	2.0	62.0
	DFMEA Project Management DFM/DFA GD&T Time Management	1	2.0	2.0	64.0
	Far too many to list. GM has constant ongoing training in numerous areas.	1	2.0	2.0	66.0
	HUSKY Hot Runners	1	2.0	2.0	68.0
	ISO training, MoldFlow training	1	2.0	2.0	70.0
	Lean Manufacturing UofM AIAG Micorsoft Project, Excel Glenn Beal product design	1	2.0	2.0	72.0
	Management of Technology courses toward Masters Degree	1	2.0	2.0	74.0
	Master Molder, Black Belt	1	2.0	2.0	76.0
	Masters of Science-Maunfacturing Management-Kettering University (2 yrs worth)	1	2.0	2.0	78.0
	MBA classes at GVSU and Walsh College	1	2.0	2.0	80.0
	Medical Supply and Decoration Topcon	1	2.0	2.0	82.0
	Plastics Processing, Management Seminars	1	2.0	2.0	84.0
	RJG	1	2.0	2.0	86.0
	RJG de-coupled molding seminar NPE - every year since graduation	1	2.0	2.0	88.0

		Frequency	Percent	Valid Percent	Cumulative Percent
	RJG Master Molder	1	2.0	2.0	90.0
	RJG Systematic Molding 1 and Master Molder 1	1	2.0	2.0	92.0
	Several Master's level Enineering Management courses through Western Michigan University.	1	2.0	2.0	94.0
	Several, including courses from SPE.	1	2.0	2.0	96.0
	Six Sigma	1	2.0	2.0	98.0
	University Of tennessee Quality Institute RJG Master Molder II TBM Lean Sigma Institute	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q18 Interested in "refresher" course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	48.0	52.2	52.2
	No	22	44.0	47.8	100.0
	Total	46	92.0	100.0	
Missing	System	4	8.0		
Total		50	100.0		

q19 Course(s) interested in

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		30	60.0	60.0	60.0
	A good overview of plastics processing, tooling, and polymer review for employees we hire.	1	2.0	2.0	62.0
	All	1	2.0	2.0	64.0
	Any related to my field	1	2.0	2.0	66.0
	Chemistry	1	2.0	2.0	68.0
	I would like a Masters level ciriculum offered by Ferris.	1	2.0	2.0	70.0
	Injection Molding Processing	1	2.0	2.0	72.0
	Injection Molding processing or troubleshooting.	1	2.0	2.0	74.0
	Management	1	2.0	2.0	76.0
	Medical supplier issues / information	1	2.0	2.0	78.0
	Needs to be offered off site. Med/High level polymer design and processing.	1	2.0	2.0	80.0
	Packaging	1	2.0	2.0	82.0
	Plant or business management	1	2.0	2.0	84.0
	Plastic Materials Tool Design - advanced topics	1	2.0	2.0	86.0
	Polymer Chemistry	1	2.0	2.0	88.0
	Processing	1	2.0	2.0	90.0
	Processing and Tooling	1	2.0	2.0	92.0
	Project Management - Capstone Project PLTS-499	1	2.0	2.0	94.0
	Scientific Molding Principles (RJG)	1	2.0	2.0	96.0
	Testing	1	2.0	2.0	98.0
	Tooling and processing	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q20a The economy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	*18*	*36.0*	*36.7*	*36.7*
	OK, worsening	*25*	*50.0*	*51.0*	*87.8*
	OK, improving	*5*	*10.0*	*10.2*	*98.0*
	Good/Very Good	*1*	*2.0*	*2.0*	*100.0*
	Total	*49*	*98.0*	*100.0*	
Missing	System	*1*	*2.0*		
Total		*50*	*100.0*		

q20b Environmental issues affecting your company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OK, worsening	*15*	*30.0*	*31.3*	*31.3*
	OK, improving	*27*	*54.0*	*56.3*	*87.5*
	Good/Very Good	*6*	*12.0*	*12.5*	*100.0*
	Total	*48*	*96.0*	*100.0*	
Missing	System	*2*	*4.0*		
Total		*50*	*100.0*		

q20c Ability to hire additional technical employees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	*7*	*14.0*	*14.6*	*14.6*
	OK, worsening	*19*	*38.0*	*39.6*	*54.2*
	OK, improving	*20*	*40.0*	*41.7*	*95.8*
	Good/Very Good	*2*	*4.0*	*4.2*	*100.0*
	Total	*48*	*96.0*	*100.0*	
Missing	System	*2*	*4.0*		
Total		*50*	*100.0*		

q20d Salaries

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	2	4.0	4.2	4.2
	OK, worsening	22	44.0	45.8	50.0
	OK, improving	15	30.0	31.3	81.3
	Good/Very Good	9	18.0	18.8	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q20e Benefits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	2	4.0	4.2	4.2
	OK, worsening	28	56.0	58.3	62.5
	OK, improving	6	12.0	12.5	75.0
	Good/Very Good	12	24.0	25.0	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q20f Career choice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	1	2.0	2.0	2.0
	OK, worsening	13	26.0	26.5	28.6
	OK, improving	19	38.0	38.8	67.3
	Good/Very Good	16	32.0	32.7	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q20g Health of the Plastics industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	2	4.0	4.3	4.3
	OK, worsening	23	46.0	48.9	53.2
	OK, improving	16	32.0	34.0	87.2
	Good/Very Good	6	12.0	12.8	100.0
	Total	47	94.0	100.0	
Missing	System	3	6.0		
Total		50	100.0		

q20h Job change opportunities within the industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	6	12.0	12.5	12.5
	OK, worsening	21	42.0	43.8	56.3
	OK, improving	14	28.0	29.2	85.4
	Good/Very Good	7	14.0	14.6	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q20i Career growth opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor/Terrible	2	4.0	4.2	4.2
	OK, worsening	16	32.0	33.3	37.5
	OK, improving	19	38.0	39.6	77.1
	Good/Very Good	11	22.0	22.9	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q21a Advisor availability & interest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	4.0	4.1	4.1
	Somewhat Satisfied	16	32.0	32.7	36.7
	Very Satisfied	31	62.0	63.3	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21b Preparation for leadership & advancement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	6	12.0	12.2	12.2
	Somewhat Satisfied	22	44.0	44.9	57.1
	Very Satisfied	21	42.0	42.9	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21c Quality of classroom instruction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	13	26.0	26.5	26.5
	Very Satisfied	36	72.0	73.5	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21d Number of students in Plastics lectures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	8	16.0	16.3	16.3
	Very Satisfied	41	82.0	83.7	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21e Number of students in Plastics labs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	9	18.0	18.4	18.4
	Very Satisfied	40	80.0	81.6	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21f Number of students in other courses attended

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	3	6.0	6.3	6.3
	Somewhat Satisfied	22	44.0	45.8	52.1
	Very Satisfied	23	46.0	47.9	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q21g Plastics faculty availability for extra help

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	2.0	2.0	2.0
	Somewhat Satisfied	12	24.0	24.5	26.5
	Very Satisfied	36	72.0	73.5	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21h Understanding of the internship program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	2.0	2.0	2.0
	Somewhat Satisfied	17	34.0	34.7	36.7
	Very Satisfied	31	62.0	63.3	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q21i Availability of internship positions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	4	8.0	8.2	8.2
	Somewhat Satisfied	21	42.0	42.9	51.0
	Very Satisfied	24	48.0	49.0	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q22a Increase the global focus of the curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.0	2.0	2.0
	Somewhat Disagree	5	10.0	10.2	12.2
	Somewhat Agree	25	50.0	51.0	63.3
	Strongly Agree	18	36.0	36.7	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

q22b Increase entrance requirement for all incoming freshmen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	4.0	4.2	4.2
	Somewhat Disagree	19	38.0	39.6	43.8
	Somewhat Agree	22	44.0	45.8	89.6
	Strongly Agree	5	10.0	10.4	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q22c Increase entrance requirements for all Plastics freshmen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	6.0	6.3	6.3
	Somewhat Disagree	14	28.0	29.2	35.4
	Somewhat Agree	25	50.0	52.1	87.5
	Strongly Agree	6	12.0	12.5	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

q22d Reduce entrance requirements for all Plastics freshmen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*13*	*26.0*	*28.3*	*28.3*
	Somewhat Disagree	*29*	*58.0*	*63.0*	*91.3*
	Somewhat Agree	*4*	*8.0*	*8.7*	*100.0*
	Total	*46*	*92.0*	*100.0*	
Missing	System	*4*	*8.0*		
Total		*50*	*100.0*		

q22e Reduce/eliminate GPA requirements AAS to BS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*23*	*46.0*	*46.9*	*46.9*
	Somewhat Disagree	*24*	*48.0*	*49.0*	*95.9*
	Somewhat Agree	*1*	*2.0*	*2.0*	*98.0*
	Strongly Agree	*1*	*2.0*	*2.0*	*100.0*
	Total	*49*	*98.0*	*100.0*	
Missing	System	*1*	*2.0*		
Total		*50*	*100.0*		

q22f Increase leadership development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*1*	*2.0*	*2.0*	*2.0*
	Somewhat Agree	*28*	*56.0*	*57.1*	*59.2*
	Strongly Agree	*20*	*40.0*	*40.8*	*100.0*
	Total	*49*	*98.0*	*100.0*	
Missing	System	*1*	*2.0*		
Total		*50*	*100.0*		

q23a Assist: Influence employer-financial donation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	18	36.0	72.0	72.0
	Selected	7	14.0	28.0	100.0
	Total	25	50.0	100.0	
Missing	System	25	50.0		
Total		50	100.0		

q23b Assist: Influence employer-equipment donation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	19	38.0	76.0	76.0
	Selected	6	12.0	24.0	100.0
	Total	25	50.0	100.0	
Missing	System	25	50.0		
Total		50	100.0		

q23c Assist: Developing student scholarships

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	23	46.0	92.0	92.0
	Selected	2	4.0	8.0	100.0
	Total	25	50.0	100.0	
Missing	System	25	50.0		
Total		50	100.0		

q23d Assist: Recruiting local prospective students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	11	22.0	44.0	44.0
	Selected	14	28.0	56.0	100.0
	Total	25	50.0	100.0	
Missing	System	25	50.0		
Total		50	100.0		

q23e Assist: Improve visibility on campus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*18*	*36.0*	*72.0*	*72.0*
	Selected	*7*	*14.0*	*28.0*	*100.0*
	Total	*25*	*50.0*	*100.0*	
Missing	System	*25*	*50.0*		
Total		*50*	*100.0*		

q23f Assist: Improve visibility in your region

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*7*	*14.0*	*28.0*	*28.0*
	Selected	*18*	*36.0*	*72.0*	*100.0*
	Total	*25*	*50.0*	*100.0*	
Missing	System	*25*	*50.0*		
Total		*50*	*100.0*		

q23g Assist: Make video to be used in class/promotions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*22*	*44.0*	*88.0*	*88.0*
	Selected	*3*	*6.0*	*12.0*	*100.0*
	Total	*25*	*50.0*	*100.0*	
Missing	System	*25*	*50.0*		
Total		*50*	*100.0*		

q24 Less likely to recommend FSU PLTS program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	*5*	*10.0*	*10.2*	*10.2*
	No	*44*	*88.0*	*89.8*	*100.0*
	Total	*49*	*98.0*	*100.0*	
Missing	System	*1*	*2.0*		
Total		*50*	*100.0*		

q25a Yes: Lack of employment security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*2*	*4.0*	*40.0*	*40.0*
	Selected	*3*	*6.0*	*60.0*	*100.0*
	Total	*5*	*10.0*	*100.0*	
Missing	System	*45*	*90.0*		
Total		*50*	*100.0*		

q25b Yes: Too much stress in this industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*2*	*4.0*	*40.0*	*40.0*
	Selected	*3*	*6.0*	*60.0*	*100.0*
	Total	*5*	*10.0*	*100.0*	
Missing	System	*45*	*90.0*		
Total		*50*	*100.0*		

q25c Yes: Concerns regarding quality of FSU PLTS prog

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*5*	*10.0*	*100.0*	*100.0*
Missing	System	*45*	*90.0*		
Total		*50*	*100.0*		

q25d Yes: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	*4*	*8.0*	*80.0*	*80.0*
	Selected	*1*	*2.0*	*20.0*	*100.0*
	Total	*5*	*10.0*	*100.0*	
Missing	System	*45*	*90.0*		
Total		*50*	*100.0*		

q25e Yes: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		48	96.0	96.0	96.0
	Good program, poor industry! There should be a strong shift in the program to teach students in-depth automation. Running "lights out" is the only way companies can stay competitive with other countries.	1	2.0	2.0	98.0
	Very limited to where you can work/live.	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q26 Name

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		22	44.0	44.0	44.0
	Andrew Sics	1	2.0	2.0	46.0
	Dale Gilbert	1	2.0	2.0	48.0
	Dale Sandell	1	2.0	2.0	50.0
	DAn Fuller	1	2.0	2.0	52.0
	Dana Jones	1	2.0	2.0	54.0
	David Lange	1	2.0	2.0	56.0
	David Matthews	1	2.0	2.0	58.0
	Ed Terris	1	2.0	2.0	60.0
	Elliot Essenburg	1	2.0	2.0	62.0
	Fred Hunter	1	2.0	2.0	64.0
	Jason Trahan	1	2.0	2.0	66.0
	Jeffrey Davis	1	2.0	2.0	68.0
	Jennifer Helder	1	2.0	2.0	70.0
	Jim Frost	1	2.0	2.0	72.0
	John Keys	1	2.0	2.0	74.0
	Josh Erwin	1	2.0	2.0	76.0
	Julie Riordan	1	2.0	2.0	78.0
	Kelcey Cook-Please call to discuss prior to commitment on items	1	2.0	2.0	80.0
	Kristy Powell	1	2.0	2.0	82.0
	Mike Kloian	1	2.0	2.0	84.0
	Nate Robinson	1	2.0	2.0	86.0
	Nora (Malaski) Beevers	1	2.0	2.0	88.0
	Patrick James	1	2.0	2.0	90.0
	Ron Gunter	1	2.0	2.0	92.0
	Scott Lampe	1	2.0	2.0	94.0
	Sean Buffington	1	2.0	2.0	96.0
	Stacey Drozd (Smith)	1	2.0	2.0	98.0
	Vince Hicks	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q27 Address

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		25	50.0	50.0	50.0
	10900 Arrowhead Dr. Chesaning, MI 48616	1	2.0	2.0	52.0
	11024 Maple Hill Road	1	2.0	2.0	54.0
	11579 Richland Ct Grand Haven, MI 49417	1	2.0	2.0	56.0
	1170 Maplewood Dr. Jenison, MI 49428	1	2.0	2.0	58.0
	12333 E. Hill Rd Goodrich, MI 48438	1	2.0	2.0	60.0
	12598 New Holland Street Holland Michigan 49424	1	2.0	2.0	62.0
	1500 Ottawa Beach Rd. #20	1	2.0	2.0	64.0
	1523 Bowmore Place McLeansville, NC 27301	1	2.0	2.0	66.0
	17038 Kingsbrooke Drive Clinton Township, MI 48038	1	2.0	2.0	68.0
	2211 Cook Court Troy, MI 48083	1	2.0	2.0	70.0
	22137 West Village Drive Dearborn, MI 48124	1	2.0	2.0	72.0
	3000 Rachel Terrace Apt. 11 Pine Brook, NJ 07828	1	2.0	2.0	74.0
	3633 Hollow Pine Court Almont, MI 48003	1	2.0	2.0	76.0
	365 Shangri La Circle Plainwell, MI 49080	1	2.0	2.0	78.0
	3725 Portage Rd Kalamazoo, MI 49001	1	2.0	2.0	80.0
	3960 Bell Road apt#408 Hermitage, TN 37076	1	2.0	2.0	82.0
	5154 Vista Bay Trail Goodrich, MI 48438	1	2.0	2.0	84.0
	530 e oliver st owosso mi 48867	1	2.0	2.0	86.0
	5300 Auto Club Drive Dearborn, MI 48126	1	2.0	2.0	88.0
	540 W Cinnabar Trail Flagstaff, AZ 86001	1	2.0	2.0	90.0
	748 Harmony Place Dr. Sparta, MI 49345	1	2.0	2.0	92.0
	8125 Park Drive Clarkston, MI 48348	1	2.0	2.0	94.0
	90 Edward Dr. Eureka, MO 63025	1	2.0	2.0	96.0
	940 Monroe Ste. 418 Grand Rapids, MI 49503	1	2.0	2.0	98.0
	St. Jude Medical 14900 Minnetonka Industrial Blvd Minnetonka, MN 55345	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q28 E-mail address

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		21	42.0	42.0	42.0
	andrewsics@hotmail.com	1	2.0	2.0	44.0
	dalergilbert@yahoo.com	1	2.0	2.0	46.0
	david.lange@basf.com	1	2.0	2.0	48.0
	dcfuller@dow.com	1	2.0	2.0	50.0
	dsandell@clariontechnologies.com	1	2.0	2.0	52.0
	ed_terris@hotmail.com	1	2.0	2.0	54.0
	elliote@ess-tec.com	1	2.0	2.0	56.0
	fhunter@plastecheng.com	1	2.0	2.0	58.0
	jeffreydavis_13@hotmail.com	1	2.0	2.0	60.0
	jennifer.helder@gmail.com	1	2.0	2.0	62.0
	jfrost@stlc..edu	1	2.0	2.0	64.0

	john.1.keys@gm.com	1	2.0	2.0	66.0
	jones_dana@yahoo.com	1	2.0	2.0	68.0
	joshua.m.erwin@jci.com	1	2.0	2.0	70.0
	jriorda2@ford.com	1	2.0	2.0	72.0
	k.p.cook@dowcorning.com	1	2.0	2.0	74.0
	kpowell@sjm.com	1	2.0	2.0	76.0
	matthewd@creativetechniques.com	1	2.0	2.0	78.0
	mkloian@hotmail.com	1	2.0	2.0	80.0
	nathan.robinson@royaltechnologies.com	1	2.0	2.0	82.0
	nmalaski1@hotmail.com	1	2.0	2.0	84.0
	oclv82@hotmail.som	1	2.0	2.0	86.0
	pecjames@gmail.com	1	2.0	2.0	88.0
	ron.gunter@innotecgroup.com	1	2.0	2.0	90.0
	sdrozd@agapeplastics.com	1	2.0	2.0	92.0
	seancbuffington@hotmail.com	1	2.0	2.0	94.0
	slampe@grcc.edu	1	2.0	2.0	96.0
	trahanj@hotmail.com or jason.trahan@wmich.edu	1	2.0	2.0	98.0
	vhicks@iacna.com	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q29 Telephone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		25	50.0	50.0	50.0
	231-937-7031	1	2.0	2.0	52.0
	248-225-7868	1	2.0	2.0	54.0
	248-373-3050 Ext. 308	1	2.0	2.0	56.0
	248-391-6526	1	2.0	2.0	58.0
	248-393-2101 x2247	1	2.0	2.0	60.0
	248-640-9931	1	2.0	2.0	62.0
	269 209 0091	1	2.0	2.0	64.0
	269.664.5462	1	2.0	2.0	66.0
	313-240-3721	1	2.0	2.0	68.0
	314-984-7345	1	2.0	2.0	70.0
	336-547-7184	1	2.0	2.0	72.0
	480-202-3183	1	2.0	2.0	74.0
	517-203-6756	1	2.0	2.0	76.0
	586-863-3433	1	2.0	2.0	78.0
	615-627-7158	1	2.0	2.0	80.0
	616-234-3652	1	2.0	2.0	82.0
	616-443-1350	1	2.0	2.0	84.0
	616-633-1431	1	2.0	2.0	86.0
	616-667-4166	1	2.0	2.0	88.0
	616-886-7704	1	2.0	2.0	90.0
	616-990-6424	1	2.0	2.0	92.0
	616.634.3142	1	2.0	2.0	94.0
	810 240 0801	1	2.0	2.0	96.0

	973-396-2714	1	2.0	2.0	98.0
	989-598-3947	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

q30 Company name and address

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		23	46.0	46.0	46.0
	Agape Plastics 11474 1st Ave NW Grand Rapids, MI 49534	1	2.0	2.0	48.0
	BASF Corporation 450 Clark Drive Budd Lake, NJ 07828	1	2.0	2.0	50.0
	Clarion Technologies(2 addresses) 501 Cedar St Greenville, MI 48838 Avenida de las Torres #2070 Colonia Torres del Sur Cd. Juarez, Chi., Mexico 32545	1	2.0	2.0	52.0
	Creative Techniques Inc. 2441 N. Opdyke Auburn Hills, MI 48326	1	2.0	2.0	54.0
	Dow Automotive 3900 Automation Avenue Aurburn Hills, MI 48326	1	2.0	2.0	56.0
	Dow Corning Corporation 2914 Patterson Street Greensboro, NC 27407	1	2.0	2.0	58.0
	EMS Grivory 2060 Corporate Way PO Box 1717 Sumter SC 29151	1	2.0	2.0	60.0
	Ess Tec, Inc. 128 Aniline Ave North Holland MI 49424	1	2.0	2.0	62.0
	GM Powertrain SMCO 1629 N. Washington Ave. Saginaw, MI 48605	1	2.0	2.0	64.0
	II Stanley Co., Inc. 1500 Hill Brady Rd. Battle Creek, MI 49037	1	2.0	2.0	66.0
	Innotec Group 441 E Roosevelt Zeeland, MI 49464	1	2.0	2.0	68.0
	International Automotive Components 5300 Auto Club Drive Dearborn, MI 48126	1	2.0	2.0	70.0
	Johnson Controls Inc. 921 E. 32nd St. Holland, MI 49423	1	2.0	2.0	72.0
	Magna Donnelly 600 Wilshire Drive Troy, MI	1	2.0	2.0	74.0
	Magna Donnelly Engineering Center 5085 Kraft Avenue Kentwood, MI 49512	1	2.0	2.0	76.0
	Mahle Filter Systems North America, Inc 906 Butler Drive Murfreesboro, Tennessee 37127	1	2.0	2.0	78.0
	Marshall Plastic Film 904 East Allegan Martin, MI 49070	1	2.0	2.0	80.0
	MPC 29200 Northwestern Hwy Suite 250 Southfield, MI 48034	1	2.0	2.0	82.0
	N-K Manufacturing 1134 Freeman Ave. Grand Rapids, MI 49503	1	2.0	2.0	84.0
	Nero Plastics, inc	1	2.0	2.0	86.0
	Nyloncraft of Michigan, Inc.	1	2.0	2.0	88.0
	Plastech Engineered Products 1600 Harmon Road Auburn Hills, MI 48326	1	2.0	2.0	90.0
	Proper Mold & Engineering Plastics Division 13870 East Eleven Mile Warren, MI 48089	1	2.0	2.0	92.0
	Royal Technologies 3133 Highland Dr. Hudsonville, MI 49426	1	2.0	2.0	94.0
	St. Jude Medical 14900 Minnetonka Industrial Blvd Minnetonka, MN 55345	1	2.0	2.0	96.0
	St. Louis Community College 11333 Big Bend Blvd. St. Louis, MO 63025	1	2.0	2.0	98.0
	W.L. Gore Kendrick Peak 4250 W. Kiltie Lane Flagstaff, AZ 86001 928-864-4324 jhelder@wlgore.com	1	2.0	2.0	100.0

	Total	*50*	*100.0*	*100.0*	

Section 2A

SURVEY SUMMARY

Alumni Survey Summary

Strong survey response indicators that are consistent with program goals:

- As a model, 94% supported satisfaction with the availability and interest of the advisor, 86% supported satisfaction with their preparation for leadership and advancement, 98% supported satisfaction for both the number of students in lecture as well as lab, 96% supported satisfaction with faculty being available for extra help, 88% indicated they were more likely to recommend the FSU Plastics Program today than 2 years ago, and 84% are still employed in the Plastics Industry versus any other industry.
- In regards to improving incoming student quantity and quality, 96% supported keeping GPA requirements for the transition from the AAS to the BS degrees, and 56% indicated they could assist with recruiting local prospective students.
- In regards to maintaining or increasing visibility to be a leader in supplying the Plastics Industry, 72% said they would assist with improving visibility in their region of the country,
- The match of the curriculum to the knowledge/skill base that industry needs is supported by the following input: all respondents indicated they had no concerns about the quality of the Plastics Program, and 97% indicated a positive intern experience.

Strong survey response indicators suggesting action:

- That there be a increase in leadership development was supported by 98%.
- Response to in-house plastics processes used included: 68% injection, 25% thermoforming, 48% decoration, 40% assembly, 20% blow molding, and 30% extrusion.
- Response to the types of markets served included: 66% automotive, 23% medical, and 15% packaging.
- 87% responded that the prospects for the economy were bad, but prospects for the Plastics Industry were good (56%) even though salaries and benefits were worsening.

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Employer

As part of the Academic Program Review (APR) process, the Plastics Department is asking employers of Ferris State University Plastics graduates to please take a few minutes to complete this survey. Your responses will help us evaluate the program, see where the strengths are and show us where changes need to be made. Thank you for your feedback in this important process.

Graduate Related

Q1 Have you hired (full-time) a graduate from the Plastics program?
- Yes
- No
- I don't know

Q2 How many graduates are employed within your company?
- 1
- 2-4
- Over 4
- I don't know

Q3 What is your overall level of satisfaction with these graduates?
- Very Unsatisfied
- Somewhat Unsatisfied
- Somewhat Satisfied
- Very Satisfied
- I don't know

Q4 What is your overall assessment of the technical preparation?
- Very Inadequate
- Somewhat Inadequate
- Somewhat Adequate
- Very Adequate
- I don't know

Q5 Have you ever visited the FSU Plastics Program?
- Yes
- No

Q6 Would you hire additional FSU Plastics grads in the future?
- Yes
- Maybe
- No
- I don't know

Q7 **Please indicate the level of importance each of these areas has in your company.**

	Very Unimportant	Somewhat Unimportant	Somewhat Important	Very Important	Not Applicable
Processing	◯	◯	◯	◯	◯
Design	◯	◯	◯	◯	◯
Composites	◯	◯	◯	◯	◯
Materials	◯	◯	◯	◯	◯
Decorating & Assembly	◯	◯	◯	◯	◯
Ancillary Equipment	◯	◯	◯	◯	◯
Rubber	◯	◯	◯	◯	◯
Elastomers	◯	◯	◯	◯	◯

Q8 **Please indicate your company's perception of the need for each of the following within the next 5 years.**

	Decrease	About the Same	Increase	Don't Know
The need for plastics graduates in my company will	◯	◯	◯	◯
The need for plastics grads within a 100 mile radius of my company will	◯	◯	◯	◯

Q9 **Knowledge of International aspects of the plastics industry is**

- ◯ Can be learned on job/not a requirement
- ◯ Important
- ◯ Critical

Q10 **What are the 2 or 3 most important personal attributes you would like to see in a plastics graduate?**

Q11 **What are the 2 or 3 most important technical skills you would like to see in a plastics graduate?**

Intern Related

Q12 **Have you hired (full time) a summer intern from the Plastics program?**

- ◯ Yes
- ◯ No
- ◯ I don't know

Q13 How many interns are employed within your company in the last 2 years?

- 1
- 2-4
- Over 4
- I don't know

Q14 How would you assess the interns' ability to communicate?

- Not Adequate
- Adequate
- Excellent
- I don't know

Q15 How would you assess the interns' ability to solve problems?

- Not Adequate
- Adequate
- Excellent
- I don't know

Q16 Plastics interns are valuable to my company

- Never
- Sometimes
- Always
- I don't know

Q17 In terms of your company's perception of the next 5 years, will the need for plastics interns

- Decrease
- Be about the same
- Increase
- I don't know

Frequency Table

q1 Company's hiring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Only interns	2	5.7	5.7	5.7
	Only full-time employees	11	31.4	31.4	37.1
	Both	22	62.9	62.9	100.0
	Total	35	100.0	100.0	

q2 Hired (full-time) PLTS grad

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	60.0	63.6	63.6
	No	11	31.4	33.3	97.0
	I don't know	1	2.9	3.0	100.0
	Total	33	94.3	100.0	
Missing	System	2	5.7		
Total		35	100.0		

q3 Number grads employed in company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	14.3	17.9	17.9
	2-4	11	31.4	39.3	57.1
	Over 4	7	20.0	25.0	82.1
	I don't know	5	14.3	17.9	100.0
	Total	28	80.0	100.0	
Missing	System	7	20.0		
Total		35	100.0		

q4 Overall level of satisfaction with grads

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unsatisfied	4	11.4	14.8	14.8
	Somewhat Satisfied	3	8.6	11.1	25.9
	Very Satisfied	19	54.3	70.4	96.3
	I don't know	1	2.9	3.7	100.0
	Total	27	77.1	100.0	
Missing	System	8	22.9		
Total		35	100.0		

q5 Overall assessment of their technical preparation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Inadequate	2	5.7	6.9	6.9
	Somewhat Adequate	4	11.4	13.8	20.7
	Very Adequate	22	62.9	75.9	96.6
	I don't know	1	2.9	3.4	100.0
	Total	29	82.9	100.0	
Missing	System	6	17.1		
Total		35	100.0		

q6 Visited the FSU Plastics Program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	40.0	43.8	43.8
	No	18	51.4	56.3	100.0
	Total	32	91.4	100.0	
Missing	System	3	8.6		
Total		35	100.0		

q7 Hire additional FSU PLTS grads in future

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	28	80.0	87.5	87.5
	Maybe	3	8.6	9.4	96.9
	I don't know	1	2.9	3.1	100.0
	Total	32	91.4	100.0	
Missing	System	3	8.6		
Total		35	100.0		

q8a Importance: Processing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	4	11.4	12.5	12.5
	Somewhat Unimportant	1	2.9	3.1	15.6
	Somewhat Important	1	2.9	3.1	18.8
	Very Important	26	74.3	81.3	100.0
	Total	32	91.4	100.0	
Missing	System	3	8.6		
Total		35	100.0		

q8b Importance: Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	*4*	*11.4*	*12.9*	*12.9*
	Somewhat Unimportant	*1*	*2.9*	*3.2*	*16.1*
	Somewhat Important	*12*	*34.3*	*38.7*	*54.8*
	Very Important	*14*	*40.0*	*45.2*	*100.0*
	Total	*31*	*88.6*	*100.0*	
Missing	System	*4*	*11.4*		
Total		*35*	*100.0*		

q8c Importance: Composites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	*6*	*17.1*	*19.4*	*19.4*
	Somewhat Unimportant	*7*	*20.0*	*22.6*	*41.9*
	Somewhat Important	*8*	*22.9*	*25.8*	*67.7*
	Very Important	*10*	*28.6*	*32.3*	*100.0*
	Total	*31*	*88.6*	*100.0*	
Missing	System	*4*	*11.4*		
Total		*35*	*100.0*		

q8d Importance: Materials

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	*2*	*5.7*	*6.5*	*6.5*
	Somewhat Unimportant	*4*	*11.4*	*12.9*	*19.4*
	Somewhat Important	*6*	*17.1*	*19.4*	*38.7*
	Very Important	*19*	*54.3*	*61.3*	*100.0*
	Total	*31*	*88.6*	*100.0*	
Missing	System	*4*	*11.4*		
Total		*35*	*100.0*		

q8e Importance: Decorating & Assembly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	1	2.9	3.2	3.2
	Somewhat Unimportant	10	28.6	32.3	35.5
	Somewhat Important	11	31.4	35.5	71.0
	Very Important	8	22.9	25.8	96.8
	Don't Know	1	2.9	3.2	100.0
	Total	31	88.6	100.0	
Missing	System	4	11.4		
Total		35	100.0		

q8f Importance: Ancillary Equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	2	5.7	6.5	6.5
	Somewhat Unimportant	10	28.6	32.3	38.7
	Somewhat Important	7	20.0	22.6	61.3
	Very Important	11	31.4	35.5	96.8
	Don't Know	1	2.9	3.2	100.0
	Total	31	88.6	100.0	
Missing	System	4	11.4		
Total		35	100.0		

q8g Importance: Rubber

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	6	17.1	19.4	19.4
	Somewhat Unimportant	11	31.4	35.5	54.8
	Somewhat Important	7	20.0	22.6	77.4
	Very Important	6	17.1	19.4	96.8
	Don't Know	1	2.9	3.2	100.0
	Total	31	88.6	100.0	
Missing	System	4	11.4		
Total		35	100.0		

q8h Importance: Elastomers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unimportant	1	2.9	3.3	3.3
	Somewhat Unimportant	4	11.4	13.3	16.7
	Somewhat Important	13	37.1	43.3	60.0
	Very Important	9	25.7	30.0	90.0
	Don't Know	3	8.6	10.0	100.0
	Total	30	85.7	100.0	
Missing	System	5	14.3		
Total		35	100.0		

q8i Importance: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Unimportant	2	5.7	10.5	10.5
	Somewhat Important	1	2.9	5.3	15.8
	Very Important	4	11.4	21.1	36.8
	Don't Know	12	34.3	63.2	100.0
	Total	19	54.3	100.0	
Missing	System	16	45.7		
Total		35	100.0		

q9 Importance: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		27	77.1	77.1	77.1
	Good tech skills on machines as well as good communication skills	1	2.9	2.9	80.0
	I'm a technical Recruiter. I place Process, Project & Tooling Engineers with plastics skills on a regular basis. I recruit based on my client's requirements. I have both Plastics & Rubber molding clients.	1	2.9	2.9	82.9
	I am not sure about those areas specifically.	1	2.9	2.9	85.7
	Plastic Extrusion	1	2.9	2.9	88.6
	RJG Technology	1	2.9	2.9	91.4
	Tooling & Program Management	1	2.9	2.9	94.3
	Tooling Machine Design (hydraulics, controls, drives, plastication, structure)	1	2.9	2.9	97.1
	Two shot injestion molding	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

q10a Need for PLTS grads in my company will

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decrease	*1*	*2.9*	*3.0*	*3.0*
	About the Same	*14*	*40.0*	*42.4*	*45.5*
	Increase	*16*	*45.7*	*48.5*	*93.9*
	Don't Know	*2*	*5.7*	*6.1*	*100.0*
	Total	*33*	*94.3*	*100.0*	
Missing	System	*2*	*5.7*		
Total		*35*	*100.0*		

q10b Need for PLTS grads within a 100 mile radius of company will

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decrease	*6*	*17.1*	*18.8*	*18.8*
	About the Same	*13*	*37.1*	*40.6*	*59.4*
	Increase	*9*	*25.7*	*28.1*	*87.5*
	Don't Know	*4*	*11.4*	*12.5*	*100.0*
	Total	*32*	*91.4*	*100.0*	
Missing	System	*3*	*8.6*		
Total		*35*	*100.0*		

q11 Knowledge of International aspects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Can be learned on job/not a requirement	*16*	*45.7*	*50.0*	*50.0*
	Important	*15*	*42.9*	*46.9*	*96.9*
	Critical	*1*	*2.9*	*3.1*	*100.0*
	Total	*32*	*91.4*	*100.0*	
Missing	System	*3*	*8.6*		
Total		*35*	*100.0*		

q12 2 or 3 most important personal attributes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		10	28.6	28.6	28.6
	1 Hardworking 2 Dedicated 3 Self Motivated	1	2.9	2.9	31.4
	1) Highly Intelligent 2) Hard Working 3) Dedeicated and committed to a successful profesional career 3) Great interpesonal skills	1	2.9	2.9	34.3
	1) Sense of ownership for the process and related equipment, tooling and products. 2) Verbal and written communication skills. 3) Understanding that promotions and salary increases come in time, not necessarily in year one or two.	1	2.9	2.9	37.1
	Assertiveness to complete projects with little information. Reliability and follow through.	1	2.9	2.9	40.0
	Blue Sky thinking Technicially driven candidates	1	2.9	2.9	42.9
	Broad understanding Strong application knowledge	1	2.9	2.9	45.7
	Communication Adaptability with various personalities	1	2.9	2.9	48.6
	Communication, organization and drive to complete a goal	1	2.9	2.9	51.4
	Communications, presentations skills. Professional presence	1	2.9	2.9	54.3
	Creativity in problem solving Accountability Organization	1	2.9	2.9	57.1
	Flexibility, Team Player and Accountability	1	2.9	2.9	60.0
	Good communication skills and ability for teamwork.	1	2.9	2.9	62.9
	I think the people we have used fit well into our enviroment	1	2.9	2.9	65.7
	LOOK SOMEBODY IN THE EYES WHEN YOU SPEAK TO THEM. The ear, nose, tongue earrings, facial hair, sloppy appearance & absence of preparation for interviews (resumes, project reports, molded articles etc;) is a guarantee that your opportunities will be limited.	1	2.9	2.9	68.6
	motivated to learn and grow willing to work from the ground up personable and confident to communicate with customers	1	2.9	2.9	71.4
	Positive Attitude, Logical reasoning skills	1	2.9	2.9	74.3
	project & team management skills communication skills	1	2.9	2.9	77.1
	seeks production improvements can work with all levels of employees (the GED to the MS) can help in training/explaining technical aspects to workers to enable better team efforts	1	2.9	2.9	80.0
	Self-starter, flexibility and open to challenges.	1	2.9	2.9	82.9
	self motivated-willingness to take on responsibilities for issues and stay with them until resolved Interaction with employees on the floor is critical	1	2.9	2.9	85.7
	Self starter and personable	1	2.9	2.9	88.6
	Team player Good communication - both verbally and in writing	1	2.9	2.9	91.4
	That is difficult as every individual is different. For the most part my clients are looking for individuals who are eager to learn more, not indiviuals who think they have a degree and know everything there is to know about the processes.	1	2.9	2.9	94.3
	Understand that they have only scratched the surface and there is much more that is needed to learn in the work force. How to interact with customers	1	2.9	2.9	97.1
	Work ethic, people and computer skills	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

q13 2 or 3 most important technical skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		10	28.6	28.6	28.6
	1) Hands on technical processing of a variety of polymers. 2) Ability to document process variations and determine optimum process parameters and put the instructions into written format for machine operators.	1	2.9	2.9	31.4
	1) Strong specialty and engineering thermoplastics experince 2) Materials testing experience 3) Improved public speaking skills	1	2.9	2.9	34.3
	Basic understanding of tooling and processing	1	2.9	2.9	37.1
	Design knowledge, with possible CAD skills Strong tool knowledge	1	2.9	2.9	40.0
	Design, material and processs application	1	2.9	2.9	42.9
	FSU plastics grads need to spend more time within their English, Technical Writing classes. Technical leadership is about being able to use the data to improve an organization-writing and presenting are essential skills, equal to setting up an injection molding machine. FSU grads generally do no have outstanding writing, presenting skills. A specific class where students are presenting a 3-5 minute topic every other class period and writing a one page paper once per week is essential. Program should incorporate lean manufacturing class(es) with specific objectives to teach, do, kaizen activities such as 4S, value stream maps, PDCA storyboards, A3 reports, lean mold design, variation reduction and waste elimination projects. This should be a minimum 2-class sequence (2 semester) requirement. Students should be expected to take field trips to plastic processors on their own time and report their findings...vs. blowing a day visiting a local processor . If no second language is spoken, elective associated with global business & culture should be required. Emphasis on China, Korea, Mexico, Russia within the units.	1	2.9	2.9	45.7
	full process experience from raw material selection through product release; knowledge of industry developments and trends at all times	1	2.9	2.9	48.6
	Higer level of tooling knowledge Better project management skills	1	2.9	2.9	51.4
	I am a recruiter and find your graduates have more to offer than other colleges. I would like to see more co-op experience working in plastics. All in all your graduates are better prepared than most.	1	2.9	2.9	54.3
	Knowledge in value added operations such as assembly along with the primary processing operations.	1	2.9	2.9	57.1
	Knowledge of mold flow Knowledge of how an injection molding machine works - preferably hands-on experience.	1	2.9	2.9	60.0
	Materials knowledge Design driven thinking	1	2.9	2.9	62.9
	Materials, program management and design	1	2.9	2.9	65.7
	Problem Solving Continuous Learning	1	2.9	2.9	68.6
	Problem solving involving tool design Problem solving involving the injection molding process	1	2.9	2.9	71.4
	process engineering part and mold design analysis (FEA, MFA, material testing)	1	2.9	2.9	74.3
	Processing and analytical skills	1	2.9	2.9	77.1
	Processing and material expertise.	1	2.9	2.9	80.0
	Processing and material knowledge. Possibly additives knowledge.	1	2.9	2.9	82.9
	Processing and tool design knowledge	1	2.9	2.9	85.7

	Processing knowledge Auxiliary equipment operation Material and fillers/additives understanding	1	2.9	2.9	88.6
	Processing Tooling Knowledge Part Design	1	2.9	2.9	91.4
	Strong Engineering background Problem solving (use of various tools shanin, greenbelt etc.) Use of common sense	1	2.9	2.9	94.3
	Tooling, Injection Molding and Equipment experience	1	2.9	2.9	97.1
	understanding raw materials of extrusion write to/discuss with customers problems& quality control aspects & corrections in manufacturing - also internally	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

q14 Hired (full time) summer PLTS intern

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	37.1	41.9	41.9
	No	18	51.4	58.1	100.0
	Total	31	88.6	100.0	
Missing	System	4	11.4		
Total		35	100.0		

q15 Number interns employed in company last 2 yrs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	25.7	32.1	32.1
	2-4	7	20.0	25.0	57.1
	Over 4	8	22.9	28.6	85.7
	I don't know	4	11.4	14.3	100.0
	Total	28	80.0	100.0	
Missing	System	7	20.0		
Total		35	100.0		

q16a Skill set: Communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not selected	1	2.9	3.4	3.4
	Selected	28	80.0	96.6	100.0
	Total	29	82.9	100.0	
Missing	System	6	17.1		
Total		35	100.0		

q16b Skill set: Problem solving

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not selected	*2*	*5.7*	*6.9*	*6.9*
	Selected	*27*	*77.1*	*93.1*	*100.0*
	Total	*29*	*82.9*	*100.0*	
Missing	System	*6*	*17.1*		
Total		*35*	*100.0*		

q16c Skill set: Processing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not selected	*2*	*5.7*	*6.9*	*6.9*
	Selected	*27*	*77.1*	*93.1*	*100.0*
	Total	*29*	*82.9*	*100.0*	
Missing	System	*6*	*17.1*		
Total		*35*	*100.0*		

q16d Skill set: Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not selected	*16*	*45.7*	*55.2*	*55.2*
	Selected	*13*	*37.1*	*44.8*	*100.0*
	Total	*29*	*82.9*	*100.0*	
Missing	System	*6*	*17.1*		
Total		*35*	*100.0*		

q16e Skill set: Materials knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not selected	*9*	*25.7*	*31.0*	*31.0*
	Selected	*20*	*57.1*	*69.0*	*100.0*
	Total	*29*	*82.9*	*100.0*	
Missing	System	*6*	*17.1*		
Total		*35*	*100.0*		

q16f Skill set: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not selected	26	74.3	89.7	89.7
	Selected	3	8.6	10.3	100.0
	Total	29	82.9	100.0	
Missing	System	6	17.1		
Total		35	100.0		

q16g Skill set: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		31	88.6	88.6	88.6
	Auxiliary equipment	1	2.9	2.9	91.4
	Comittment Ethics Enthusiasm Creativity	1	2.9	2.9	94.3
	lean Manufacturing	1	2.9	2.9	97.1
	Mold Design Plastic Part Design Strength of materials SPC	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

q17a Satisfaction: Communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	2.9	4.5	4.5
	Somewhat Dissatisfied	1	2.9	4.5	9.1
	Somewhat Satisfied	10	28.6	45.5	54.5
	Very Satisfied	8	22.9	36.4	90.9
	No Previous Experience	2	5.7	9.1	100.0
	Total	22	62.9	100.0	
Missing	System	13	37.1		
Total		35	100.0		

q17b Satisfaction: Problem solving

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	2.9	4.5	4.5
	Somewhat Dissatisfied	1	2.9	4.5	9.1
	Somewhat Satisfied	12	34.3	54.5	63.6
	Very Satisfied	6	17.1	27.3	90.9
	No Previous Experience	2	5.7	9.1	100.0
	Total	22	62.9	100.0	
Missing	System	13	37.1		

Total	35	100.0		

q17c Satisfaction: Processing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	2.9	4.5	4.5
	Somewhat Satisfied	9	25.7	40.9	45.5
	Very Satisfied	10	28.6	45.5	90.9
	No Previous Experience	2	5.7	9.1	100.0
	Total	22	62.9	100.0	
Missing	System	13	37.1		
Total		35	100.0		

q17d Satisfaction: Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	2.9	5.3	5.3
	Somewhat Dissatisfied	1	2.9	5.3	10.5
	Somewhat Satisfied	11	31.4	57.9	68.4
	Very Satisfied	2	5.7	10.5	78.9
	No Previous Experience	4	11.4	21.1	100.0
	Total	19	54.3	100.0	
Missing	System	16	45.7		
Total		35	100.0		

q17e Satisfaction: Materials knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	2.9	4.8	4.8
	Somewhat Satisfied	10	28.6	47.6	52.4
	Very Satisfied	7	20.0	33.3	85.7
	No Previous Experience	3	8.6	14.3	100.0
	Total	21	60.0	100.0	
Missing	System	14	40.0		
Total		35	100.0		

q17f Satisfaction: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	1	2.9	16.7	16.7
	Very Satisfied	2	5.7	33.3	50.0
	No Previous Experience	3	8.6	50.0	100.0
	Total	6	17.1	100.0	
Missing	System	29	82.9		
Total		35	100.0		

q18 Satisfaction: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		31	88.6	88.6	88.6
	Demonstrated commitment to achieve a quality result. Very organized.	1	2.9	2.9	91.4
	I cannot speak on behalf of the interns we've had.	1	2.9	2.9	94.3
	No interns came from the Ferris Plastics program.	1	2.9	2.9	97.1
	Please disgard the other, hit by accident!	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

q19 Plastics interns are valuable to my company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	2	5.7	6.3	6.3
	Sometimes	13	37.1	40.6	46.9
	Always	15	42.9	46.9	93.8
	I don't know	2	5.7	6.3	100.0
	Total	32	91.4	100.0	
Missing	System	3	8.6		
Total		35	100.0		

q20 Next 5 years, need for interns will

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decrease	2	5.7	6.7	6.7
	Be about the same	13	37.1	43.3	50.0
	Increase	13	37.1	43.3	93.3
	I don't know	2	5.7	6.7	100.0
	Total	30	85.7	100.0	
Missing	System	5	14.3		
Total		35	100.0		

q21 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		*33*	*94.3*	*94.3*	*94.3*
	Need to find way to communicate that the intern program is out there for a company to use.	*1*	*2.9*	*2.9*	*97.1*
	We usually hire local students for internships (MN/WI border areas).	*1*	*2.9*	*2.9*	*100.0*
	Total	*35*	*100.0*	*100.0*	

Employer Survey Summary and Results

The Employee Survey component of the Academic Program Review 2008 focused on the graduate (full time) employers and the Internship (temporary) employers. The survey was developed by Prof. Ed Muccio and electronically transmitted to the employer contacts as provided by Career Services for the full-time contacts and the Plastics and Rubber Engineering Technology department for the intern (temporary) contacts. Approximately 370 surveys were sent and approximately 90 were returned.

The following responses and charts indicate that the significant majority of responders were satisfied with the students and/or graduates of the Plastics Programs. Of particular interest is question # 8 (***areas and levels of importance***). While over 90% of the responders considered themselves *Plastics Processors*, it can be seen the diversity of technology and perceived level of importance was broad.

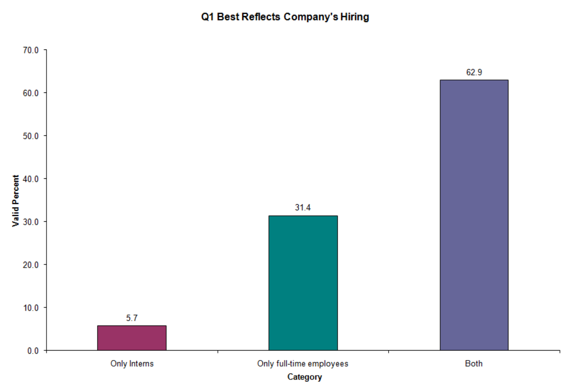
Conclusions drawn from the data in terms of suggested actions include:

Maintaining the electronic database for industry contacts (employers) both on a university and department level is critical

Approximately 50% of the responders indicated that they have never visited the Plastics Programs at Ferris State. It can be concluded that an ***Employers Day*** event may be of value to link employers and the program more closely

Included with the statistical analysis and charted data is the original survey sent to employers and the raw statistical data as compiled by FSU Instructional Research and Testing (Amy Otteson).

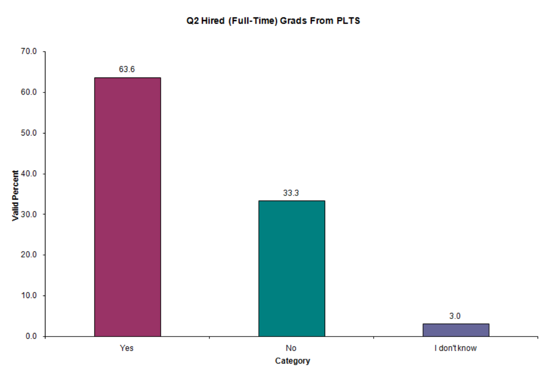
Submitted and developed by Prof. Ed Muccio March 2008



Q1 Which of the following best reflects your company's hiring?

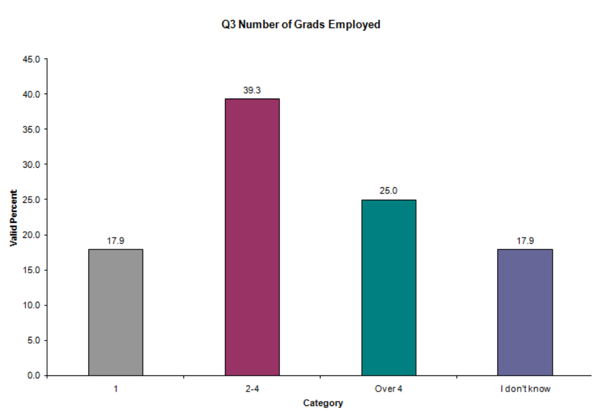
- Only interns
- Only full-time employees
- Both

Graduate Related Data



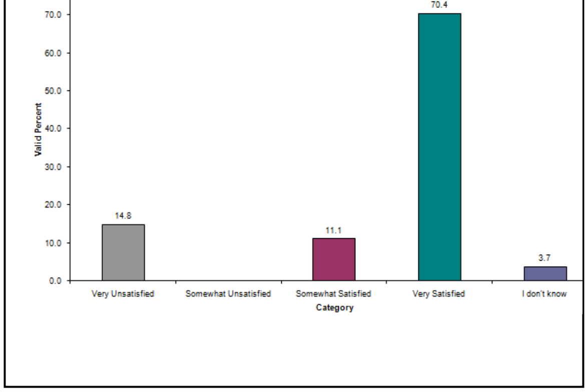
Q2 Have you hired (full-time) a graduate from the Plastics program?

- Yes
- No
- I don't know



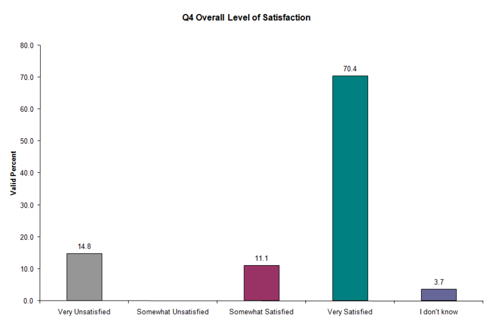
Q3 How many graduates are employed within your company?

- 1
- 2-4
- Over 4
- I don't know



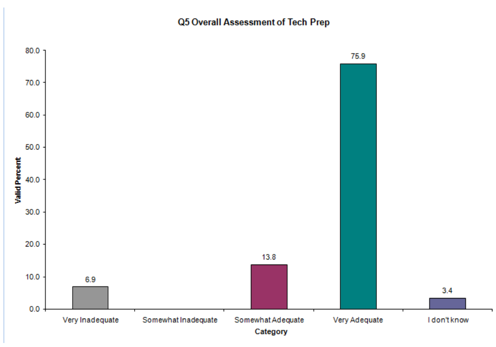
Q4 What is your overall level of satisfaction with these graduates?

- Very Unsatisfied
- Somewhat Unsatisfied
- Somewhat Satisfied
- Very Satisfied
- I don't know



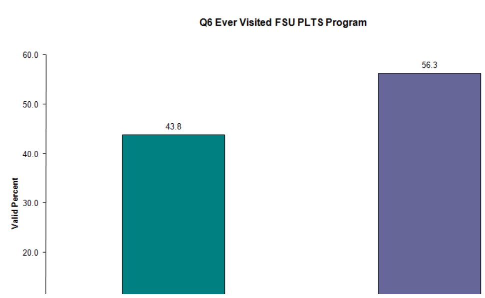
Q5 What is your overall assessment of the technical preparation

- Very Inadequate
- Somewhat Inadequate
- Somewhat Adequate
- Very Adequate
- I don't know



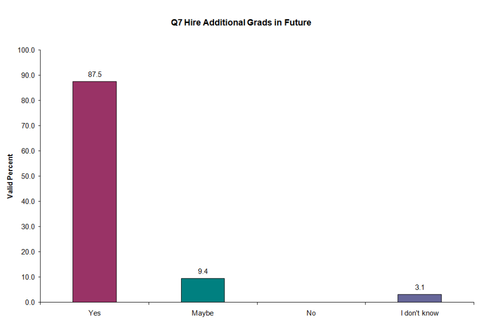
Q6 Have you ever visited the FSU Plastics Program?

- Yes
- No



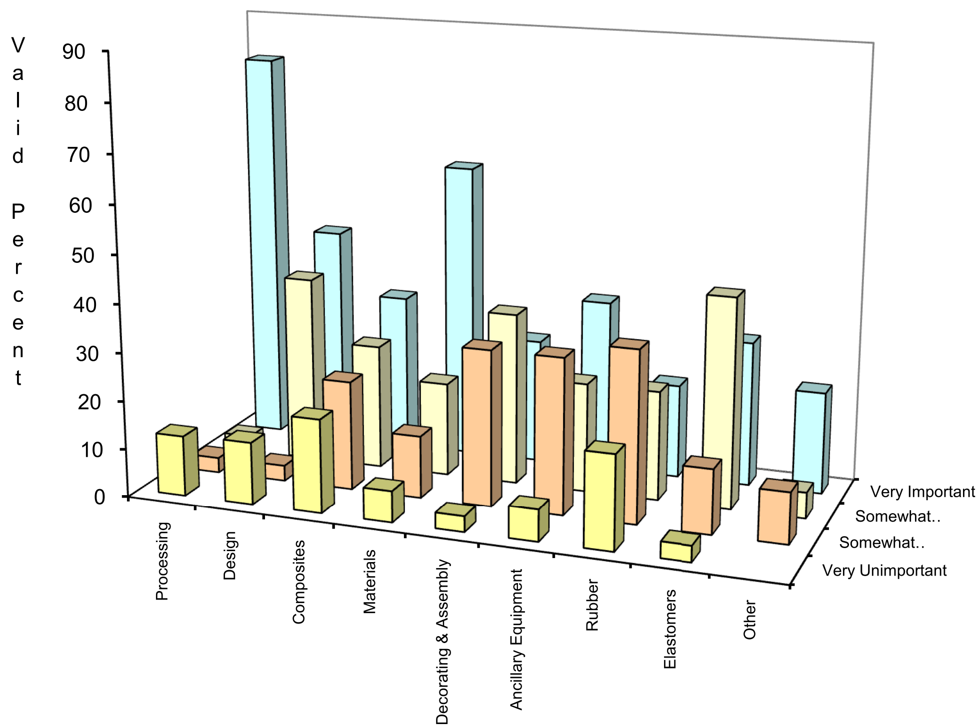
Q7 Would you hire additional FSU Plastics grads in the future?

- Yes
- Maybe
- No
- I don't know



Q8 **Please indicate the level of importance each of these areas has in your company.**

	Very Unimportant	Somewhat Unimportant	Somewhat Important	Very Important	Don't Know
Processing	◯	◯	◯	◯	◯
Design	◯	◯	◯	◯	◯
Composites	◯	◯	◯	◯	◯
Materials	◯	◯	◯	◯	◯
Decorating & Assembly	◯	◯	◯	◯	◯
Ancillary Equipment	◯	◯	◯	◯	◯
Rubber	◯	◯	◯	◯	◯
Elastomers	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯



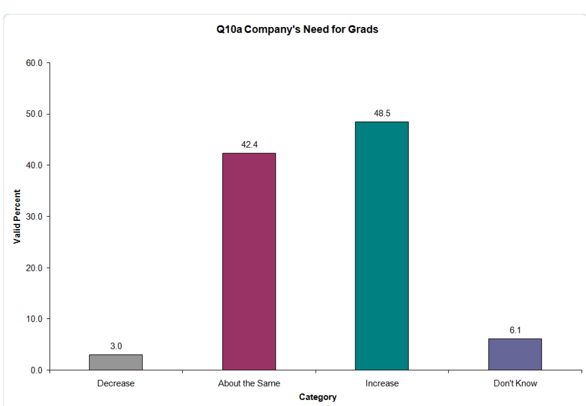
Q9 If you selected "Other" for the previous question, please elaborate here.

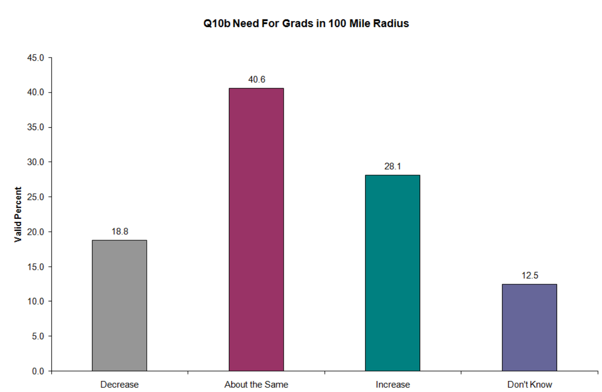
q9 Importance: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		27	77.1	77.1	77.1
	Good tech skills on machines as well as good communication skills	1	2.9	2.9	80.0
	I'm a technical Recruiter. I place Process, Project & Tooling Engineers with plastics skills on a regular basis. I recruit based on my client's requirements. I have both Plastics & Rubber molding clients.	1	2.9	2.9	82.9
	I am not sure about those areas specifically.	1	2.9	2.9	85.7
	Plastic Extrusion	1	2.9	2.9	88.6
	RJG Technology	1	2.9	2.9	91.4
	Tooling & Program Management	1	2.9	2.9	94.3
	Tooling Machine Design (hydraulics, controls, drives, plastication, structure)	1	2.9	2.9	97.1
	Two shot injestion molding	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Q10 **Please indicate your company's perception of the need for each of the following within the next 5 years.**

	Decrease	About the Same	Increase	Don't Know
The need for plastics graduates in my company will	○	○	○	○
The need for plastics grads within a 100 mile radius of my company will	○	○	○	○





Q11 Knowledge of International aspects of the plastics industry

- Can be learned on job/not a requirement
- Important
- Critical

Q12 What are the 2 or 3 most important personal attributes you would like to see in a plastics graduate?

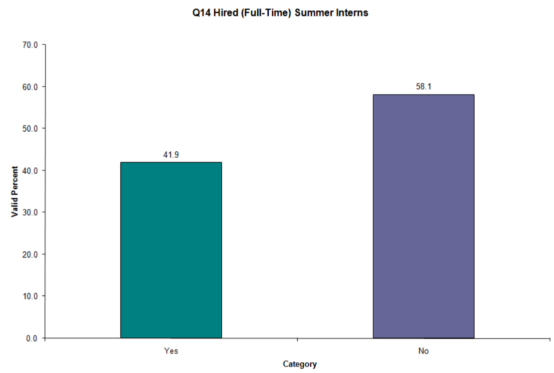
q12 2 or 3 most important personal attributes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		10	28.6	28.6	28.6
	1 Hardworking 2 Dedicated 3 Self Motivated	1	2.9	2.9	31.4
	1) Highly Intelligent 2) Hard Working 3) Dedeicated and committed to a successful profesional career 3) Great interpesonal skills	1	2.9	2.9	34.3
	1) Sense of ownership for the process and related equipment, tooling and products. 2) Verbal and written communication skills. 3) Understanding that promotions and salary increases come in time, not necessarily in year one or two.	1	2.9	2.9	37.1
	Assertiveness to complete projects with little information. Reliability and follow through.	1	2.9	2.9	40.0
	Blue Sky thinking Technicially driven candidates	1	2.9	2.9	42.9
	Broad understanding Strong application knowledge	1	2.9	2.9	45.7
	Communication Adaptability with various personalities	1	2.9	2.9	48.6
	Communication, organization and drive to complete a goal	1	2.9	2.9	51.4
	Communications, presentations skills. Professional presence	1	2.9	2.9	54.3
	Creativity in problem solving Accountability Organization	1	2.9	2.9	57.1
	Flexibility, Team Player and Accountability	1	2.9	2.9	60.0
	Good communication skills and ability for teamwork.	1	2.9	2.9	62.9
	I think the people we have used fit well into our enviroment	1	2.9	2.9	65.7
	LOOK SOMEBODY IN THE EYES WHEN YOU SPEAK TO THEM. The ear, nose, tongue earrings, facial hair, sloppy appearance & absence of preparation for interviews (resumes, project reports, molded articles etc;) is a guarantee that your opportunities will be limited.	1	2.9	2.9	68.6
	motivated to learn and grow willing to work from the ground up personable and confident to communicate with customers	1	2.9	2.9	71.4
	Positive Attitude, Logical reasoning skills	1	2.9	2.9	74.3
	project & team management skills communication skills	1	2.9	2.9	77.1
	seeks production improvements can work with all levels of employees (the GED to the MS) can help in training/explaining technical aspects to workers to enable better team efforts	1	2.9	2.9	80.0
	Self-starter, flexibility and open to challenges.	1	2.9	2.9	82.9
	self motivated-willingness to take on responsibilities for issues and stay with them until resolved Interaction with employees on the floor is critical	1	2.9	2.9	85.7
	Self starter and personable	1	2.9	2.9	88.6
	Team player Good communication - both verbally and in writing	1	2.9	2.9	91.4
	That is difficult as every individual is different. For the most part my clients are looking for individuals who are eager to learn more, not indiviuals who think they have a degree and know everything there is to know about the processes.	1	2.9	2.9	94.3
	Understand that they have only scratched the surface and there is much more that is needed to learn in the work force. How to interact with customers	1	2.9	2.9	97.1
	Work ethic, people and computer skills	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Intern Related

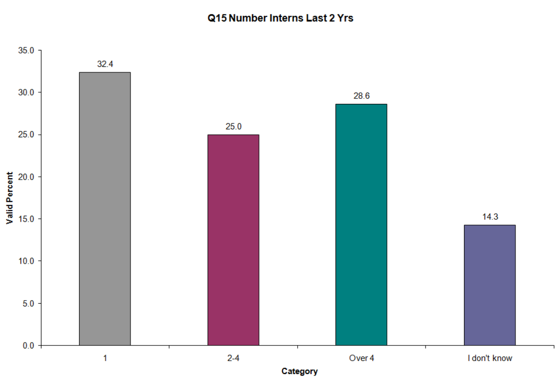
Q14 Have you hired (full time) a summer intern from the Plastics program?

- Yes
- No
- I don't know



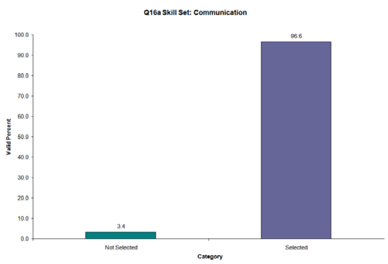
Q15 How many interns are employed within your company in the last 2 years?

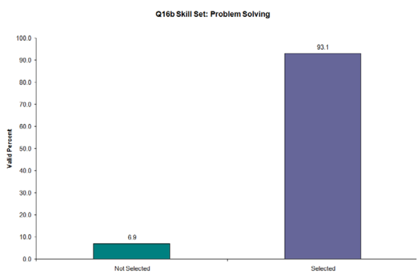
- 1
- 2-4
- Over 4
- I don't know

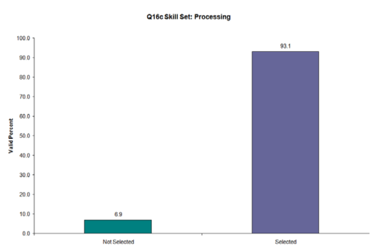


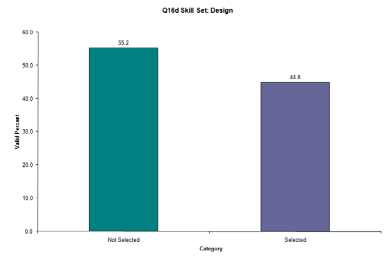
Q16 Which of the following skill sets are you looking for in an intern? *(Please select all that apply.)*

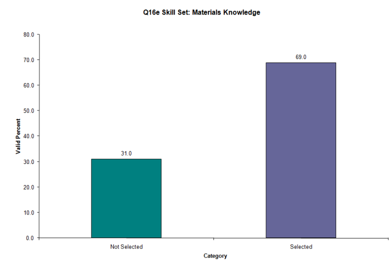
- Communication
- Problem solving
- Processing
- Design
- Materials knowledge
- Other

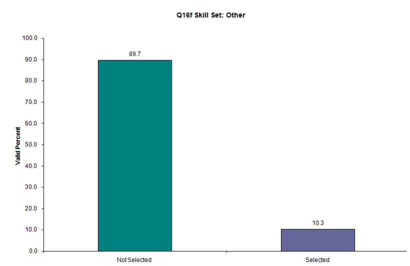






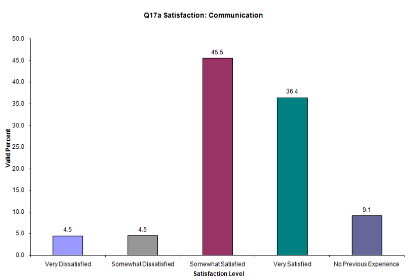


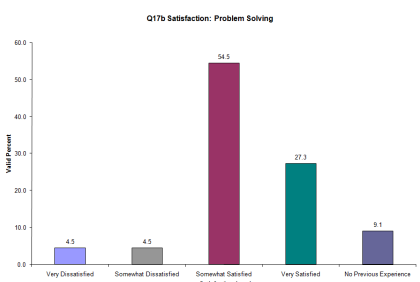


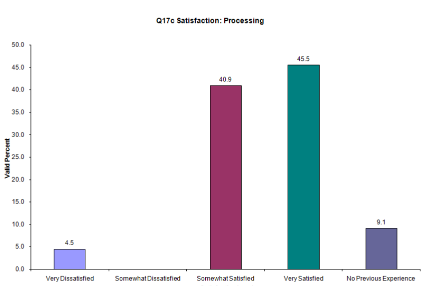


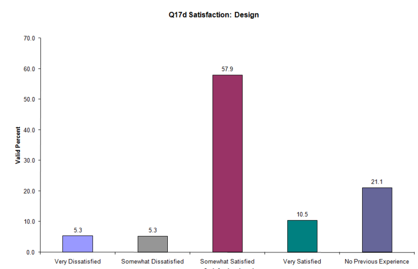
Q17 **Based on your experience with previous interns, please rate your level of satisfaction with the intern's skills in the following areas.**

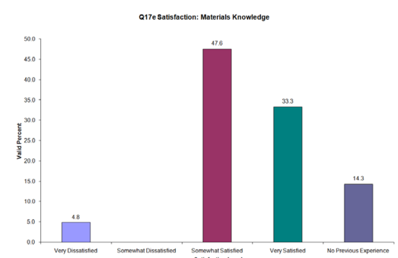
	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	No Previous Experience
Communication					
Problem solving					
Processing					
Design					
Materials knowledge					
Other					

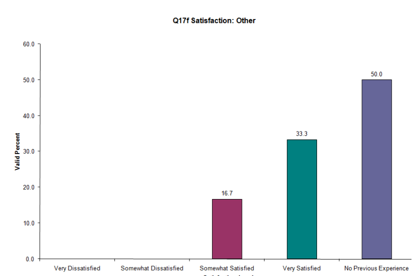












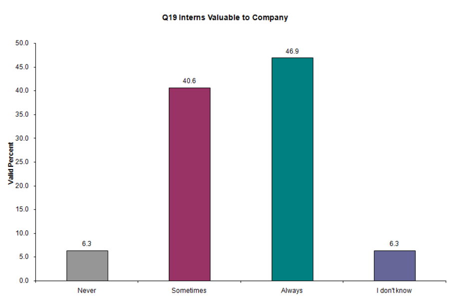
Q18 If you answered "Other" in the question above, please elaborate here.

q18 Satisfaction: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		31	88.6	88.6	88.6
	Demonstrated commitment to achieve a quality result. Very organized.	1	2.9	2.9	91.4
	I cannot speak on behalf of the interns we've had.	1	2.9	2.9	94.3
	No interns came from the Ferris Plastics program.	1	2.9	2.9	97.1
	Please disgard the other, hit by accident!	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

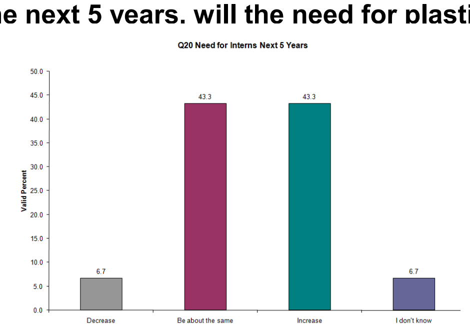
Q19 Plastics interns are valuable to my company

- Never
- Sometimes
- Always
- I don't know



Q20 In terms of your company's perception of the next 5 years, will the need for plastics interns

- Decrease
- Be about the same
- Increase
- I don't know



q21 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		33	94.3	94.3	94.3
	Need to find way to communicate that the intern program is out there for a company to use.	1	2.9	2.9	97.1
	We usually hire local students for internships (MN/WI border areas).	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Section 2B

SURVEY SUMMARY

Employer Survey Summary

Strong survey response indicators that are consistent with program goals:

- As a program model, the following skill sets are repeated within the data signifying importance: communication skills, problem solving skills, processing skills, material knowledge, and design skills.
- The match of the curriculum to the knowledge/skill base that industry needs is supported by the percentage of importance (highly or somewhat) in the following areas currently taught within the program:
    - 84% Design
    - 84% Processing
    - 81% Materials

- Substantiating the response to the report section on the value of the program as well as support for the curriculum matching industry needs, the employer survey indicated the following:
    - 81% were satisfied with FSU Plastics Program graduate's performance.
    - 87% indicated they will hire FSU Plastics Program interns or graduates in the future.
    - 89% indicated the students had adequate technical preparation for the job.

Section 2C

SURVEY SUMMARY

Graduating Student Exit Survey

Currently the program does not survey graduating students. The development of and implementation of this type of survey will be a goal for the future.

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Current Students

As part of the Academic Program Review (APR) process, the Plastics Department is asking current Ferris State University Plastics students to please take a few minutes to complete this survey. Your responses are very important for the improvement and continued success of the Plastics Engineering Technology program.

Q1 Which degree are you currently trying to obtain in the Plastics Program?

- 1-Associate's
- 2-Bachelor's
- 3-Both

Q2 Which internship(s) have you completed?

- 1-None
- 2-1st
- 3-2nd
- 4-Both

Q3 What is your transfer status?

- 1-None, didn't transfer into PLTS from anywhere
- 2-Transferred in from within another FSU curriculum
- 3-Transferred from a coll/univ outside of FSU

Q4 What are your plans/goals after completing your FSU degree(s)?

- 1-Further education
- 2-Work
- 3-Work & education
- 4-Other

Q5 Are you aware of the placement data & average starting salaries for the graduates of the Plastics programs?

- 1-No
- 2-Placement data only
- 3-Average starting salaries only
- 4-Both
- 5-Other data about the program(s)

Q6 Is/are your parent(s) aware of the placement data & average starting salaries for the graduates of the Plastics programs?

- 1-No
- 2-Placement data only
- 3-Average starting salaries only
- 4-Both
- 5-Other data about the program(s)

Q7 **Q7-19: Please indicate your opinion of how relevant you feel each of the following Plastics courses have been so far in regards to your career expectations.**

	1-Haven't Taken Yet	2-Not Relevant	3-Somewhat Relevant	4-Very Relevant
Q7: PLTS110: Intro to Plastics Technology	◯	◯	◯	◯
Q8: PLTS121: Plastics Processing I (everything but Injection Molding)	◯	◯	◯	◯
Q9: PLTS211: Plastics Processing 2 (1st Inj Molding course in series)	◯	◯	◯	◯
Q10: PLTS223: Plastics Testing & Physical Properties	◯	◯	◯	◯
Q11: PLTS212: Plastics Product & Tool Design I	◯	◯	◯	◯
Q12: PLTS312: Plastics Product & Tool Design 2	◯	◯	◯	◯
Q13: PLTS320: Plastics & Elastic Materials	◯	◯	◯	◯
Q14: PLTS321: Advanced Injection Molding	◯	◯	◯	◯
Q15: PLTS300: Plastics Engineering Management	◯	◯	◯	◯
Q16: PLTS411: Plastics Decorating & Assembly	◯	◯	◯	◯
Q17: PLTS499: Plastics Career Skills	◯	◯	◯	◯
Q18: PLTS410: Plastics Costing, Packaging & Economics	◯	◯	◯	◯
Q19: PLTSXXX: Additional Plastics Electives that have been offered	◯	◯	◯	◯

Q8 **Q20-32: In your opinion, how necessary do you feel the following plastics courses are for a "complete" Plastics curriculum?**

	1-Haven't Taken Yet	2-Should Not Be In	3-Not Core, but Technical Elective	4-Not Vital, But Core	5-Essential
Q20: PLTS110: Intro to Plastics Technology	○	○	○	○	○
Q21: PLTS121: Plastics Processing 1 (everything but Injection Molding)	○	○	○	○	○
Q22: PLTS211: Plastics Processing 2 (1st Inj Molding course in series)	○	○	○	○	○
Q23: PLTS223: Plastics Testing & Physical Properties	○	○	○	○	○
Q24: PLTS212: Plastics Product & Tool Design I	○	○	○	○	○
Q25: PLTS312: Plastics Product & Tool Design 2	○	○	○	○	○
Q26: PLTS320: Plastics & Elastic Materials	○	○	○	○	○
Q27: PLTS321: Advanced Injection Molding	○	○	○	○	○
Q28: PLTS300: Plastics Engineering Management	○	○	○	○	○
Q29: PLTS411: Plastics Decorating & Assembly	○	○	○	○	○
Q30: PLTS499: Plastics Career Skills	○	○	○	○	○
Q31: PLTS410: Plastics Costing, Packaging & Economics	○	○	○	○	○
Q32: PLTSXXX: Additional Plastics Electives that have been offered	○	○	○	○	○

Q9 **Q33: Please indicate your level of satisfaction with the training/education you received from the Plastics program in terms of meeting your expectations.**

- ○ 1-Very Unsatisfied
- ○ 2-Somewhat Unsatisfied
- ○ 3-Somewhat Satisfied
- ○ 4-Very Satisfied

Q10 **Q34: Do you feel that the Plastics courses are structured to help you develop the necessary skill sets necessary for employment in the plastics industry?**

- ○ 1-Skill sets are not really taught
- ○ 2-Skill sets are not in keeping with industry needs
- ○ 3-Relevant skill sets are taught but not fully mastered
- ○ 4-Highly relevant skill sets are mastered

Q11 **Q35: How necessary do you feel the lab experiences have been to developing those skill sets?**

- ○ 1-Skill sets are not really taught
- ○ 2-Somewhat helpful but not necessary to development of skill sets
- ○ 3-Provides nice augmentation for skill set development
- ○ 4-Indispensable to developing skill sets

Q12 **q36-40: To what degree do you believe labs are structured to reinforce the theoretical principles discussed in the lecture courses listed below?**

	1-Essentially No Relation to Lecture	2-Some Minor Principles Reinforced	3-Most Principles Reinforced	4-Highly Related to Lecture
Q36: Processing courses	○	○	○	○
Q37: Product & Tooling Design courses	○	○	○	○
Q38: Testing course	○	○	○	○
Q39: Plastics Engineering Management course	○	○	○	○
Q40: Plastics Decorating & Assembly course	○	○	○	○

Q13 **Q41: How consistent is the Plastics material taught from course to course?**

- ○ 1-Very inconsistent (becomes an obstacle)
- ○ 2-Somewhat inconsistent (makes some material confusing)
- ○ 3-Somewhat consistent (noticeable, but no effect on comprehension of course material)
- ○ 4-Very consistent

Q14 **Q42: How well are your plastics courses related to each other?**

- ○ 1-Not related at all ("stand alone")
- ○ 2-Somewhat related
- ○ 3-Highly related

Q15 **Q43: How do you feel about the current student/teacher ratio in your plastics classes?**

- ○ 1-Too many students
- ○ 2-Too few students
- ○ 3-Optimal ratio

Q16 **Q44: According to your impressions drawn from the classroom & laboratory, how qualified do you feel the instructors are in teaching their respective courses?**

- ○ 1-Don't understand question/no opinion
- ○ 2-Don't have much confidence in their knowledge/skills
- ○ 3-Marginal/just adequate
- ○ 4-Well enough versed with technology to be qualified
- ○ 5-Highly qualified

Q17 **Q45-50: Please indicate how up-to-date you feel the current equipment is in each of the following labs.**

	1-Very Outdated, no relevance	2-Somewhat Outdated, some relevance	3-Representative of current industry	4-State-of-the-Art
Q45: Testing Lab (PLTS223)	○	○	○	○
Q46: Tooling Lab	○	○	○	○
Q47: CAD & flow analysis software	○	○	○	○
Q48: Processing Labs	○	○	○	○
Q49: Decorating & Assembly Labs	○	○	○	○
Q50: Project Management software	○	○	○	○

Q18 **Please indicate your level of agreement with each of the following statements.**

	1-Strongly Disagree	2-Somewhat Disagree	3-Somewhat Agree	4-Strongly Agree
Q51: The instructors are well qualified to teach their respective courses.				
Q52: The course content is being taught very well in each of my classes.				
Q53: The Plastics program represents a good value for the money spent.				
Q54: Each course content is in line with my needs/interests.				
Q55: There are enough workstations in the lab for current class sizes.				
Q56: I feel safe when working in the non-computer labs.				
Q57: The lab equipment in the testing labs is well-maintained.				
Q58: The lab equipment in the decorating & assembly labs is well-maintained.				
Q59: The lab equipment in the computer labs is well-maintained.				
Q60: The internship experience(s) was/were valuable to my education.				
Q61: My advisor has been valuable in guiding my choices.				
Q62: I made the right choice in selecting the Plastics program at FSU.				
Q63: I am comfortable recommending FSU's Plastics program to others.				

Q19 If you answered "Other" to Q4 "What are your plans/goals after completing your FSU degree(s)?", please use this space to specify "Other."

Q20 If you answered "Other data about the programs" to Q5 "Are you aware of the placement data & average starting salaries for the graduates of the Plastics programs?", please use this space to specify what other data you mean.

Q21 If you answered "Other data about the programs" to Q6 "Is/are your parent(s) aware of the placement data & average starting salaries for the graduates of the Plastics programs?", please use this space to specify what other data you mean.

Q22 Please indicate here where you will be attending school and/or working.

Q23 Why did you select Plastics Engineering as your major?

Q24 Specifically, what helped you choose to attend FSU's Plastics Engineering Technology program?

Q25 What opportunities do you feel will be available to you as a graduate of the FSU Plastics program?

Q26 Please use this space for additional comments.

Thank you for your time and input.

Explanation and Purpose:

Once every six years the Ferris State Plastics Programs conducts a review of its AAS and BS programs. The purpose of such a Review is to asses our programs' strengths and weaknesses and then use the information gathered in the review process to guide our plans for the future of the Plastics Programs. This Review process consists, in part, of survey instruments used to gather information from all sources both within and without of the University. Industry sources, as well as the faculty, our alumni and the currently enrolled student population, are all to be polled through survey as to their perceptions on various aspects of our Plastics Programs. So today you are being asked to participate in the review process by giving us your perspective on the Plastics Programs. The survey instrument is to be distributed and you are asked to honestly and thoughtfully answer it. Remember we are looking for constructive critiquing, which means that both positive and negative comments are welcomed but please try to maintain a balance. Negative responses tell us what might need to change but Positive responses are also needed to tell us what to keep. Without the Positive responses we may not know what has been important and useful to the programs and your learning experiences.

Instructions:

Your identity is to be kept entirely anonymous, so do NOT include your name on any answer sheets. The first 63 questions are to be answered on the Scantron answer sheet provided using a #2 pencil. If you do NOT have a #2 pencil ask your instructor and one will be provided. Do NOT mark anything on the Questionnaire itself…. However any responses to the 'fill-in' or text questions #64 – 71 shall be written directly onto the provided two-sheet Questionnaire addendum. Thank you for your cooperation.

Frequency Table

Current Students

q1 Degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Associate's	10	11.0	11.1	11.1
	Bachelor's	38	41.8	42.2	53.3
	Both	42	46.2	46.7	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q2 Internships

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	37	40.7	40.7	40.7
	1st	38	41.8	41.8	82.4
	2nd	6	6.6	6.6	89.0
	Both	10	11.0	11.0	100.0
	Total	91	100.0	100.0	

q3 Transfer status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	50	54.9	54.9	54.9
	From different FSU program	25	27.5	27.5	82.4
	From different institution	16	17.6	17.6	100.0
	Total	91	100.0	100.0	

q4 Plans/goals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Further education	5	5.5	5.5	5.5
	Work	56	61.5	61.5	67.0
	Work & education	29	31.9	31.9	98.9
	Other	1	1.1	1.1	100.0
	Total	91	100.0	100.0	

q5 Placement data/salaries

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	3.3	3.3	3.3
	Placement data only	8	8.8	8.8	12.1
	Avg starting salaries only	5	5.5	5.5	17.6
	Both	75	82.4	82.4	100.0
	Total	91	100.0	100.0	

q6 Parents aware of data/salaries

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	18	19.8	19.8	19.8
	Placement data only	13	14.3	14.3	34.1
	Avg starting salaries only	4	4.4	4.4	38.5
	Both	56	61.5	61.5	100.0
	Total	91	100.0	100.0	

q7 Relevant: PLTS110

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	3	3.3	3.3	3.3
	Not Relevant	2	2.2	2.2	5.5
	Somewhat Relevant	28	30.8	30.8	36.3
	Very Relevant	58	63.7	63.7	100.0
	Total	91	100.0	100.0	

q8 Relevant: PLTS121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	6	6.6	6.7	6.7
	Not Relevant	3	3.3	3.3	10.0
	Somewhat Relevant	22	24.2	24.4	34.4
	Very Relevant	59	64.8	65.6	100.0
	Total	90	98.9	100.0	
Missing	5	1	1.1		
Total		91	100.0		

q9 Relevant: PLTS211

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	31	34.1	34.8	34.8
	Not Relevant	1	1.1	1.1	36.0
	Somewhat Relevant	6	6.6	6.7	42.7
	Very Relevant	51	56.0	57.3	100.0
	Total	89	97.8	100.0	
Missing	5	1	1.1		
	System	1	1.1		
	Total	2	2.2		
Total		91	100.0		

q10 Relevant: PLTS223

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	23	25.3	25.3	25.3
	Not Relevant	1	1.1	1.1	26.4
	Somewhat Relevant	23	25.3	25.3	51.6
	Very Relevant	44	48.4	48.4	100.0
	Total	91	100.0	100.0	

q11 Relevant: PLTS212

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	31	34.1	34.1	34.1
	Not Relevant	4	4.4	4.4	38.5
	Somewhat Relevant	16	17.6	17.6	56.0
	Very Relevant	40	44.0	44.0	100.0
	Total	91	100.0	100.0	

q12 Relevant: PLTS312

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	50	54.9	54.9	54.9
	Not Relevant	5	5.5	5.5	60.4
	Somewhat Relevant	10	11.0	11.0	71.4
	Very Relevant	26	28.6	28.6	100.0
	Total	91	100.0	100.0	

q13 Relevant: PLTS320

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	50	54.9	55.6	55.6
	Somewhat Relevant	4	4.4	4.4	60.0
	Very Relevant	36	39.6	40.0	100.0
	Total	90	98.9	100.0	
Missing	5	1	1.1		
Total		91	100.0		

q14 Relevant: PLTS321

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	49	53.8	53.8	53.8
	Not Relevant	1	1.1	1.1	54.9
	Somewhat Relevant	4	4.4	4.4	59.3
	Very Relevant	37	40.7	40.7	100.0
	Total	91	100.0	100.0	

q15 Relevant: PLTS300

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	54	59.3	59.3	59.3
	Not Relevant	1	1.1	1.1	60.4
	Somewhat Relevant	17	18.7	18.7	79.1
	Very Relevant	19	20.9	20.9	100.0
	Total	91	100.0	100.0	

q16 Relevant: PLTS411

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	69	75.8	75.8	75.8
	Not Relevant	3	3.3	3.3	79.1
	Somewhat Relevant	9	9.9	9.9	89.0
	Very Relevant	10	11.0	11.0	100.0
	Total	91	100.0	100.0	

q17 Relevant: PLTS499

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	64	70.3	70.3	70.3
	Not Relevant	3	3.3	3.3	73.6
	Somewhat Relevant	13	14.3	14.3	87.9
	Very Relevant	11	12.1	12.1	100.0
	Total	91	100.0	100.0	

q18 Relevant: PLTS410

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	56	61.5	62.2	62.2
	Not Relevant	1	1.1	1.1	63.3
	Somewhat Relevant	14	15.4	15.6	78.9
	Very Relevant	19	20.9	21.1	100.0
	Total	90	98.9	100.0	
Missing	5	1	1.1		
Total		91	100.0		

q19 Relevant: PLTSXXX (Add'l electives)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	52	57.1	57.1	57.1
	Somewhat Relevant	18	19.8	19.8	76.9
	Very Relevant	21	23.1	23.1	100.0
	Total	91	100.0	100.0	

q20 Necessary: PLTS110

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	4	4.4	4.4	4.4
	Not Core, Tech Elective	5	5.5	5.6	10.0
	Not Vital, but Core	33	36.3	36.7	46.7
	Essential	48	52.7	53.3	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q21 Necessary: PLTS121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	6	6.6	6.6	6.6
	Not Core, Tech Elective	6	6.6	6.6	13.2
	Not Vital, but Core	29	31.9	31.9	45.1
	Essential	50	54.9	54.9	100.0
	Total	91	100.0	100.0	

q22 Necessary: PLTS211

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	31	34.1	34.1	34.1
	Not Vital, but Core	15	16.5	16.5	50.5
	Essential	45	49.5	49.5	100.0
	Total	91	100.0	100.0	

q23 Necessary: PLTS223

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	24	26.4	26.4	26.4
	Not Core, Tech Elective	4	4.4	4.4	30.8
	Not Vital, but Core	28	30.8	30.8	61.5
	Essential	35	38.5	38.5	100.0
	Total	91	100.0	100.0	

q24 Necessary: PLTS212

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	30	33.0	33.0	33.0
	Not Core, Tech Elective	4	4.4	4.4	37.4
	Not Vital, but Core	27	29.7	29.7	67.0
	Essential	30	33.0	33.0	100.0
	Total	91	100.0	100.0	

q25 Necessary: PLTS312

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	48	52.7	52.7	52.7

	Should not be in	1	1.1	1.1	53.8
	Not Core, Tech Elective	5	5.5	5.5	59.3
	Not Vital, but Core	19	20.9	20.9	80.2
	Essential	18	19.8	19.8	100.0
	Total	91	100.0	100.0	

q26 Necessary: PLTS320

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	48	52.7	52.7	52.7
	Not Vital, but Core	9	9.9	9.9	62.6
	Essential	34	37.4	37.4	100.0
	Total	91	100.0	100.0	

q27 Necessary: PLTS321

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	48	52.7	53.3	53.3
	Not Core, Tech Elective	1	1.1	1.1	54.4
	Not Vital, but Core	8	8.8	8.9	63.3
	Essential	33	36.3	36.7	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q28 Necessary: PLTS300

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	52	57.1	57.1	57.1
	Not Core, Tech Elective	7	7.7	7.7	64.8
	Not Vital, but Core	22	24.2	24.2	89.0
	Essential	10	11.0	11.0	100.0
	Total	91	100.0	100.0	

q29 Necessary: PLTS411

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	64	70.3	70.3	70.3
	Not Core, Tech Elective	6	6.6	6.6	76.9
	Not Vital, but Core	12	13.2	13.2	90.1

	Essential	*9*	*9.9*	*9.9*	*100.0*
	Total	*91*	*100.0*	*100.0*	

q30 Necessary: PLTS499

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	61	67.0	67.0	67.0
	Should not be in	2	2.2	2.2	69.2
	Not Core, Tech Elective	6	6.6	6.6	75.8
	Not Vital, but Core	14	15.4	15.4	91.2
	Essential	8	8.8	8.8	100.0
	Total	91	100.0	100.0	

q31 Necessary: PLTS410

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	55	60.4	60.4	60.4
	Should not be in	1	1.1	1.1	61.5
	Not Core, Tech Elective	5	5.5	5.5	67.0
	Not Vital, but Core	21	23.1	23.1	90.1
	Essential	9	9.9	9.9	100.0
	Total	91	100.0	100.0	

q32 Necessary: PLTSXXX (Add'l electives)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Haven't taken	47	51.6	51.6	51.6
	Not Core, Tech Elective	19	20.9	20.9	72.5
	Not Vital, but Core	19	20.9	20.9	93.4
	Essential	6	6.6	6.6	100.0
	Total	91	100.0	100.0	

q33 Level of satis w/ train/educ from PLTS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unsatisfied	6	6.6	6.6	6.6
	Somewhat Unsatisfied	2	2.2	2.2	8.8
	Somewhat Satisfied	31	34.1	34.1	42.9
	Very Satisfied	52	57.1	57.1	100.0
	Total	91	100.0	100.0	

q34 Courses help develop necessary skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Relevant skills taught, not mastered	55	60.4	60.4	60.4
	Highly relevant skills mastered	36	39.6	39.6	100.0
	Total	91	100.0	100.0	

q35 Labs necessary to develop skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat helpful, not necessary	2	2.2	2.2	2.2
	Nice augmentation for development	26	28.6	28.9	31.1
	Indispensable to skill development	62	68.1	68.9	100.0
	Total	90	98.9	100.0	
Missing	5	1	1.1		
Total		91	100.0		

q36 Lab/Lec: Processing courses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Relation	1	1.1	1.1	1.1
	Some Minor Principles	2	2.2	2.3	3.4
	Most Principles	27	29.7	30.7	34.1
	Highly Related	58	63.7	65.9	100.0
	Total	88	96.7	100.0	
Missing	5	1	1.1		
	System	2	2.2		
	Total	3	3.3		
Total		91	100.0		

q37 Lab/Lec: Product & Tooling Design courses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some Minor Principles	7	7.7	8.0	8.0
	Most Principles	34	37.4	39.1	47.1
	Highly Related	46	50.5	52.9	100.0
	Total	87	95.6	100.0	
Missing	System	4	4.4		
Total		91	100.0		

q38 Lab/Lec: Testing course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some Minor Principles	4	4.4	4.6	4.6
	Most Principles	34	37.4	39.1	43.7
	Highly Related	49	53.8	56.3	100.0
	Total	87	95.6	100.0	
Missing	5	1	1.1		
	System	3	3.3		
	Total	4	4.4		
Total		91	100.0		

q39 Lab/Lec: Plastics Eng Mgmt course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Relation	3	3.3	3.9	3.9
	Some Minor Principles	12	13.2	15.6	19.5
	Most Principles	38	41.8	49.4	68.8
	Highly Related	24	26.4	31.2	100.0
	Total	77	84.6	100.0	
Missing	5	2	2.2		
	System	12	13.2		
	Total	14	15.4		
Total		91	100.0		

q40 Lab/Lec: Plastics Decorating & Assembly course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Relation	1	1.1	1.4	1.4
	Some Minor Principles	7	7.7	9.5	10.8
	Most Principles	38	41.8	51.4	62.2
	Highly Related	28	30.8	37.8	100.0
	Total	74	81.3	100.0	
Missing	5	4	4.4		
	System	13	14.3		
	Total	17	18.7		
Total		91	100.0		

q41 Material consistency course to course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very inconsistent	*1*	*1.1*	*1.1*	*1.1*
	Somewhat inconsistent	*3*	*3.3*	*3.3*	*4.4*
	Somewhat consistent	*46*	*50.5*	*50.5*	*54.9*
	Very consistent	*41*	*45.1*	*45.1*	*100.0*
	Total	*91*	*100.0*	*100.0*	

q42 PLTS courses related to each other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not related at all	*1*	*1.1*	*1.1*	*1.1*
	Somewhat related	*23*	*25.3*	*25.8*	*27.0*
	Highly related	*65*	*71.4*	*73.0*	*100.0*
	Total	*89*	*97.8*	*100.0*	
Missing	4	*2*	*2.2*		
Total		*91*	*100.0*		

q43 Student/teacher ratio in PLTS classes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Too many students	*6*	*6.6*	*6.6*	*6.6*
	Too few students	*3*	*3.3*	*3.3*	*9.9*
	Optimal ratio	*82*	*90.1*	*90.1*	*100.0*
	Total	*91*	*100.0*	*100.0*	

q44 How qualified instructors are

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Marginally/adequate	*3*	*3.3*	*3.3*	*3.3*
	Well enough to be qualified	*44*	*48.4*	*48.9*	*52.2*
	Highly qualified	*43*	*47.3*	*47.8*	*100.0*
	Total	*90*	*98.9*	*100.0*	
Missing	System	*1*	*1.1*		
Total		*91*	*100.0*		

q45 Equipmt: Testing Lab

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Outdated	*2*	*2.2*	*2.4*	*2.4*

		Frequency	Percent	Valid Percent	Cumulative Percent
	Somewhat Outdated	16	17.6	19.0	21.4
	Representative of current	57	62.6	67.9	89.3
	State-of-the-Art	9	9.9	10.7	100.0
	Total	84	92.3	100.0	
Missing	5	1	1.1		
	System	6	6.6		
	Total	7	7.7		
Total		91	100.0		

q46 Equipmt: Tooling Lab

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Outdated	4	4.4	4.9	4.9
	Somewhat Outdated	22	24.2	26.8	31.7
	Representative of current	46	50.5	56.1	87.8
	State-of-the-Art	10	11.0	12.2	100.0
	Total	82	90.1	100.0	
Missing	5	1	1.1		
	System	8	8.8		
	Total	9	9.9		
Total		91	100.0		

q47 Equipmt: CAD & Flow Analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Outdated	4	4.4	5.0	5.0
	Somewhat Outdated	13	14.3	16.3	21.3
	Representative of current	40	44.0	50.0	71.3
	State-of-the-Art	23	25.3	28.8	100.0
	Total	80	87.9	100.0	
Missing	5	4	4.4		
	System	7	7.7		
	Total	11	12.1		
Total		91	100.0		

q48 Equipmt: Processing Lab

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Outdated	18	19.8	21.4	21.4
	Representative of current	53	58.2	63.1	84.5
	State-of-the-Art	13	14.3	15.5	100.0

		Frequency	Percent	Valid Percent	Cumulative Percent
	Total	84	92.3	100.0	
Missing	5	1	1.1		
	System	6	6.6		
	Total	7	7.7		
Total		91	100.0		

q49 Equipmt: Decorating & Assembly Labs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Outdated	1	1.1	1.3	1.3
	Somewhat Outdated	19	20.9	25.0	26.3
	Representative of current	47	51.6	61.8	88.2
	State-of-the-Art	9	9.9	11.8	100.0
	Total	76	83.5	100.0	
Missing	5	1	1.1		
	System	14	15.4		
	Total	15	16.5		
Total		91	100.0		

q50 Equipmt: Project Mgmt Software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Outdated	3	3.3	4.1	4.1
	Somewhat Outdated	12	13.2	16.2	20.3
	Representative of current	42	46.2	56.8	77.0
	State-of-the-Art	17	18.7	23.0	100.0
	Total	74	81.3	100.0	
Missing	5	1	1.1		
	System	16	17.6		
	Total	17	18.7		
Total		91	100.0		

q51 Agree: Instructors well qualified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	31	34.1	34.4	34.4
	Strongly Agree	59	64.8	65.6	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q52 Agree: Content taught very well

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	5	5.5	5.6	5.6
	Somewhat Agree	37	40.7	41.1	46.7
	Strongly Agree	48	52.7	53.3	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q53 Agree: PLTS prog good value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	7	7.7	7.8	7.8
	Somewhat Agree	31	34.1	34.4	42.2
	Strongly Agree	52	57.1	57.8	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q54 Agree: Content in line w/ needs/interests

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.1	1.1	1.1
	Somewhat Disagree	6	6.6	6.7	7.8
	Somewhat Agree	50	54.9	55.6	63.3
	Strongly Agree	33	36.3	36.7	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q55 Agree: Enough workstations in lab

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.1	1.1	1.1
	Somewhat Disagree	5	5.5	5.6	6.7
	Somewhat Agree	25	27.5	27.8	34.4
	Strongly Agree	59	64.8	65.6	100.0
	Total	90	98.9	100.0	
Missing	System	1	1.1		
Total		91	100.0		

q56 Agree: Feel safe in non-computer labs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	14	15.4	15.7	15.7
	Strongly Agree	75	82.4	84.3	100.0
	Total	89	97.8	100.0	
Missing	5	1	1.1		
	System	1	1.1		

	Total	2	2.2		
Total		91	100.0		

q57 Agree: Lab equip in test lab well-maintained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	3	3.3	3.5	3.5
	Somewhat Agree	28	30.8	32.6	36.0
	Strongly Agree	55	60.4	64.0	100.0
	Total	86	94.5	100.0	
Missing	5	1	1.1		
	System	4	4.4		
	Total	5	5.5		
Total		91	100.0		

q58 Agree: Lab equip in D&A labs well-maintained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.1	1.4	1.4
	Somewhat Disagree	3	3.3	4.1	5.4
	Somewhat Agree	27	29.7	36.5	41.9
	Strongly Agree	43	47.3	58.1	100.0
	Total	74	81.3	100.0	
Missing	5	1	1.1		
	System	16	17.6		
	Total	17	18.7		
Total		91	100.0		

q59 Agree: Lab equip in computer labs well-maintained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.2	2.3	2.3
	Somewhat Disagree	4	4.4	4.5	6.8
	Somewhat Agree	24	26.4	27.3	34.1
	Strongly Agree	58	63.7	65.9	100.0
	Total	88	96.7	100.0	
Missing	System	3	3.3		
Total		91	100.0		

q60 Agree: Internship exper(s) valuable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.1	1.4	1.4
	Somewhat Disagree	4	4.4	5.6	6.9
	Somewhat Agree	16	17.6	22.2	29.2
	Strongly Agree	51	56.0	70.8	100.0
	Total	72	79.1	100.0	
Missing	System	19	20.9		
Total		91	100.0		

q61 Agree: Advisor valuable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	7	7.7	7.9	7.9
	Somewhat Disagree	14	15.4	15.7	23.6
	Somewhat Agree	23	25.3	25.8	49.4
	Strongly Agree	45	49.5	50.6	100.0
	Total	89	97.8	100.0	
Missing	System	2	2.2		
Total		91	100.0		

q62 Agree: Made right choice selecting PLTS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.1	1.1	1.1
	Somewhat Disagree	3	3.3	3.4	4.5
	Somewhat Agree	24	26.4	27.0	31.5
	Strongly Agree	61	67.0	68.5	100.0
	Total	89	97.8	100.0	
Missing	System	2	2.2		
Total		91	100.0		

q63 Agree: Comfortable recommending prog

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.1	1.1	1.1
	Somewhat Disagree	2	2.2	2.2	3.4
	Somewhat Agree	17	18.7	19.1	22.5
	Strongly Agree	69	75.8	77.5	100.0

	Total	*89*	*97.8*	*100.0*	
Missing	System	*2*	*2.2*		
Total		*91*	*100.0*		

Plastics APR Survey Questions- Q64-71 March 2008

Q64 Why did you select Plastics Engineering as your major?

I didn't like my previous major and kind of fell into it
Growing field in a slowing economy
A good source of income in a challenging and never ending industry
I find injection molding to be interesting, especially from the design aspect. Also the high job placement.
A Rep came to my physics class in high school, I liked the job placement.
It would be interesting to try something that wasn't well known in high school & science/chemistry was my strong point.
For the money
Job placement-high demand for FSU Ferris grads
Graduated from CDTD w/AAS. Parents said I needed a 4 year degree. PLTS/RUBR matched well with classes I had already taken to get me out in approx. 4-5 years total
The job placement of the program, the starting salary and money that can be made in the industry. The career options that I have in this field.
A friend recommended it.
I heard of the program through my high school Vocational Ed. Instructor. I came and visited and the following week applied to Ferris. Also job placement and starting salary was a big influence.
Job opportunities higher than average in Plastics, especially for an Industrial program.
Because I was interested in plastics and there is a high percent of job placement.
A good fit of education for me.
Job placement, job locations, excellent pay.
Because of the job placement and starting salary
Job placement & starting wage
It fits my interests, and it is a job I can see myself enjoying.
Transferred from CDTD and it had high job placement.
After finishing my AAS in CAD I wanted a BS so I chose Plastics because it seemed to be the most fun.
My Uncle pointed me in this direction since I didn't know what I wanted to do.
Because of prior interest in plastics from high school, starting salary and job placement.
I was a CDTD student and enjoyed mold design and Moldflow and liked what I heard about the program.
Subject interest me, great job placement, and great pay.
The plastics industry seems more diverse and more stable than the automotive industry and is just as interesting.
Family went through the program. Teachers have experience in the field, excellent program.
My uncle was in the program.
It was recommended by a family member.
I had a plastics class in high school, and my tech teacher told me about the growing industry.
Job placement, salary
Because of my background in Manufacturing (27 yrs) and the job placement rate of Plastics Engineers from Ferris.
Because of the money and career placement plus it's interesting.

Q64 continued

Job placement and cool job.
An in demand material with great placement percentage and pay.
Availability of jobs, income, and highly interested in the subject.
I heard of it from a friend and then looked it up on the internet and found that it was good starting pay and good job placement.
I knew someone in the program and they recommended it to me.
Family in the program, job placement
Job Placement
Because it seemed like the most exciting major to enter after CAD.
Just interested in the plastics field
One of my high school teachers recommended it.
Thought it would be interesting.
It seemed to be the best program offered at Ferris, and Ferris was my only option for school.
Wanted to be an engineer and Plastics has a good job placement ratio.
Enjoyed math & science and thought that Plastics would have good job security.
Wanted something different.
I have a strong chemistry background and was interested in the field.
I knew I wanted to come to Ferris and the Plastics program looked good to me. My dad also works in the plastics industry.
Because of the job opportunities.
The size of the Plastics industry, hands on experience gained, specialization/scarcity of degree.
It was a very specific program related to science and technology.
Always had an interest in Plastics.
Sounded interesting, later switched to rubber as main focus.
I wanted to follow in my Father's footsteps.
Excellent job placement and good starting salaries
I like to design things, and plastics is the new up and coming industry.
Based on the materials I saw being used around me in today's world. The placement and salary stats for FSU Plastics Grads.
I realized that plastic is going to be a big part of the future and wanted to be a part of that 99.9% job placement.
Very open ended field, like hands on jobs, and new field for advancement.
I like engineering but wasn't sure which path. Plastic appealed to me because I like Ferris.
Parent in the plastics industry.
The chemistry
Good job placement & flexibility with career choices
It is my minor because I have Product Design as my major.
High job placement and unique major
After leaving mold design in my CAD curriculum, I decided I would need to learn more about plastics themselves.
Job placement, personal interest, starting salary
Family member went through program and liked what they had to say. Money & job placement.
It sounded interesting & knew someone in the program
Thought I would enjoy it and the market is great

Q64 continued

I finished the CDTD program & wanted to continue my education. I liked the plastics design aspect of that program so I decided to go into the plastics program.

The high placement along with the hands on experience that is received here.

Big industry, have possible product ideas, enjoy math & science, highly recommended program, close but far from home.

Because I heard about it from the Dean of Technology at the time and he sounded excited about it. And it's a growing field.

Seemed like an interesting field at least more so than Dir (?) making which was my other choice.

Told by a family friend to check it out. Got a tour and liked what I saw.

I was already in the rubber program, and I felt being more well rounded in both education and experience in both industries was vital.

It's something different. Lots of opportunities after graduation.

I was graduating from Manufacturing and couldn't find a satisfactory job. I enjoyed building my injection mold and wanted to learn more about plastics.

My father works in the industry and it caught my attention. I felt that I could be successful in the plastics field.

I had a plastics course in my high school. Heard Plastics Engineers made good money and told myself to go. Then picked up the Rubber program.

Because of COT's Monday Night Technology back in 1997-1998.

Job security, 100% job placement, versatility

I wanted a specialized field in the Engineering criteria.

It seemed like a good idea at the time and it was

Good starting salaries and job opportunities

I thought it would be an every growing field. With many directions to choose from.

Q65 Specifically, why did you choose the Ferris State Plastics Programs to pursue your goal of Plastics Engineer?

I chose to pursue my plastics goal because I came from another program.

Needed a Bachelors after CDTD AAS

Good job placement, close to home.

No other plastics programs around

Free school, sounded interesting

Quality teaching & lab equipment to mirror the industry that we can operate

It keeps my college career as short as possible because I could transfer from the program I was in.

Job placement. I also like manufacturing

Closest to home and it was pretty well defined

I live in Michigan and top 10 in nation

Because it is regarded as a top school throughout the country

Because I was already enrolled in Ferris, see #Q64

Because it is said to be the best.

I was already attending Ferris.

I knew I was interested in the engineering field only I did not want to sit through countless math classes and physics and such.

Q65 continued

I was living in the Big Rapids area already, and didn't want to go to another school.
Because they have one of the best programs.
Only one I know about.
One of best national learning centers. Home town.
It was the only college that I knew of that had Plastics Engineering
Location
It was random
FSU Plastics program has a good reputation.
Because I was already at Ferris, and I heard their program is one of the top programs offered.
Ferris was the only school I could attend.
I heard it was one of the better Plastics schools.
Because it is only 60 miles from where I live, and I was told it is one of the best in the country.
Because I heard Ferris is one of the best technology schools in the nation.
Ferris State is close enough to home and known for its plastics program.
I didn't want to leave Michigan or pay outstanding amounts of money.
Ferris has a good faculty/student ratio.
My uncle thought very highly of it.
Only school out of six that offered Plastics Engineering that was close.
Close to home, and it is the family university. I was also very familiar with the campus thanks to my high school dual-enrollment program.
One of only a few schools to offer this program. Only 45 minutes from home.
Close to home, did not want to leave state, family went to Ferris, and friends.
It's the only one I know of.
A retired professor brought it to my attention and my classes would transfer.
Because of the cheaper tuition and state of the art facility
Same as above
Best in the nation
It's the closest one around, and it's not too big.
They have a good program.
Because I was already attending Ferris and Ferris is the only college in Michigan with the plastics program.
Because of its location within driving distance of my home.
Best in nation, 30 min. from home
Closest place to take it.
Only one I knew of.
Ferris State gave me most scholarship money.
It's the only college in state that has BS in it.
One of the best. Best in Michigan
Because it is the closest school to my home.
In-State Tuition
Because it has the biggest lab facility and I've heard great things about it.
Local university
Close to home.
A well known program that was located in Michigan.
It was close to home. I enjoyed visiting on Career day, and it was the only one I knew about.

Q65 continued
Referred by a previous employer of Ferris grads.
They transferred all my classes and they have a good reputation.
I liked the hands on experience.
I was already at Ferris for a previous degree.
Was accepted to Ferris, did not like my Chemistry degree so switched in to a new field.
I like the campus and it seemed like Ferris State's plastic program was reputable.
Started in Pre-Pharmacy then switched
Because it had a good reputation and wanted it.
Only school I know of offering major
First place I was accepted
Many people, especially my advisor informed me that Ferris has the best CAD and Plastics program in the entire country.
Location, technology based, recommended
Close to home, cheaper education.
Main reason is to understand the industry in order to start a company with an idea of how things function & typically occur.
Best program there is, plain & simply
I was already attending school here when I decided.
Already here and the good reputation.
The Dean of Technology at Ferris. When I was looking for a school to go to.
Highly recognized program and relatively close to home.
It has the easiest transfer from one program to the next, it is an easy transition which was key.
It's the closest one to where I live. Heard good things about it.
Ferris has one of the best technical schools in the nation, both for manufacturing and plastics.
It was the closest plastics program and it has a great reputation.
Live in Grand Rapids. Didn't research any others.
Parents worked at Ferris. Free School!
Close to home, 100% placement, Lab and equipment (hands on)
Closest to home
Don't really know just seemed like a good idea
Top 3 programs in US
My Uncle and my father graduated from Ferris

Q66 What opportunities (or job titles) do you feel will be available to you as a graduate of the FSU Plastics program?

Program Manager, Process Engineer
Mold and Tooling, Process Engineer, Materials, Project engineer
Plant Manager
Plant Manager, Product Design
A few I think as you get more experience more will come
Process Engineering/program management
Project Engineer, Product Designer
Tool designer, Plant manager, Process engineer, etc
Process engineer, Program Manager, Job out of state.

Q66 continued
Process engineer, Design engineer, Plant engineer, Sales, ect.
Limitless
I feel confident I will be able to get a job
Manager, Engineer, Rep
Engineer, process tech, mold design, supervisor, manager
Program/Project manager, Engineer, Part/Mold designer
Program engineer, project engineer, process engineer
I would be able to work in any area pretty easily, high positioned jobs
Product engineer, product manager, program manager, sales
Supervisors, Process Eng., Design Eng, Production Manager
Too many to list or think of…..they have mentioned the postings/titles in class/lecture/lab
An Engineering title such as product. Plant engineer, etc… possibly higher in the chain than that.
Process engineer, leading towards plant manager.
Factory worker. Not happy about it. I wasn't completely aware of the fact that I wouldn't be receiving an Engineering degree. We receive an Engineering Technology degree.
Essentially any job related in the Manufacturing industry, this degree is not restricted to Plastics alone.
That is circumstantial, I don't think it is necessarily true that a job opportunity is automatically available.
Whatever I am looking for in the program.
Plastics design, sales, ect.
Quality experience opportunities
Engineering and management positions
Several
Retiree
Any in the plastics industry, whatever I want to pursue I will go with.
Process engineer, project engineer.
A job as a plastics engineer, actually, a few of them.
I feel that vast opportunities will be available to me.
Process engineer, project engineer
Very many opportunities. Not only in Plastics but in Engineering as a whole.
I feel I should have no problem obtaining a great job.
Employers see FSU Plastics they will want me to work for them right away.
Plastics Engineer, Management positions
Endless opportunities. People will be retiring.
A good job that pays well. Somewhere close to home.
I'm not sure.
Too early in the program to tell
Product engineer
Basically unlimited which is why I became so interested.
Anything related to plastics, office, on the floor.
Project manager, plant manager
Pretty much anything I want to do.
Pretty much anything relating to plastics!
Management, Department Engineer

Q66 continued

Process engineer
Sales Rep, various kinds of Engineering management
Processing eng, Tool design, Testing
A wide range of jobs that have to do with plastics and the industry.
Too many to list
Testing, Processing, Sales Rep
Process Engineering, Design, Program management
Lots of opportunities in fields from sales to design.
Process Engineer, Sales, Management, Product Design, Program Management
Numerous (not sure of specific titles)
Project eng, Process eng, Tooling eng, Material eng.
Rubber jobs
Hopefully many
Processing Engineer, Testing, maybe eventually Plant Management
Design engineer, Managing eng, Project end, Process eng
I feel I am equipped to easily step into a production supervisor role or engineering role.
I should be able to work my way up in a company as far as I want to.
A supervisor position that I will be able to work my way up the chain of command.
Process Engineer for the majority of jobs. Others would be quality or lower management.
Process engineers, Project manager
Process Engineer, Project Engineer, Sales, General Managerial jobs
Program Manager, Process Engineer, Technical jobs
Process engineer, Project engineer, Plant manager
Really anything through management, need more experience to own
Design Engineer, Process Engineer
I feel that I could attain any job in the industry related to the degree if that is what I really wanted.
Part of the management (business end) of a company instead the typical Process engineer.
Any Process Eng, R & D, Supervisor, etc.
Process engineer, Project manager, Processing Tech
Process Engineer, Product Design, Technical Sales
Sales, Process Management, Systems Management
Any job in the plastics industry. Processing, Project, Quality, Sales, etc.
Mold design engineer, tooling quoting engineer, processing engineer, quality engineer, material specialist, tooling consultant, packaging engineer, etc.
Any engineering position, something in product or tool design, and possibly a job in sales.
Process Engineer, Manufacturing Engineer, Floor Leader (Technician), Sales (Technical Sales)
Just about any job involved with plastic in the industry.

Q67 If you answered "Other" in Q4, "What are your plans/goals after completing your FSU degrees(s)? …then please use this space to specify what the choice "Other" Refers to.

To become highly involved in product design and possibly start a business of my own.
Possible marketing degree
Military
Didn't answer Q4 with other

Q68 This is in reference to Q4 "What are your plans/goals after completing your FSU Plastics degree(s)?" If you selected "further education" as a response … then please indicate here what school you feel you might want to attend.

A business school
University of Mass. Lowell for a Masters and possibly a Ph.D
Getting my Masters in Business
Some school for Bachelors
Work for a couple years, then move into day trading stock/options.
Unsure
A school to either receive my masters or get another degree in accounting here at Ferris.
Work
University of Mass for a Masters.
My goal is to attain an MBA
I selected work and further education. I would like to get a Masters degree pertaining to my career after I am in the field awhile.
Maybe Masters but definitely find a job.
Not sure yet but get my MBA somewhere.
University of Massachusetts, Lowell
MBA
I will pursue a masters in Business management.
Work in the injection molding field
MBA in business management at the University of Massachusetts
Specific equipment training such as RJG, possible Masters studies.
I think continuing at Ferris Business and Administration is the best bit for me and I am already familiar with the universities policies.
Probably Grand Valley
Not sure
Work and Masters (undecided on MBA or …)
Work and school, possibly. After x number of years thoughts of returning to Ferris to teach.
Any school that the company I work for will help pay for.
Did not answer that question in that way.
MBA/U Mass possible

Q69 If you answered "Other data about the programs" in Q5 "Are you aware of the placement data & average starting salaries for the graduates of the Plastics programs?" … then please use this space to specify what "other data" you are referring to.

I heard that large corporations look for FSU students for plastics as well Penn St & Tex A&M.

Q70 If you answered "Other data about the programs" to Q6 "Is/are your parent(s) aware of the placement data & average starting salaries for the graduates of the Plastics programs?" …then please use this space to specify what "other data" you are referring to.

Q71 Feel free to use this space to add any additional comments you feel might be useful to the Program Review Panel in assessing the FSU Plastics Programs.

Since already being in the industry for approx. 5-7 years I feel that the FSU Plastics Program is one if not the best, source for a degree in that field. Some classes are irrelevant, but most apply. I applaud all of the faculty.

The school should get no money for internships, we usually find our own, pay our own expenses. We don't need another $1500 added to our already $18,000 tuition bill already…its bullshit

Excellent job.

Don't charge for internships, its bullshit you don't find us a job yet we pay you $1000 for us to write idiotic papers to you. Get a clue, you guys have enough money, quit ripping us off.

Plastics was a good choice for me and I am greatly satisfied.

<u>Most</u> of the teachers do a great job working with students. They take an interest in their students and are willing to go out of their way to help and work with students.

1) Intern class/program: I along with my parents felt that its crazy that we have to pay the school for a job they don't provide. We pay for internships and are told to find what you want…we are doing the hunting/interviewing etc. not you. If we are paying you for the internship I would expect it to be all set for me to go to. You found the company, brought them to campus for interviews, paperwork etc. I go there come May 14th when schools ends.
2) PLTS 499

Require this class 1 semester before graduation. I had my choice to take the class this semester or last. I am taking it this semester, and graduating in May…. And I wish I would have taken it last semester. The material is great: interviews, resumes, contracts, negotiations, IRA, 401K….It's a lot of stuff students have no idea about and <u>need</u> to know before job searching/interviewing, etc.

Q71 continued
I feel my education here so far has been well worth my money and all experiences have greatly increased my awareness of the plastics industry.

Some of the classes don't have books and I feel that my education is suffering because of it. Also, the requirement of two internships seems excessive at $1500 a piece. The teachers are very intelligent but it seems at times that they have a hard time teaching processing.

The Tooling & Design classes are a joke compare industry use (Catia, Unigraphics, Solid works ect) & hardly any design knowledge is used in the most of the time is wasted teaching CAD & Moldflow (which are simple programs).

Students in the plastics program need to be educated stronger in safety training before participating in labs.
Program should have more choices in electives. I am interested in stocks and marketing and management and would like to take an intro class, but it would set me back in the program. Those classes would help me more than a history, or geography elective would.

Testing students knowledge of plastics before entering program.

This program has the best teachers I have had.

Internship is somewhat long. I currently work full time and will have a hard time completing 400 hrs. 200 hrs is more reasonable.

Look into the chemistry and MFGE classes we have to take. Some are very ridiculous.

I feel that Plastics students should not be placed in a chemistry class full of Pre-Pharm students. My chem. Prof told us she makes it harder to get students that aren't capable to go pre-pharm out of that program

I think the plastics program here is great. The class sizes are perfect, and the material covered is very relevant.

Only suggestion is making the labs shorter or have breaks in them. GO FSU: Plastics!
FSU PLRU program seems good, but this is only my first year. The teachers are exceptional. I've had Wolfer and Langell. The internship is a good idea.

Love the program, students and teachers.

The Chemistry courses need to be evaluated! General Chemistry was not at all what should be taught for plastics students. Being with Pre-Pharmacy and other medical students makes it very difficult for us to learn. We technical students learn in a very different way than the medical students. Also many of the pre-pharmacy students are retaking the course for A's in place of their B's, that means that many of the students are on a completely different learning level than others. Plastics students along with other technology students should have an alternative

Q71 continued
chemistry class! It is absolutely ridiculous that so many plastics students have to retake a Chem 121 course. Also the MFGE 353 class needs to be looked in to because I am currently 4 weeks into the course and I am still unsure of what we are supposed to be learning in the class. Thank you for your interest in the students and our opinions about the program!

They are problems within the chemistry requirements for the Plastics Programs. Chem 121's curriculum is geared for Pre-Pharm students. Most Plastics students from Fall 2007 chem 121 did not pass this class with a C- or better, withdrew, or dropped Chem 121 and must repeat this course. Please look into the stats on this. What % of Plastics students vs pre-pharm students dropped, withdrew, didn't pass with a C- or better, and must repeat this 5 credit course again? What are the total numbers? Chemistry is important to the plastics curriculum but should be taught as more plastics/rubber specific and not with the pre-pharm curriculum.

Please, expand the CAD portion.

I do extrusion in the summers and I only learned about it at school for two weeks.

Teach/offer more alternative processing courses, ex. Extrusion

You need to update tool design. No CAD 3D, use solid edge or something more relevant to industry, AutoCAD is in the stone age.

Excellent program with excellent instructors.

Questions pertaining to professors were difficult to answer because a majority are qualified and eager to share information, but there are a few that aren't passionate about their students. These few teachers cause variations in the knowledge of students.

AutoCAD is out of date and none of the big companies use this any more as it has too many limitations. The plastics 410 class is just a review of Acct 202 (that Rubr students take), but with less information learned.

Make the program an Engineering program not an Engineering Technology program.

I recognize that design courses are important, but I don't feel the information taught in 212 and 312 is given in a way to make it memorable/useful. Students don't really spend time in practical application of this knowledge.

I feel that overall the program equips the student with the tools necessary to have a successful start in the plastics industry.

1)Professor evaluations need to be read & followed to benefit students not at the instructors comfort. 2)Class needs to be formed on other Plastic processes instead of injection molding (95% of industry). Such things as robotics. 3)All professors should take part in SPE/Rubber group.

I feel that the 1st Plts Processing lab is too long, it should probably go for 6 hrs instead of 8.

Q71 continued

Have Plastics department help out more on helping students get internships other than just postings, after all the department requires it and students pay for it. I feel I am not getting my moneys worth and it has been difficult for me at least to get an internship, first and second.

I think the program courses and the teachers in this program are very good, and are impressive in the regards of the other technical engineering programs here at Ferris.

A big thing that needs improvement is the machines in labs. Also, more independent studies/senior project would be nice to have, so students can explore a little more on their own.

The major classes for plastics are great. Extended classes, (2nt EEET class is worthless, and Chem classes should be broken into 1 in each program) need a little modification.

Help the Rubber program grow.

Plastics is a good program, but it would better students if they were persuaded to take Rubber as well as plastics. This makes a complete “well-rounded education”. I am very happy with my decision in both PLTS & RUBR.

No Friday labs, would rather stay late during week.

The program needs to include automation & more analytical thinking. Should combine the Associate Rubber & Plastic program. This could increase students in both program. Have elastomer associates. The choice major.

I think there really needs to be a capstone course. A course where everything comes together.

Section 2D

SURVEY SUMMARY

Student Survey Summary

Strong survey response indicators that are consistent with program goals:

- Current student perceptions relative to curriculum matching industry needs using appropriate methods:
  - Lab structured to reinforce course principles:
    - Processing-97% (highly related or most principles)
    - Design-92% (same)
    - Testing-91% (same)
    - Decoration & Assembly-73% (same)
    - Eng Mgmt Systems-68% (same)
  - Satisfied with education, meets expectations-91% satisfied
- As a program model, the following student perceptions relate to the current program set up:
  - Necessary lab experience to skills development
    - 98% indispensable, augments learning
  - Course material consistent one to another
    - 96% indicated consistency felt
  - Courses related to each other
    - 99% felt courses were related
  - Student to teacher ratio
    - 90% thought it optimal
  - State of laboratory equipment to industry
    - Testing
      - 79%-equipment representative
    - Tooling
      - 68%-equipment representative
    - Design
      - 79%-equipment representative
    - Processing
      - 79%-equipment representative

        - Decoration and Assembly
          - 74%-equipment representative
        - Lab equipment well maintained
          - 97% agree
- In relation to faculty development for effectiveness:
    - Instructor qualification to teach course
        - 100% agree
    - Course content taught well
        - 94% agree
    - Course in line with my needs/interests
        - 92% agree
- In relation to recruiting and retention:
    - Program represents a good value for the money
        - 92% agree
    - Made right choice selecting Plastics Program
        - 96% agree
    - Comfortable recommending Plastics Program
        - 97% agree

Strong survey response indicators suggesting action:

- As a program model, the following student perceptions relate to the current program set up:
    - Courses structured to develop skills for a job
        - 40% High level, mastered skills
        - 60% Relevant skills, not mastered
    - State of laboratory equipment
        - Processing
          - 15% state of art, 63% current
        - Decoration and Assembly
          - 12% state of art, 62% current
        - Project Management Software
          - 23% state of art, 57% current
- In relation to program visibility:
    - Knowledge of placement/salary data
        - 82% students, 61% parents

Strong survey additional comments suggesting action:

- High mention of program reputation in why coming to FSU Plastics Program.
- Perception of multiple opportunities and job titles after degree.
- 93% believe that internships were valuable to their educational experience.
- Issues with chemistry requirements are numerous.

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Faculty

Thank you for completing this survey. Your input will provide valuable insight into the future direction of the Plastics program. This is an anonymous survey.

Q1 **Please indicate your level of agreement with each of the following statements regarding program offerings.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
The program should have only one instructor per course when possible.	○	○	○	○
The program should use one instructor to teach the lecture & another to conduct the lab.	○	○	○	○
The Associate's program should have 2 entry points (Fall & Spring).	○	○	○	○
The program should operate year-round including classes & externships during the summer term.	○	○	○	○
The program should become/continue to be involved with certifying various skills with the industry.	○	○	○	○
The program should offer certificates in Plastics.	○	○	○	○
The program should offer some of its credit-bearing courses in an on-line format.	○	○	○	○
The program should offer some of its courses at off-campus locations such as other institutions & industrial sites.	○	○	○	○
An advanced degree is needed in the Plastics program.	○	○	○	○
A minor should be offered within the Plastics program.	○	○	○	○
There are currently too many classes offered with the program.	○	○	○	○
Applicable supportive courses are relevant to program goals & student needs.	○	○	○	○
The Plastics & Rubber programs should be a single department.	○	○	○	○
The student to faculty ratio is sufficient to permit optimum program effectiveness.	○	○	○	○

Q2 **Please indicate your level of agreement with each of the following statements regarding facilities, equipment & support mechanisms.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
The program faculty has access to adequate funds for faculty development.	◯	◯	◯	◯
The program has adequate leadership.	◯	◯	◯	◯
The advisory board has adequate input & influence for the program.	◯	◯	◯	◯
Adequate funds for equipment and supplies are available for student usage.	◯	◯	◯	◯
The program computer labs have adequate hardware.	◯	◯	◯	◯
Aides & lab assistants are available & provide appropriate support for students and faculty to insure maximum effectiveness of the program.	◯	◯	◯	◯
Office and clerical assistance is available to enhance the effectiveness of program faculty.	◯	◯	◯	◯
Equipment within the program is representative of that which is used in the industry.	◯	◯	◯	◯
Equipment within the program is in adequate supply.	◯	◯	◯	◯
Equipment is operational, safe and well-maintained.	◯	◯	◯	◯
Instructional facilities meet program objectives including safety, functionality, flexibility and satisfying students' needs.	◯	◯	◯	◯
Scheduling of facilities and equipment is planned & consistent w/ quality instruction.	◯	◯	◯	◯
Materials & supplies are readily available and in sufficient quantity to support quality instruction.	◯	◯	◯	◯
Adequate funds are available for new equipment and/or equipment repair.	◯	◯	◯	◯
Fund allocation is consistent w/ program objectives and instructor input.	◯	◯	◯	◯
The current number of students assigned to each advisor is manageable.	◯	◯	◯	◯

Q3 **Please indicate your level of agreement with each of the following statements regarding placement.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Current labor market and employment data are systematically utilized for the development and evaluation of the program.	◌	◌	◌	◌
Current job skills and trends are systematically utilized for the development and evaluation of the program.	◌	◌	◌	◌
Current graduate follow-up data are systematically utilized for the development and evaluation of the program.	◌	◌	◌	◌
Adequate opportunities are available for relevant student co-op, work experience and/or internships.	◌	◌	◌	◌
Student internships are adequately coordinated with classroom instruction and employer supervision.	◌	◌	◌	◌
The program curriculum is relevant to students once they have entered the workforce.	◌	◌	◌	◌
The University has an effective system for job placement of students within the program.	◌	◌	◌	◌
Student supervision at internships should be centralized.	◌	◌	◌	◌

Q4 **Please use this space for additional comments/suggestions.**

Thank you for your time and input.

Frequency Table
Faculty

q1a Prog: Should have only 1 instructor per course when possible

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	50.0	50.0	50.0
	Somewhat Agree	2	33.3	33.3	83.3
	Strongly Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q1b Prog: Should use 1 instructor to teach the lecture & another to conduct the lab

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	83.3	83.3	83.3
	Somewhat Disagree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q1c The Associate's prog should have 2 entry points (Fall & Spring)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	2	33.3	33.3	50.0
	Strongly Agree	3	50.0	50.0	100.0
	Total	6	100.0	100.0	

q1d Prog: Should operate year-round

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	4	66.7	66.7	83.3
	Somewhat Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q1e Prog: Should become/continue to be involved with certifying various skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	33.3	33.3	33.3

	Somewhat Disagree	1	16.7	16.7	50.0
	Somewhat Agree	2	33.3	33.3	83.3
	Strongly Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q1f Prog: Should offer certificates in Plastics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	33.3	33.3	33.3
	Somewhat Disagree	1	16.7	16.7	50.0
	Somewhat Agree	3	50.0	50.0	100.0
	Total	6	100.0	100.0	

q1g Prog: Should offer some of its credit-bearing courses on-line

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	16.7	16.7	16.7
	Somewhat Agree	4	66.7	66.7	83.3
	Strongly Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q1h Prog: Should offer some of its courses at off-campus locations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	50.0	50.0	50.0
	Somewhat Disagree	1	16.7	16.7	66.7
	Somewhat Agree	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

q1i An advanced degree is needed in the Plastics program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	2	33.3	33.3	50.0
	Somewhat Agree	3	50.0	50.0	100.0
	Total	6	100.0	100.0	

q1j A minor should be offered within the Plastics program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	*1*	*16.7*	*16.7*	*16.7*
	Somewhat Agree	*5*	*83.3*	*83.3*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q1k Currently too many classes offered with the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*3*	*50.0*	*50.0*	*50.0*
	Somewhat Disagree	*2*	*33.3*	*33.3*	*83.3*
	Somewhat Agree	*1*	*16.7*	*16.7*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q1l Applicable supportive courses are relevant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	*4*	*66.7*	*66.7*	*66.7*
	Somewhat Agree	*1*	*16.7*	*16.7*	*83.3*
	Strongly Agree	*1*	*16.7*	*16.7*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q1m The Plastics & Rubber programs should be a single department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*2*	*33.3*	*33.3*	*33.3*
	Somewhat Agree	*1*	*16.7*	*16.7*	*50.0*
	Strongly Agree	*3*	*50.0*	*50.0*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q1n The student to faculty ratio is sufficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	*1*	*16.7*	*16.7*	*16.7*
	Somewhat Agree	*3*	*50.0*	*50.0*	*66.7*
	Strongly Agree	*2*	*33.3*	*33.3*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q2a Faculty has access to adequate funds for faculty development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	1	16.7	16.7	33.3
	Somewhat Agree	3	50.0	50.0	83.3
	Strongly Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q2b Program has adequate leadership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	50.0	50.0	50.0
	Somewhat Disagree	1	16.7	16.7	66.7
	Somewhat Agree	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

q2c Advisory board has adequate input & influence for the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	33.3	33.3	33.3
	Somewhat Disagree	3	50.0	50.0	83.3
	Somewhat Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q2d Adequate funds for equipment & supplies are available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	33.3	33.3	33.3
	Somewhat Disagree	2	33.3	33.3	66.7
	Somewhat Agree	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

q2e Program computer labs have adequate hardware

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	5	83.3	83.3	83.3
	Strongly Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q2f Aides & lab assts are available & provide appropriate support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	*3*	*50.0*	*50.0*	*50.0*
	Strongly Agree	*3*	*50.0*	*50.0*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q2g Office & clerical assistance is available to enhance the effectiveness of faculty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	1	16.7	16.7	33.3
	Somewhat Agree	2	33.3	33.3	66.7
	Strongly Agree	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

q2h Equipment within the program is representative of that used in industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	16.7	20.0	20.0
	Somewhat Agree	4	66.7	80.0	100.0
	Total	5	83.3	100.0	
Missing	System	1	16.7		
Total		6	100.0		

q2i Equipment within the program is in adequate supply

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	2	33.3	33.3	50.0
	Somewhat Agree	3	50.0	50.0	100.0
	Total	6	100.0	100.0	

q2j Equipment is operational, safe & well-maintained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	6	100.0	100.0	100.0

q2k Instructional facilities meet program objectives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	3	50.0	50.0	50.0
	Strongly Agree	3	50.0	50.0	100.0
	Total	6	100.0	100.0	

q2l Scheduling of facilities & equip is planned & consistent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	33.3	33.3	33.3
	Somewhat Disagree	1	16.7	16.7	50.0
	Somewhat Agree	3	50.0	50.0	100.0
	Total	6	100.0	100.0	

q2m Materials & supplies are readily available & in sufficient quantity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	16.7	16.7	16.7
	Somewhat Disagree	4	66.7	66.7	83.3
	Somewhat Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q2n Adequate funds are available for new equipment and/or repair

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	33.3	33.3	33.3
	Somewhat Disagree	3	50.0	50.0	83.3
	Somewhat Agree	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

q2o Fund allocation is consistent w/ program objectives & instructor input

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	33.3	33.3	33.3
	Somewhat Agree	4	66.7	66.7	100.0
	Total	6	100.0	100.0	

q2p Number of students assigned to each advisor is manageable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	2	33.3	33.3	33.3
	Strongly Agree	4	66.7	66.7	100.0
	Total	6	100.0	100.0	

q3a Current labor market/employment data are systematically utilized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*2*	*33.3*	*33.3*	*33.3*
	Somewhat Disagree	*3*	*50.0*	*50.0*	*83.3*
	Strongly Agree	*1*	*16.7*	*16.7*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q3b Current job skills & trends are systematically utilized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*2*	*33.3*	*33.3*	*33.3*
	Somewhat Disagree	*2*	*33.3*	*33.3*	*66.7*
	Somewhat Agree	*2*	*33.3*	*33.3*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q3c Current grad follow-up data are systematically utilized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*2*	*33.3*	*33.3*	*33.3*
	Somewhat Disagree	*3*	*50.0*	*50.0*	*83.3*
	Somewhat Agree	*1*	*16.7*	*16.7*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q3d Adequate opportunities are available for relevant student co-op, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	*1*	*16.7*	*16.7*	*16.7*
	Strongly Agree	*5*	*83.3*	*83.3*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q3e Student internships are adequately coordinated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	*1*	*16.7*	*16.7*	*16.7*
	Somewhat Disagree	*1*	*16.7*	*16.7*	*33.3*
	Somewhat Agree	*4*	*66.7*	*66.7*	*100.0*
	Total	*6*	*100.0*	*100.0*	

q3f Prog curriculum is relevant to students once enter the workforce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	16.7	16.7	16.7
	Somewhat Agree	3	50.0	50.0	66.7
	Strongly Agree	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

q3g University has an effective system for job placement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	16.7	16.7	16.7
	Somewhat Agree	5	83.3	83.3	100.0
	Total	6	100.0	100.0	

q3h Student supervision at internships should be centralized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	50.0	50.0	50.0
	Somewhat Disagree	1	16.7	16.7	66.7
	Somewhat Agree	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

q4 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	66.7	66.7	66.7
	one 6 month coop should be considered as an alternative to 2 internships	1	16.7	16.7	83.3
	The program needs to utilize advisory board input, but to do so, the advisory board make-up and system for use needs re-vitalization. Curriculum changes need to be made to allow updated and changing technologies.	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

Section 2E

SURVEY SUMMARY

Faculty Survey Summary

Strong survey response indicators that are consistent with program goals:

- As a model, both lecture and lab sections need to be taught by the same professor and the students need a choice of professors for the same class. The current student to faculty ratio and advisees to faculty ratio are both supported. The internship experience is highly supported and the de-centralization of intern follow up is also supported.
- To attract more students (and possibly different populations) minor degrees and advanced degrees are supported but certificate programs are not. Coursework needs to be taught on the main FSU campus for the most part. On-line course development has support. A dual entry point into the program(s) is also supported.
- The match of the curriculum to the knowledge/skill base that industry needs is supported as is the issue of the overall facilities and information technology matching the program objectives.

  The existence of adequate funds for faculty development is also supported. The use of lab aides and assistants has strong support.

Strong survey response indicators suggesting action:

- The relevance of support courses to the curriculum and industry needs is challenged, as is the number of core program courses within the program, increasing not decreasing.
- Advisory board influence and input needs to be addresses and improved.
- Laboratory equipment needs to be changed to match industry type equipment with better maintenance also and better supply outlets to procure it (increased funding). Materials and supplies also need to be addressed.
- The maintenance of current data for the labor market and employment as well as graduate follow up data needs to be addressed. Further job placement activities improvement is indicated.

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Advisory Board

As part of the Academic Program Review (APR) process, the Plastics Department is asking the Advisory Board of Ferris State University Plastics to please take a few minutes to complete this survey. Your responses will help us evaluate the program, see where the strengths are and show us where changes need to be made. Thank you for your feedback in this important process.

Q1 How many years have you served on the advisory board?

Q2 How many years have you worked in the industry?

Q3 What is your current job title?

Q4 Did you attend classes in FSU's Plastics program?

- Yes
- No

Q5 Has your company hired Plastics graduates or interns from Ferris State University?

- Yes
- No

Please indicate which option best reflects your level of agreement with the statements beneath each category.

Q6 Instructional Program Content & Quality

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Is keeping with industry trends & changes				
Satisfies a broad range of industries (auto, furniture, packaging, etc.)				
Has a good balance of hands-on vs. theory education				

Q7 **Instructional Equipment & Machinery**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Is updated to reflect latest technology used in industry	○	○	○	○
Is maintained in good running condition	○	○	○	○
Is sufficient for the number of students enrolled	○	○	○	○
Meets health & safety standards	○	○	○	○
Is appropriately funded by the university	○	○	○	○
Represents sound industry standards	○	○	○	○

Q8 **Placement Services for this Program**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Knows the level of need for professionals in the Plastics industry	○	○	○	○
Are valuable to the student for finding employment & help students evaluate good vs. bad positions/companies	○	○	○	○
Shows that industry comes to FSU looking for students	○	○	○	○

Q9 **Staff**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Is adequate in student to instructor ratio	○	○	○	○
Has sufficient opportunity to grow with industry (technology, etc.)	○	○	○	○
Is represented by strong leadership practices & has a voice in the university operations	○	○	○	○
Is actively promoting the FSU Plastics program to industry	○	○	○	○

Q10 **Advisory Board**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
Time is used wisely & input is considered/utilized	○	○	○	○
Meeting agendas are appropriate for giving direction	○	○	○	○
Meets often enough to help keep program on track	○	○	○	○
Is provided adequate & proper direction to function efficiently	○	○	○	○

Q11 Please use this space for additional comments/suggestions.

Thank you for your time and input.

Frequency Table

q1 Number of years served on Advisory Board

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	9.1	9.1	9.1
	1	1	9.1	9.1	18.2
	2	1	9.1	9.1	27.3
	31	1	9.1	9.1	36.4
	5	2	18.2	18.2	54.5
	7	2	18.2	18.2	72.7
	8	2	18.2	18.2	90.9
	Not sure	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

q2 Number of years worked in the industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16	2	18.2	18.2	18.2
	21	1	9.1	9.1	27.3
	22	1	9.1	9.1	36.4
	25	1	9.1	9.1	45.5
	31	2	18.2	18.2	63.6
	34	2	18.2	18.2	81.8
	7	1	9.1	9.1	90.9
	8	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

q3 Current job title

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Account Executive	1	9.1	9.1	9.1
	Account Manager	1	9.1	9.1	18.2
	Application Engineer	1	9.1	9.1	27.3
	Co-Owner	1	9.1	9.1	36.4
	Director - Process & Tooling Engineering	1	9.1	9.1	45.5
	Director of Engineering	1	9.1	9.1	54.5
	Launch Coordinator	1	9.1	9.1	63.6
	Materials Manager	1	9.1	9.1	72.7
	Partner/Sales/Development Engineer	1	9.1	9.1	81.8
	Professor	1	9.1	9.1	90.9
	Project Engineer	1	9.1	9.1	100.0

	Total	11	100.0	100.0	

q4 Attend classes in PLTS program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	63.6	63.6	63.6
	No	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

q5 Company hired FSU PLTS grads/interns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	9	81.8	81.8	81.8
	No	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

q6a Prog: Industry trends & changes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	9	81.8	81.8	81.8
	Strongly Agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

q6b Prog: Broad range of industries

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	7	63.6	63.6	63.6
	Strongly Agree	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

q6c Prog: Good balance of hands-on & theory

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	1	9.1	9.1	9.1
	Strongly Agree	10	90.9	90.9	100.0
	Total	11	100.0	100.0	

q7a Equip: Updated to reflect latest technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	18.2	18.2	18.2
	Somewhat Agree	7	63.6	63.6	81.8
	Strongly Agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

q7b Equip: Maintained in good running condition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	5	45.5	45.5	45.5
	Strongly Agree	6	54.5	54.5	100.0
	Total	11	100.0	100.0	

q7c Equip: Sufficient for number of students enrolled

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	5	45.5	45.5	45.5
	Somewhat Agree	2	18.2	18.2	63.6
	Strongly Agree	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

q7d Equip: Meets health & safety standards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	4	36.4	36.4	36.4
	Strongly Agree	7	63.6	63.6	100.0
	Total	11	100.0	100.0	

q7e Equip: Appropriately funded by university

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	4	36.4	36.4	36.4
	Somewhat Agree	7	63.6	63.6	100.0
	Total	11	100.0	100.0	

q7f Equip: Represents sound industry standards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	6	54.5	54.5	54.5
	Strongly Agree	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

q8a Place: Knows level of need in industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	4	36.4	36.4	36.4
	Strongly Agree	7	63.6	63.6	100.0
	Total	11	100.0	100.0	

q8b Place: Valuable for finding employment, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	4	36.4	36.4	36.4
	Strongly Agree	7	63.6	63.6	100.0
	Total	11	100.0	100.0	

q8c Place: Shows industry comes looking for students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	2	18.2	18.2	18.2
	Strongly Agree	9	81.8	81.8	100.0
	Total	11	100.0	100.0	

q9a Staff: Adequate in student to instructor ratio

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	3	27.3	27.3	27.3
	Strongly Agree	8	72.7	72.7	100.0
	Total	11	100.0	100.0	

q9b Staff: Sufficient opportunity to grow w/ industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	9.1	9.1	9.1
	Somewhat Agree	5	45.5	45.5	54.5
	Strongly Agree	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

q9c Staff: Strong leadership practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	9.1	9.1	9.1
	Somewhat Agree	6	54.5	54.5	63.6
	Strongly Agree	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

q9d Staff: Actively promotes program to industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	9.1	9.1	9.1
	Somewhat Agree	6	54.5	54.5	63.6
	Strongly Agree	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

q10a Adv: Time used wisely, input is considered/utilized

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	6	54.5	54.5	54.5
	Strongly Agree	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

q10b Adv: Meeting agendas are appropriate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	9.1	9.1	9.1
	Somewhat Agree	5	45.5	45.5	54.5
	Strongly Agree	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

q10c Adv: Meets often enough

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	*1*	*9.1*	*9.1*	*9.1*
	Somewhat Agree	*8*	*72.7*	*72.7*	*81.8*
	Strongly Agree	*2*	*18.2*	*18.2*	*100.0*
	Total	*11*	*100.0*	*100.0*	

-q10d Adv: Provided adequate & proper direction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	*2*	*18.2*	*18.2*	*18.2*
	Somewhat Agree	*7*	*63.6*	*63.6*	*81.8*
	Strongly Agree	*2*	*18.2*	*18.2*	*100.0*
	Total	*11*	*100.0*	*100.0*	

q11 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		*3*	*27.3*	*27.3*	*27.3*
	Advisory board is typically used as a sounding board, which is very appropriate. However, I believe the advisory board could be called upon for more input to program changes and improvements. This could easily be done through e-mail. If a change is being considered, e-mail the advisors and ask for input. Typically, the advisory board is "brought up to speed" on changes after the decisions have been made. Input on what we see for the next 5 years (as requested today) is perfect for what I am suggesting. The university needs to step-up to the marketing and recruiting needs. It is not reasonable to expect the professors to take this role on. This is time they could be spending on R&D and personal development.	*1*	*9.1*	*9.1*	*36.4*
	I feel staying in tune with merging plastic and rubber markets is important. indications are---this is being addressed. This needs to be continued and accelerated when a direction is found. Don't hold on to mature market segment past their time.	*1*	*9.1*	*9.1*	*45.5*
	Perhaps the advisory board could split into smaller groups, given a task that is applicable to the program such as finding a silicone pump or, resin for molding or, marketing the program. These smaller groups could communicate periodically between board meetings to accomplish their given task. The task should be appropriate to the given profession of the board members. Just a thought.	*1*	*9.1*	*9.1*	*54.5*
	Program has supposed the plastics industry with very well trained graduates. University should consider promoting the program more so it can expand and be able to fill more of the jobs available and Ferris needs to promote this program outside of Michigan as well	*1*	*9.1*	*9.1*	*63.6*

	Promotional materials (video, photos, etc) show the industrial/hands-on/blue collar side of the industry, not the white collar side that most of the graduates aspire to and are employed in. The hands-on background is what gives the graduates the broad knowledge base that makes them valuable in industry, but the visual presentation of students pushing buttons at a machine does portray their future in industry and could be a deterent to unenlightened parents and future students.	*1*	*9.1*	*9.1*	*72.7*
	Students could benefit with an ability to focus in particular markets as processes and materials vary significantly from market to market.	*1*	*9.1*	*9.1*	*81.8*
	The face of our industry is changing. We are slowly moving from a traditional American manufacturing methodology to one that considers the forms of waste in traditional batch type manufacturing detrimental to our success. Some of the topics of Lean and TPS have been shared and taught in this curriculum. However, our lack of lean thinking in today's automotive industry is a significant contributor to our failures of late. Lean thinking will involve a change in culture. If we allow our students to enter the workforce with traditional manufacturing practices in mind with the idea that they will learn these skills later, our migration into this successful way of manufacturing will be very slow. The "true North" single piece flow concept should be in the forfront of our thinking. This includes the way we layout or laboratories as well.	*1*	*9.1*	*9.1*	*90.9*
	The program has to expand it geographic reach, due to the depressed state of the auto industry (the prime industry where FSU gradutates are employeed) in Michigan, Ohio and to a lesser extent Indiana. With the shift of molding to southern states, there should be a focus on drawing students from those areas to support the expanded molding in the south. I believe that the course work required for the degree is very good, I would suggest changes in the courses involving controls and most definitely in the CAD/mechanical design course. I suggest an upgrade of the CAD system from AutoCad to CATIA, since most poduct design, and mold design is done in CATIA. (Manual drafting, and running Bridgeport's is a waste of time.) Not being a FSU grad, is there a program/process for recent grads to "mentor" seniors in job seaking and inteviewing skills, and in how to evaluate companies and positions. The intern portion of the program and the cap stone senior project are key part s of the program, job well done! Since the job market is shifting from smaller plants / employers, to larger employers, does the plastics program have "champions" assigned to GM/Ford/Chrysler/Nissan to promote the program and seek their imput into what they're looking for in a grad? If the need is present, what about an "executive" program, and intensive, focused 18 month program located in the Detroit area the the OEM companies would "sponsor" their employees in?	*1*	*9.1*	*9.1*	*100.0*
	Total	*11*	*100.0*	*100.0*	

Section 2F

SURVEY SUMMARY

Advisory Board Survey Summary

Strong survey response indicators that are consistent with program goals:

- In relation to the management and integration of change, the current structure of the advisory board is as follows: 18% of its members have been on the board for 5 years, 18% for 7 years, and 18% for 8 years. 64% have taken FSU plastics program classes.
- As a model, 91% support the balance of theory and hands on education. That the program covers a broad range of industries within the plastics industry was supported by 64%. That the program has a proper student to instructor ratio was supported.
- In relation to faculty opportunities to grow, it was supported that the faculty have sufficient opportunity to grow with the industry. It was also supported that the faculty promote the program to industry.
- The match of the curriculum to the knowledge/skill base that industry needs is supported by the following input: 81% of board members have hired grads, 81% perceive that the program follows change in the industry.

Strong survey response indicators suggesting action:

- That the program reflects the latest technology changes and updates within the industry is supported by 64%.
- The advisory board is provided with adequate direction on how to function to improve the program.
- Written in suggestions include: the university step up to marketing and recruitment needs, stay in tune with immerging markets, advisory board split into task force groups, promote outside of Michigan, implement new immerging manufacturing methodologies, look at different software technologies, and work with key OEM companies to form partnerships with for placement opportunities.

Section 3

PROGRAM PROFILE

The following section addresses the make-up of and functioning of the program. The discussion within the sections is supported by data within the appendices where appropriate. The section is informational in its intent, and conclusions as a result of the information are left for Section #5 per the report guidelines.

Section 3A

PROFILE OF STUDENTS

As reported through the Ferris State University Productivity Report, Fall 2002 – Winter 2007, the profile of the Plastics Program students is as follows:

AAS Degree:

BY GENDER –	*YEAR*	*MALE*	*FEMALE*
	2003	86%	14%
	2004	92%	8%
	2005	96%	4%
	2006	94%	6%
	2007	91%	9%

BS Degree:

BY GENDER –	*YEAR*	*MALE*	*FEMALE*
	2003	82%	18%
	2004	88%	12%
	2005	81%	19%
	2006	91%	9%
	2007	90%	10%

AAS Degree:

BY ETHNICITY – PREDOMINATE OTHER	*YEAR*	*WHITE*	*OTHER*	
	2003	91%	9%	Asian
	2004	95%	5%	Asian
	2005	94%	4%	Black
	2006	91%	6%	Black
	2007	98%	9%	Black

BS Degree:

BY ETHNICITY – PREDOMINATE OTHER	*YEAR*	*WHITE*	*OTHER*	
Black/Asian	2003	92%	8%	
Black/Asian	2004	86%	14%	
	2005	88%	12%	Asian
Black/Asian	2006	91%	9%	
Black/Hispanic	2007	94%	6%	

AAS Degree:

BY FULL/PART TIME	*YEAR*	*FULL*	*PART*
	2003	95%	14%
	2004	98%	8%
	2005	95%	4%
	2006	91%	6%
	2007	93%	9%

BS Degree:

BY FULL/PART TIME	*YEAR*	*FULL*	*PART*
	2003	96%	4%
	2004	91%	9%
	2005	83%	17%
	2006	87%	13%
	2007	88%	12%

The profile of the students can be summarized by saying that they are predominately full-time, white, and male students. As seen in the above data, there is trending data that indicates an increase in part-time students, an increase of Black or Asian background students, and a decline in the percentage of female students. The program is not taught off campus so these students are on campus or local commuters by nature. (See Appendix "C")

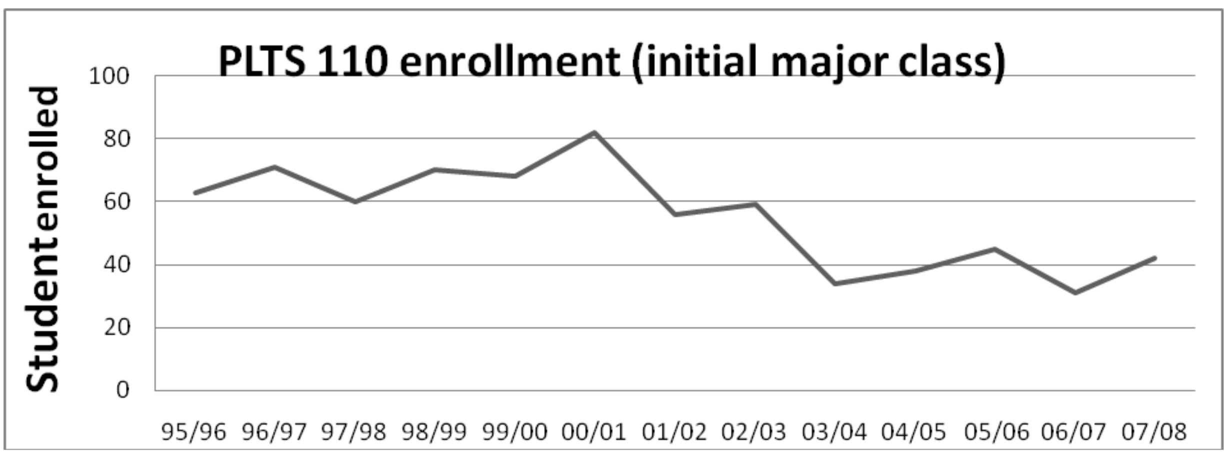
PLASTICS TECHNOLOGY, PLASTICS ENGINEERING TECHNOLOGY – ENROLLMENT TRENDS

The programs enrollment has stabilized since Fall 2000. Incoming freshmen enrollment has averaged 38 new students per year for the past five years. Program capacity is currently targeted at 48 new students; any additional number would require an additional FTE to cover. See graph "PLTS 110 Enrollment" for specific information.

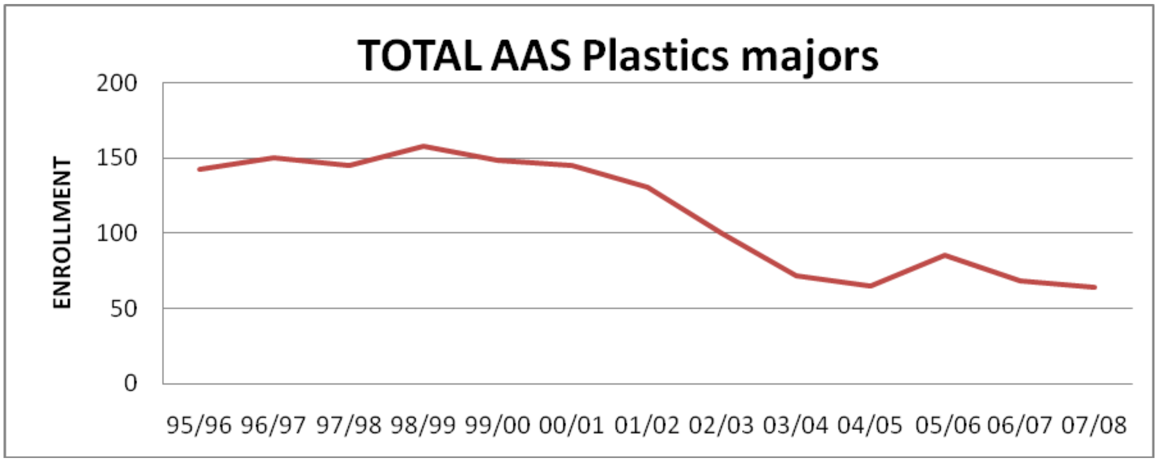
The department believes this reduction in enrollment stems from a poor "manufacturing" image in Michigan. The Automotive economy has been eroding since the late 1990's and many Michiganders perceive that the manufacturing is being exported overseas.

Additionally, seem to be a nationwide issue, there is a decrease in enrollment in "manufacturing" oriented programs.

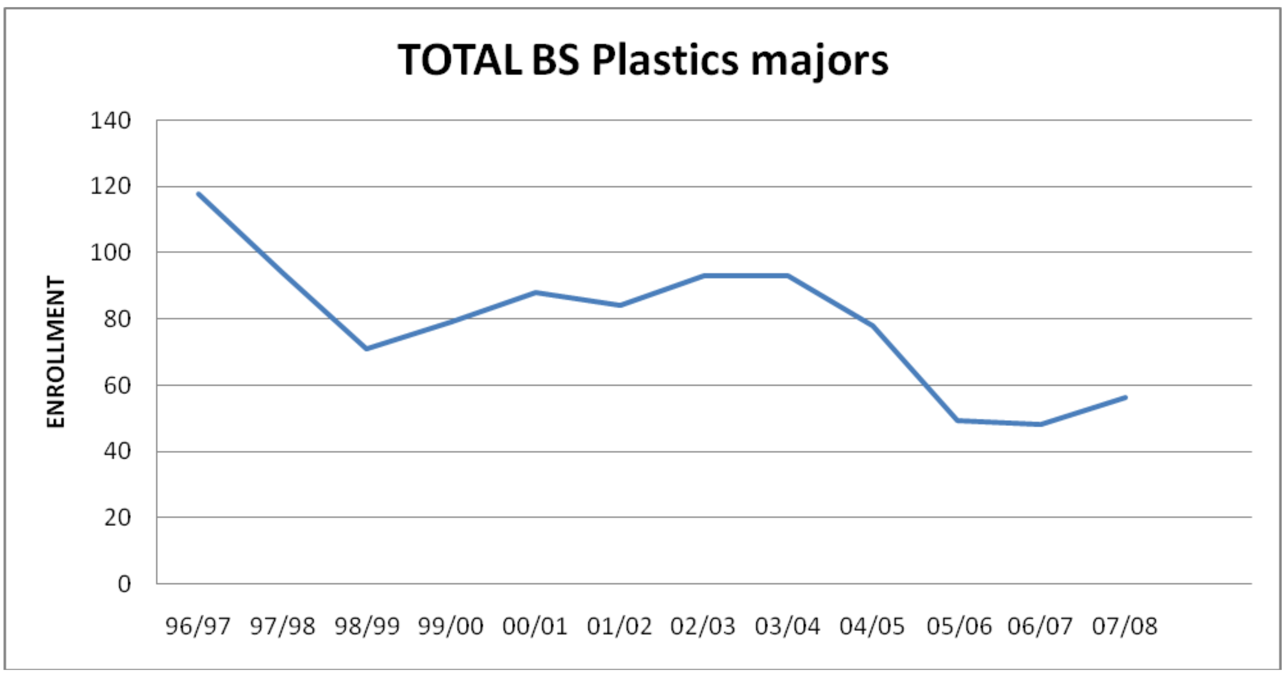
Stability has been achieved by improved recruiting efforts by departmental faculty in conjunction with industry and alumni efforts. The department hosts at least 2 "Plastics and Rubber Career days", where high schools are invites to tour the programs in the department and enjoy a lunch at Westview dining hall. This travel is funded by the department S&E and has started to yield new students. In 2007, 10 freshmen indicated that they attended a Career Day, which swayed their major choice.



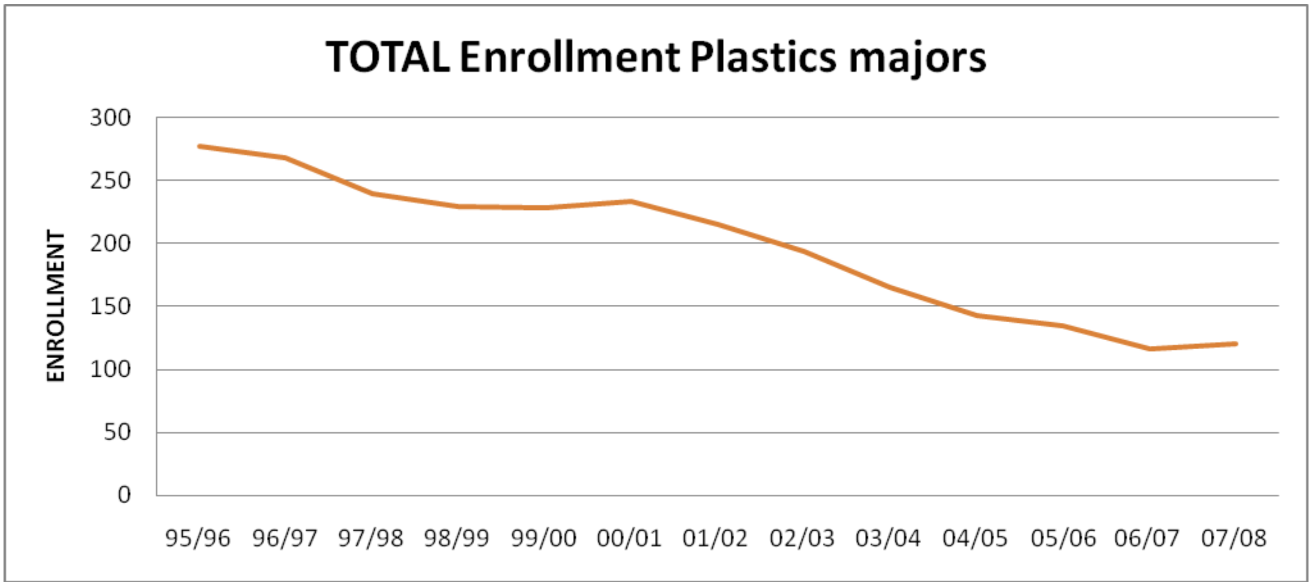
Total enrollment in the AAS (Plastics Technology) degree has stabilized over the past five years, after a significant drop in 2001 through 2003. The past 5 years the number of students in the AAS degree has stabilized, averaging 70 majors. This reflects the stable size of entering students along with consistent retention of continuing students. Again, the loss of student seems to reflect a national trend regarding "manufacturing" oriented degrees. The following graph demonstrates the AAS enrollment stability.



BS (juniors and seniors) enrollment has also leveled off over the last three years, if fact there is a slight increase in 2007/08 year. This reflects the stabilization of the AAS enrollment and improved retention efforts by the faculty and staff. The BS enrollment drop starting in 2003/4 is a reflection of the AAS enrollment loss that occurred 2 years prior.



Total enrollment in the Plastics major (both AAS and BS combined) has stabilized at about 130 students, reflecting the entering class stabilization and retention efforts of the department.



(SEE APPENDIX "C")

Section 3C

PROGRAM CAPACITY

Laboratory experiences with hands-on exercises form the basis for the majority of the core courses within the Plastics Program. Although the program's relationship with industry partners and alumni contacts remains stronger than ever, the amount of laboratory equipment remains a limiting factor to coursework capacity. A large concern that also relates to capacity is that for the student's safety. When running industrial equipment, the same safety issues exist here as do within a plastics manufacturing plant.

As such, the number of students within a laboratory section is held to between 10 and 15 students. The variance is dependent upon the type of class being taught (processing versus tooling, versus design, etc.) and the kind of equipment required for the class. The equipment and educational experience is unique, as is problem solving using cognitive thought processes for example. These things can only be properly developed and assessed through hands-on educational activities.

The number of students within the lecture sections of the core courses is, then, made up multiples of the laboratory section sizes. Typical lecture sections run from 12 to 36 students. Overall, the entrance capacity for incoming freshmen to the AAS Degree Program is 48 students, and acceptance into the BS Degree Program is 36 students.

Retention and Graduation of Students

The department has continually exceeded the University average for graduation by almost 50% and College of Technology's graduation average by almost 15%. The department had averaged just under a 60% graduation rate (University averages just over 40%, COT is 51%). This is an indication of the level and quality of teaching the department faculty have demonstrated. This also indicates the relationships developed between the faculty and the department's students, the faculty have been encouraged to work with the students outside of the class room in order to develop a stronger bond as part of our retention efforts.

Another significant indication of the work the faculty are doing is the percentage of persisters in the department. The Plastics and Rubber department has over 75% persisters after 4 years and 69% after 7 years. This persistence is significantly higher than the University and the College. The University numbers are 40% lower after 4 years and 37% lower after 7 years. Similarly, the department number is favorable when comparing to the College persistence numbers, 31% higher after 4 years and 24% after seven.

Generally, in terms of department performance, the Plastics and Rubber department graduates a higher percent of its students then either the college or the University. Also, when "persister" performance is reviewed the Plastics and Rubber department keeps more of its enrolled students on campus. This is an indication of a committed faculty and students who understand the value of the specific education they are receiving.

	PLRU retention 2 & 4 yr degrees			**PLRU Retention 2 yr.**		
	% Graduation (7 yrs)	***Persisters (4 yrs)***	***Persisters (7 yrs)***	**% Graduation (7 yrs)**	***Persisters (4 yrs)***	***Persisters (7 yrs)***
2001	75	82	82	75	82	82
2002	64	76	64	64	72	64
2003	60	68	60	60	68	60
2004	38	75		35	74	
2005	10	71		27	73	
2006	0	85		0	83	
Dept Avg.*	**59.25**	**76.2**	**68.7**	**58.5**	**75.3**	**68.7**
COT Avg.*	**50.75**	**52.25**	**52**	**50.75**	**52.25**	**52**
University*	**40.25**	**45.25**	**42.75**	**40.25**	**45.25**	**42.75**

* Based on entering students from 2001 - 2004

Future of the program

We continually survey our freshmen class to gain a handle on how they arrived in our department. The results indicate that over 80% of them were somehow sent here, by a neighbor, alumni, a person currently in the industry, a person at church, or a teacher. In addition, between 5 and 10 of the incoming freshmen indicated that they attended a “Plastics and Rubber Career day” sponsored by the department.

Challenges

The University needs to “get the word” out to the school districts that the plastics industry is still vital in the region. Contrary to the media’s gloom and doom reporting there are still career opportunities for “Plastics” people regionally, nationally and internationally. Virtually 100% placement and reported starting salaries exceeding $55,000/yr.

Additionally, the department and University have to work to gain more local notoriety for the program by getting information items published in local papers, contribute to newspaper articles and increase our presence in the public forums. Also, the University should develop a marketing plan focused specifically on the COT programs in order to attract capable, interested students.

Section 3E

PROGRAM ACCESS

The courses of the Plastics Program have all been taught exclusively on the Big Rapids Campus. A large contributor to this issue is the strong laboratory content of the program and availability (or lack) of equipment at other facilities. This also makes specific program courses difficult to impossible to teach on-line. Although plastics processing and related equipment exists at other facilities, certain specific equipment as well as the variety of equipment would be difficult at best to match.

Section 3F

CURRICULUM

The current curriculum of the Plastics Program follows the traditional 2+2 Ferris model of 2 years to an AAS Degree and 2 additional years to a BS Degree. By its nature and structure, the Associates Degree Program follows a more sequential format of course requirements and prerequisites to aid in the building of skills and knowledge for the student.

The AAS Degree coursework follows 3 groupings of fundamental knowledge which is required to attain an entry level direct plastics manufacturing position: 1-processing, 2-design, and 3-testing and materials. It currently includes technical related courses in electronics, graphics and CAD, fluid power, and machining and tooling practices.

The BS Degree coursework follows a broader spectrum of related core coursework as well as further manufacturing and engineering discipline topics. As illustrated by the check sheet, courses in management systems, materials, advanced design, decoration and assembly, and economic issues are taught here.

Both the AAS and the BS Degrees have a mandatory 4 credit hour internship as a requirement. This is typically a 10 week, 40 hour per week summer experience. Each one of the internships has its own focus and direction, separating them by the level of coursework and competency that the student possesses at that time in the program.

Following the included check sheet in this section, a summary of a recently submitted curriculum change proposal is also included. The proposal speaks of the direction of change that the program faculty is pursuing to enhance the relevance and currency of the student's education, as well as provide for more graduate opportunities within this vast industry. The student will also have more flexibility within their own schedule and educational path to minimize the time spent on acquiring the degree.

Student:			
Email:		ID:	
Advisor:		PH:	

Associate in Applied Science in Plastics Technology and Bachelor of Science in Plastics Engineering Technology Course Sequence Guide

YEAR 1 - FALL SEMESTER			Crs	Gr
PLTS	110	Intro to Plastics Technology (PLTT/RUBT Student)	3	
MFGT	150	Manufacturing Processes	2	
ENGL	150	English 1(ACT 14 or ENGL 074)	3	
MATH	116	Intermediate Algebra & Numerical Trig (ACT19 or MATH 110)	4	
		Social Awareness Elective	3	
FSUS	100	Freshmen Seminar	1	
		Total	16	

YEAR 1 - SPRING SEMESTER			Crs	Gr
PLTS	121	Plastics Processing 1 (PLTS 110)	4	
ETEC	140	Engineering Graphics	3	
MATH	126	Algebra & Analytical Trig (C- or Better MATH 116)	4	
PHYS	211	Introductory Physics 1 (MATH 116 or 120 or 26 ACT	4	
		Total	15	

YEAR 1 - SUMMER SEMESTER			Crs	Gr
PLTS	193	Industrial Internship	4	
		Total	4	

YEAR 2 - FALL SEMESTER			Crs	Gr
PLTS	211	Plastics Processing 2	5	
EEET	201	Electrical Fundamentals (ACT 24 or MATH 116)	3	
ENGL	250	English 2 (ENGL 150)	3	
CHEM	121	General Chemistry 1(CHEM 103 or H/S CHEM)	5	
		Cultural Enrichment Elective	3	
		Total	19	

YEAR 2 - SPRING SEMESTER			Crs	Gr
PLTS	212	Plts. Prdt. & Tool Design 1 (PLTS 110, ETEC 140)	5	
PLTS	223	Plts Testing & Properties (MATH 116, CHEM 121)	5	
MECH	250	Fluid Power w/Controls (MATH 116)	2	
CHEM	211	Fund. Organic/Polymer Chemistry (C- in CHEM 121)	4	
		Total	16	

Prerequites for 300/400 level coursew ork is admission into the BS program

YEAR 3 - FALL SEMESTER			Crs	Gr
PLTS	312	Plastics Product & Tool Design 2	4	
PLTS	320	Plastics & Elastic Materials	3	
MECH	340	Statics & Strengths of Mat'ls (MATH 126)	4	
COM M	121	Fundamentals of Public Speaking	3	
		Total	14	

YEAR 3 - SPRING SEMESTER			Crs	Gr
PLTS	300	Plastics Engineer Management System	4	
PLTS	321	Advanced Injection Molding	4	
EEET	301	Controls for Automation (EEET 201)	3	
ENGL	311	Advanced Technical Writing (ENGL 250)	3	
		Total	14	

YEAR 3 - SUMMER SEMESTER			Crs	Gr
PLTS	393	Industrial Internship	4	
		Total	4	

Submit Application for Graduation.

YEAR 4 - FALL SEMESTER			Crs	Gr
PLTS	411	Plastics Decorating & Assembly	4	
MFGE	351	Intro Industrial Engineering	3	
MFGE	353	Statistical Quality Control (MATH 115)	3	
		Cultural Enrichment Elective	3	
		Social Awareness Elective	3	
		Total	16	

YEAR 4 - SPRING SEMESTER			Crs	Gr
PLTS	410	Plts Costing, Pkng, & Econ Issues	3	
PLTS	499	Plastics Career Skills (PLTS 393, final semester)	1	
MFGE	451	Intro to Plant Engineering (Technology Student)	3	
		Directed Elective - Consult your department advisor	2	
		Cultural Enrichment Elective (200 level or higher)	3	
		Social Awareness Elective (200 level or higher)	3	
		Total	15	

PLTS Curriculum Submission – Program Summary

The PLTS curriculum committee decided to complete an initial curriculum submission with minor changes to the program. This "phase 1" submission is being submitted on Friday 4/18/08. A "phase 2" submission with more comprehensive updates is the focus of the committee for the Fall 2008 semester.

Summary of the April 2008 submission

1. Revise Plastics curriculum to better reflect needs of modern plastics industry. These changes are based on input from the PLTS Industrial Advisory Board & program faculty.
2. Streamline the A.A.S. program from 66 credits (plus intern) to 63 credits (plus intern). Streamline 4 year total from 125 (plus interns) to 122 credits (plus interns).
3. Change MFGE & ENGL B.S. courses to electives rather than specific courses. This will allow students to better tailor their coursework to meet their individual interests.
4. Add on PLRU elective to the B.S. program. This creates space for the development of new/advanced plastics & rubber elective offerings. Current students are limited to a single 2-credit "directed elective" which is often filled with a non plastics/rubber course.

Specifics of the April 2008 submission

A.A.S.

-Drop MFGT 150

-Move PLTS 121 from freshman spring to sophomore fall

-Change name to PLTS 218 "General Plastics Processing"

-Move PLTS 211 from sophomore fall to freshman spring

-Change name to PLTS 118 "Intro to Injection Molding"

-Move CHEM 211 from sophomore spring to junior fall

-Move COMM 121 from junior fall to sophomore spring

OLD = 66 credits plus intern

NEW=63 credits plus intern

B.S.

-Drop EEET 301

-Drop MFGE 351

-Drop MFGE 353

-Drop MFGE 451

-Drop ENGL 311

-Add (3) MFGE electives

-Add (1) ENGL elective (311, 321, 323, or 325)

-Add (1) PLRU elective (min. 2 credits)

-Move PLTS 320 from junior spring to junior fall

-Move PLTS 321 from junior spring to junior fall

OLD=59 credits plus intern (125 plus interns total)

NEW=59 credits plus intern (122 plus interns total)

Section 3G

QUALITY OF INSTRUCTION

The best way to assess the quality of the education is to look at the success or failure of the student when implementing the knowledge gained. There are two points of reference/measurement for the assessment of the student in his/her ability to implement correct, current, and relevant knowledge. These two points of reference are the two required internships (one for each program, AAS Degree and BS Degree) that each student is required to take. This is typically done during the summer months between the freshman and sophomore and the junior and senior years.

The students are responsible to find their own internship for that summer. However, many companies start the solicitation process as soon as January of that year. Many companies contact the department directly, or work through the job fairs the university has each semester. The number of repeat companies who take interns from the program is demonstrated by listing each one (See Appendix “D”). Each internship site within Michigan and near states is visited by one of the faculty who is assigned as that student’s internship coordinator. The visit produces many favorable results, including a sense of the effectiveness and quality of the instruction being given to the student.

In serving as a wide-based enhancement to the advisory board input regarding curriculum and skill base, the internship visits allow coordinators (which rotate from year to year) to get first hand industry input to and assistance with topical content to the courses being taught.

Each intern is also formally evaluated by their supervisor. The evaluation is a requirement for completion of the class (each internship is a 4 credit hour required course). The coordinator reviews the evaluation and is able to address individual student issues or program course/content issues as a result. Most issues stem from the individual person versus the preparation for the internship experience within the Plastics Industry. Final internship reports (another requirement) are kept on file within the student resource room here in the National Elastomer Center.

Section 3H

COMPOSITION AND QUALITY OF FACULTY

There are six Plastics Program faculty members currently. The program does not have any other support faculty at this time, and, of them, one is serving as the department chair. Each faculty member's Curriculum Vitae is included within this section. Several key issues regarding the quality of the faculty are addressed when reviewing the vitae:

1. Their own educational background.
2. Their individual experience within the industry they are teaching.
3. Current and ongoing activities relative to teaching.
4. Activities relevant to the development and improvement of the student's education.
5. Activity within professional organizations within the industry.
6. Ferris rank held on the teaching level.

A couple of summarizing statements regarding the faculty along the lines of these points:

- Each faculty member has worked full time within the Plastics Industry at some point in time.
- Each faculty member has worked (at some capacity) with companies within the industry as a consultant, during a sabbatical leave, or as a resource to enhance particular coursework.
- Each faculty member belongs to a professional society for the industry.
- Most faculty members have published information regarding his expertise in various forms – books, trade journals, periodicals, and web sites.
- Most faculty members have followed the promotion sequence and have been upgraded. There are 3 full professors out of the six at this time.
- There are three faculty members who graduated from competing plastics programs across the nation, two have graduated out of this Ferris program, and one out of a formal education venue.

In addition to the above points, the plastics faculty members are involved in many university, college, and department committees on an ongoing basis. Each one has also been responsible for bringing in both equipment and supplies to the program for student learning on several different levels. This includes hand tools and equipment, material, molding machines, secondary machines, software, etc.

CURRICULUM VITAE

ROBERT G. SPEIRS III

EDUCATION:

MAY 1980	B.S. Plastics Engineering, University of Lowell, Lowell, MA.
SEPT. 1982	M.S. Plastics Engineering, University of Lowell
Thru 2008	Doctor of Engineering, University of Massachusetts@ Lowell (ADB)

FACULTY POSITIONS:

1981-82	Graduate Assistant, University of Lowell Plastics Engineering Dept.
1981-82	Adjunct Faculty, University of Lowell, School of Continuing Education
1988-93	Assistant Professor, Ferris State University, Plastics Engineering Technology
1993-2002	Associate Professor, Ferris State University, Plastics Engineering Technology
2002- Present	Professor, Ferris State University, Plastics Engineering Technology
2003 – Present	Department Chair, Plastics and Rubber programs.

COURSES TAUGHT (Ferris State University)

PLTS 110	Introduction to Plastics technology
PLTS 121	Plastics Processing 1
PLTS 211	Plastics Processing 2
PLTS 223	Plastics Testing and Properties
PLTS 312	Plastics Product and Tool design 2
PLTS 320	Plastics & Elastomer systems
PLTS 321	Advanced Injection molding
PLTS 342	Plastics Materials Selection
PLTS 499	Plastics Career Skills

COURSES TAUGHT (University of Massachusetts @ Lowell)

26.300	Polymeric Materials I
26.301	Polymeric Materials II
26.25/216	Plastics Processing Laboratory

INDUSTRIAL SEMINARS TAUGHT

- Introduction to Injection molding
- Advanced Injection molding
- Trouble-shooting the Injection molding process
- Plastics Materials and Testing
- Automotive Materials and testing
- Plastics materials selection
- Plastics process selection
- Automotive plastics

PROFESSIONAL EXPERIENCE:

1980-81	Market Development Engineer, Dynamit Nobel AG, Kay-Fries Chemical Div. (Plastics materials sales)
1982-85	Principle engineer, Baxter Travenol Labs, Artificial Organs Div. (Medical products)
1985-88	Senior Applications Development Engineer, Dow Chemical Co., Plastics Dept. (Plastics materials, service/design)
Jan. 2000-Aug. 2000	Plastics Consultant, NMC Group, Inc., Pomona, CA (Sabbatical leave, worked with a custom molder)

INDUSTRIAL CONSULTING:
The focus of most clients' needs are for assistance in plastics product design and development, production processes selection, analysis and automation. Materials selection as it pertains to trouble- shooting, problem identification and new product introduction. Additionally, consultation has occurred in the areas of training and education, specifically curriculum development.

INDUSTRIAL CONSULTING (partial list):
The Food and Drug Administration, Washington, D.C.
Phillips Plastics, Phillips, WI
Tri-Quest Products, Vancouver, WA
DME Corporation, Detroit, MI
Still, Neimier, Yockey & Young, Attorneys at Law, Farmington Hills, MI
Hyman, Phelps & McNamara, P.C., Attorneys at Law, Washington, D.C.
Arnold & Porter, Attorneys at Law, Washington, D.C.
Dow Corning Corp., Freeland, MI
Prince Corp., Holland, MI
United Technologies Corporation, Hartford, CT
Society of Manufacturing Engineers, Dearborn, MI
The NMC Group, Inc., Pomona, CA
Minnesota Technologies, Minneapolis, MN
Johnson and Johnson, Ethicon Div., Columbus, OH
Leer Corp., South Bend, IN
Kaiser Electronic, Inc., San Jose, CA

PUBLICATIONS:
THESIS: "RIM/RRIM: A Technology Assessment", M.S. Thesis, University of Lowell, 1982

ARTICLES: "Nylons, Amorphous": Modern Plastics Encyclopedia-1982, McGraw Hill Publications.

CHAPTERS: Problem resolution: "Plastics Technicians Toolbox", Society of Plastics Engineers, 2002

CONFERENCE PUBLICATIONS:

"*Injection Molding CIM Cooperative for Education: Pay-offs for the Plastics Industry";* P. Engelmann, R. Speirs III, R. Cedarholm. Society of Plastics Engineers-Annual National Technical Conference 1991.

"Rubber Technician/Technologist: A Skill/Task Assessment"; R. Speirs and E. Whitmore. American Chemical Society Rubber Division-Annual Conference 1991.

Development and Manufacture of Visor for Helmet Mounted Display David Krevor, Gregg McNelly, John Skubon, and Robert Speirs; ; SPIE Vol. 5180; C.E. Rash and C. E. Reese (editors); 2004

"Manufacturing development of visor for binocular Helmet Mounted Display", David Krevor, Timothy Edwards, Eric Larkin, Rockwell Collins Display Systems; John Skubon, MXL Industries, Robert Speirs, Ferris State University, Tom Sowden, Contour Metrological & Manufacturing. Proceedings of SPIE Volume: **6671.** ISBN: 9780819468192

MISCELLANEOUS: BOOK REVIEW

"Handbook of Plastics and Composites"; ASM International, 1989.

"Handbook of Plastics Testing Technology"; Shah, V., Wiley Interscience, 1998

Ed Muccio

Curriculum Vitae

Address

Ferris State University
National Elastomer Center
Plastics and Rubber Engineering Technology Department
NBC-223
919 Campus Drive
Big Rapids, MI 49307

Communication

Phone: 231 591 2965 email: muccioe@ferris.edu
Fax: 231 591 2642

Education

- BS (1972) and MS (1973) in Plastics: University of Massachusetts-Lowell (Formerly Lowell Technological Institute)
- 2000-2004 Graduate studies in Higher Education Leadership: Western Michigan University
- 1997-Present – over 40 hours of foreign language credits taken at Ferris State University and Aachen, German Fachhochschule
- 1972-1973 Secondary Education Courses – Salem State College; Salem, Massachusetts

Present Position

Professor of Plastics Engineering Technology Ferris State University (1989-present)

Publications

- Plastic Part Technology - 1991 ASM International
- Plastics Processing Technology - 1994 ASM International
- Plastics Material Handling - 1996 JEPP Associates, Inc.
- ASM Handbook Vol. 20 Plastics Materials Selection and Design - Chapter 7-1 Design for Polymer Processing - 1997
- Injection Molding Operator's Handbook - 1999 JEPP Associates, Inc.
- Decorating and Assembly of Plastics - October 1999 ASM International

Ed Muccio

Curriculum Vitae

Honors

- ODK Omicron Delta Kappa inducted in 1998
- Nominated for Distinguished Teacher Award 1990 and 2000
- Distinguished Teacher Award Finalist 2001
- Elected to Academic Senate 1991
- Elected to Academic Senate Executive Board 1992
- Student Affairs/Student Judicial Services Award Honoree 2001-2003
- Academic Honors Award (4.0 GPA) 2002
- International Educator Nominee 2001-2003
- Ferris Award for Academic Excellence Nominee 2002

Courses Taught at Ferris

- PLTS-100 Survey of Plastics and Elastomer Technology
- PLTS-193 Plastics Internship – Level 1
- PLTS-223 Testing of Plastic Materials
- PLTS-212 Plastics Mold and Product Design I
- PLTS-290 Polymer Composites Experimental Course
- PLTS-290 International Plastics Elective
- PLTS-300 Plastics Project Management
- PLTS-312 Plastics Mold and Product Design II
- PLTS-343 Materials Selection for Product Design Majors
- PLTS-361 Plastics Composites
- PLTS-393 Plastics Internship – Level 2
- PLTS-411 Decorating and Assembly of Plastics
- PLTS-499 Plastics Capstone/Career Skills
- FSUS-100 University Seminar

University Committees

- University-Wide Task Force – Professional Development
- Student Judicial Committee
- Department Curriculum Committee
- Program Curriculum Committee
- Plastic Program Review Committee
- College Program Committee

Over the past 7 years, I have developed and coordinated several international activities within the College of Technology including arranging for students to work at internships in Germany, German students to spend a semester at FSU, and took 18 plastics students to Germany as part of a study abroad program.

Ed Muccio

Curriculum Vitae

Prior Committee Work:

- University Arts and Lecture Committee (Chair and member)
- Department Curriculum Committee
- Academic Senate Member and Executive Committee Member
- Plastics program review
- Author of Plastics Newsletter
- International Affairs Advisory Committee
- Tenure Committee member for Robert Pierce
- Tenure Committee (Chair) for Larry Langell

Memberships

- SPE (Society of Plastics Engineers) 1968-present
- Mid Michigan SPE (Society of Plastics Engineers) 1989-present
- ASM (American Society of Materials) Author 1990-present
- SME (Society of Manufacturing Engineering) 2004

Professional Society Support and Development

- Elected to the board of trustees of the SPE Decorating Assembly Division (1992-1995)
- Technical Chairperson for SPE Decorating Assembly Division RETEC (1995)

Professional Education

- 40+ credits in German language studies at FSU and Fachhochschule-Aachen, Germany. Intermediate level fluency in German
- Introductory French and Spanish language studies
- CMold
- MoldFlow
- Haake Rheology Seminars
- Institut für Kunststoffverarbeitung
- ABET TEI Continuous Improvement Workshop
- National Plastics Exposition Seminars
- SPE Regional Technical Conferences (RETEC)

Ed Muccio

Curriculum Vitae

Industrial Experience

Texas Instruments Inc. (1973-1989) for 16 years where I held positions as senior plastics engineer, product design supervisor, mold design and build supervisor, project engineer and primary operations manager. Work sites include:

• Sherman, Texas	Military and Government Products
• Lubbock, Texas	Computers and Calculators
• Attleboro, Massachusetts	Materials and Controls
• Aversa and Rieti, Italy	Materials and Controls
• Versailles, Kentucky	Materials and Controls

Areas I have directed at Texas Instruments include:

- All major molding processes
- Product Design
- Mold Design
- Mold Build
- Capital Procurement
- Project Management
- Production Management
- In-Plant Training
- Operations Management

Teaching Experience (Other)

While at Texas Instruments, Ed Muccio developed and taught plastics courses at area colleges and universities, including:

1972-1973	Substitute Teacher in the Middlesex County School System in Massachusetts
1973-1975	Adjunct Instructor teaching Plastics Technology and Manufacturing Engineering at Grayson County College in Sherman-Denison, Texas
1975-1976	Developed and instructed Plastics Technology at West Texas Community College in Lubbock, Texas
1981-1989	Assistant Adjunct Professor in the Graduate School of the Materials Science Dept. of the University of Kentucky where I developed and instructed graduate level classes in Polymer Engineering and Plastics Processing
1998-Present	Fachhochschule (University of Applied Science) Aachen, Germany. Guest Lecturer in Plastics Engineering for Aerospace Engineering, Chemical Engineering, and Mechanical Engineering students.

Ed Muccio

Curriculum Vitae

Industrial Consulting

Professor Muccio is an active consultant to the plastics industry and has assisted major companies throughout North America and Europe.

Some clients include

- Steelcase
- Texas Instruments
- Alpha Plastics
- United Technologies
- Hahn Elastomers
- IBM
- Lord Chemical
- Wright Plastics
- Cadillac Rubber and Plastics
- Hi-Tech Film
- PlastiPak
- Frigidaire
- Michigan Rubber and Plastics
- Pliant Plastics
- Mid Michigan Technology Center
- General Electric
- Kalfact Molding
- Drake Plastics
- RWTH Aachen, Germany
- FH- Aachen, Germany
- FH- Würzburg, Germany
- FH- Darmstadt, Germany
- Paderborn University, Germany

CURRICULUM VITAE

Larry L. Schult
19907 Indian Drive
Paris, MI 49338

(231) 591-5261 (W) (231) 592-4775 (H)

Education

Macomb County Community College
Warren, Michigan
Automotive Body Design Program

Eastern Michigan University
Ypsilanti, Michigan
Bachelor of Science (BS)
Industrial Education

University of Michigan
Ann Arbor, Michigan
Master of Arts (MA)
Occupational Education

Professional Industrial Experience

Northwood Industries **1977 - 1981**
Traverse City, Michigan
Laborer/Plant Manager/Sales & Marketing

This small family-owned plastics manufacturing company allowed me to experience many duties which current grads of my program will encounter. My manufacturing responsibilities included common laborer, machine/process technician duties, mold tryout duties, and shift management duties. My administrative duties included plant management duties and sales and marketing activities.

Grand Traverse Plastics Corporation **1981 - 1985**
Williamsburg, Michigan
Vice-President (Stockholder) & General Manager

I was one of four initial investors and operation start-up stockholders in this plastics injection molding company. Duties included initial plant construction/layout, equipment purchasing and set-up, manufacturing start-up, day-to-day running/administrative duties, and all related business functions of a custom molding facility. The company did both automotive and non-automotive plastic part manufacturing. My duties again are relative to duties that many grads of my current program will be a part of.

AMP Industries **1985 - 1994**
Harrison Twp., Michigan
Policy and Procedure Coordinator/Manufacturing Vice-President

Initial duties included writing policies and procedures for this plastics molding company with the intent of running the manufacturing operations to them in the future. These documents and methods included areas of design, manufacturing, quality, as well as the daily functions of the business. As Vice-President, I took over all manufacturing activities of this 30 machine operation primarily involved with the automotive industry. I directed all molding, decoration, assembly, and support activities. This experience allows me to better serve my students in attaining and retaining positions within these areas which may also expand into these upper management duties in the future.

Professional Teaching Experience

Fraser Public Schools – Fraser High School **1972 - 1977**
Fraser, Michigan
Teacher - Plastics Shop, Wood Shop, Shop Math

I taught these courses from the 1972-73 school year to the 1976-1977 school year. The classes had a mixture of 9th grade to 12th grade students in them. I focussed on the plastics area and helped establish curriculum and lab set-up. I had developed 2 levels of classes in plastics at that time. and laid the groundwork for a co-op program prior to leaving. This would have added a vocational certified class for seniors to the other two levels of classes.

Ferris State University **1994 – Current**
Big Rapids, Michigan
Associate Professor – Plastics Engineering Technology Programs

Teaching Activities At FSU Main Campus Since Hiring:

PLTS100 – Survey of Plastics and Elastomers
This offering is intended for non-majors, anyone interested in exploring the world of plastics and related materials. It is a 2 credit hour class which focuses on general concepts and covers the industry in general, materials, processes, and related jobs within the industry. As a result of this class, interested, undecided students become full-time students within the program.

PLTS110 – Introduction To Plastics
This is the first class the students take within the AAS Plastics Program. It is an exploratory class of the industry and includes a hands-on laboratory component. The students get a "wide-view" look at the industry and begin to understand key concepts and fundamentals which lead into the next series of courses.

PLTS121 – Processing 1
In this AAS Program course the students focus on the processing aspects of the industry and explore the key techniques/methods used to produce plastic parts of all kinds. The key concepts include set-up, running, auxiliary equipment, and troubleshooting. This course also has a laboratory component in which the students operate blow molding, extrusion. rotational molding, compression molding, thermoforming, and related auxiliary equipment.

PLTS300 – Plastics Engineering Management Systems

The focus of this BS Program course is to teach the student relative skills which are a part of the job duties of the main positions they will end up working in. Topics and activities include: project management, supervisory skills, FMEA development, formal problem solving techniques, the automotive industry operating programs (such as sample submission), and the ISO certification program.

PLTS325 – Plastics Introduction for Manufacturing Program Students

This is a course similar to PLTS110 but with reduced depth and no laboratory component. It is a technical related required course for other programs within the College of Technology and focuses on an overall/general education on the plastics industry.

PLTS400 – Senior Project (now obsolete)

As a follow-up class to PLTS300 (above), this class was intended to give each senior in the BS Program the opportunity to do an individual, semester-long project. We have now incorporated this concept and opportunity as "mini" projects within other classes.

PLTS410 – PLASTIC COSTING, PACKAGING, AND ECONOMIC ISSUES

This course is one that I developed for the Plastics Engineering Technology Program. The topics include the important issues of engineering economics, quoting plastics products, cost reduction efforts for plastics, and packaging issues for plastics products (as a component of the overall industry also). The student learns to be fiscally responsible as well as how to read the financial documents of the industry.

PLTS411 – Plastic Decoration & Assembly

The plastics industry utilizes many processes and methods currently to assemble and decorate finished products after producing them. This allows the wide application for the material and products so visible today. This BS Program course is usually made up of seniors and explores all major methods for creation of a finished product or assembly. There is a hands-on laboratory component which gives the student experience in painting, hot stamping, sonic welding, fusion welding, pad printing, solvent and adhesive bonding, and heat staking. Projects with Dow Silicone have been done by students in this class.

PLTS499 – Life Skills

As the last class in the program (taken the last semester within the BS Program), the students learn things that will help them in their personal and professional lives as they enter the world of work and responsibility. Topics include: resumes and interviewing, investing, daily finance issues and decisions, sexual harassment, patents and ideas, and other related topics.

PLTS297 & 497 – Special Topics

Some students need independent studies to fulfill coursework and requirements. I have developed several such studies for students to assist them in graduation.

PLTS 193 & 393 - Internships

Both the AAS and BS Program curriculum require summer internships(400 hours). I have been one of the summer coordinators for these students for most of the summers I have been employed at Ferris. The students are visited and also submit weekly reports along with a semester's end final report and evaluations.

Concurrent Professional Activities

Company Training Programs

EVART PRODUCTS
Developed multi-media training modules

VENTURE INDUSTRIES
Developed and delivered operator and technician training

UNITED TECHNOLOGIES
Part of the training assessment team for several plants
Developed training modules for operators and technicians

SUMMIT POLYMERS
Developed and delivered training modules at several plants

Professional Organizations Membership

Society of Plastics Engineers (SPE) – Past Member
Association of Rotational Molders (ARM) - Current Member
Plastics Molders & Manufacturers Association of the Society of Manufacturing Engineers (SME) - Current Member*
**Committee member of Finishing and Decoration for Plastics Committee, an SME solicited position.*

Industry Developmental Work
Material and process development for a medical instrument – a quevette
ABS material developmental tryouts for the blow molding process for Dow
Blow molding colored material tryouts for validation–Uniform Color Compounding

Industry Publications

* *World-wide Web pages for the SME committee Handbook:*
  - *"Surface Treatment of Plastics for Decoration and Assembly"*
  - *"Flame Treatment"*
  - *"Corona Discharge Treatment"*

Book review activities for several plastics text books

Web Site:* **http://www.sme.org/cgi-bin/communities.pl?/communities/techgroups/finishing/plastics_handbook/intro.htm&&&SME&

Committee Service

University

Historical and Archive Committee
Policies and Procedures Committee (established Post Tenure Review)
College of Technology Dean Search Committee (twice)

College of Technology

College Curriculum Committee
College Promotion Committee
"Development Director" Search Committee

PLTS390 – Principles Of Blow Molding

This is a new course that I have developed which is part of the Directed Elective class choices a student has for this required course within the BS Degree Program. The course takes off where the exploratory unit in blow molding within the PLTS121 class leaves off. It is an intensive, focused, and practical course in the blow molding process. The plastics programs focus the student on injection molding, and this course gives them a popular industry method option to enhance their marketability.

FSUS100 – New Freshmen Orientation

This course is the university required orientation course for incoming freshmen – new to the college experience.

Teaching Award:

2001-2002 Distinguished Teacher Finalist

Program Coordinator Activities:

From February of 1997 to September of 1998 I served my first tenure as the Faculty Coordinator for the Plastics Program. My time was split between course teaching load and administrative duties. During that period I spent time on organizing the program, eliminating student problems, dealing with budget issues, maintaining industry contacts, and all other related activities. I also assured a smooth transition into the new National Elastomer Center building, and wrote non-existent procedures and policies regarding the program.

From January of 2001 to September of 2001 I served my second term as Department Chair for the Plastics Program. This was a temporary position which filled the administrative gap while the director was serving a temporary position as Assistant Dean. I maintained program initiatives during this tenure.

Curriculum Activities:

Authored a new course which became part of the Plastics Engineering Technology BS Program in Winter 2001 Semester. It is entitled "Plastics Costing, Packaging, & Economic Issues". This course helped to fill a void within the curriculum, and has been very well received by the students and faculty. Authored a second new course entitled "Principles Of Blow Molding" which, initially, is a core curriculum course that satisfies the Directed Elective requirement within the BS Degree. I have also assisted in several other curriculum changes and course improvements. I have also submitted a proposal for a Plastics Packaging BS Degree Program for the Plastics Department and am developing the proposed curriculum.

Related Activities:

As with other professors, I maintain a compliment of (25-30) students as advisees each semester. I have also acquired numerous donations from the Plastics Industry of materials and equipment for use in our extensive labs. All of my lectures have been developed on Microsoft Powerpoint for classroom presentation. I have also attended seminars relative to the subject matter that I teach such as: project management, assembly of plastics, the blow molding process, and testing plastics products. I have also guest lectured for the Welding Program on ultrasonic welding and adhesive bonding of plastics. I attend the Plastics Industry expositions as well as several professional conferences, I have spoken to the Annual Blow Molding Conference on my new course development activities, and procured extensive industry support for our new blow molding efforts as a result.

Department

Curriculum Committee Chair (Department and Program)
Program Review Committee
Articulation Leader

Program

New Faculty Mentor
Tenure Committee Chair
Curriculum Committee
Articulation Coordinator
High School Recruitment Activities Presenter

Current Coursework

Program

Certificate Program in Project Management – University of California Berkeley
Internet Program – 6 courses required
Courses Completed: "Project Management"
"Project Planning and Control"

Community Activities

"Monday Night Technologies" – Past Program Instructor/Presenter
West Michigan Science and Engineering Fair – Past Project Judge
Mentor for Math, Science, and Technology Center student work

Ferris State University

College of Technology

Yearly Resume

Academic Year: 2007/2008

Name Larry Langell Rank Associate Professor

Date of Initial Appointment: 9/97

Highest degree held (degree and date conferred):

-MS Career & Technical Education, Ferris State University, 12/00

Institutes, seminars, workshops, or field experiences:

-Moldflow Plastic Flow Analysis training, Kalamazoo MI, Fall 2004

-CATIA Software training (5-day), Ferris State University, Summer 2007

Departmental assignments/activities:

-Coordinate administration / analysis of Outcomes Assessment test to incoming PLTS freshmen, F/01-F/07

-Coordinate administration / analysis of Outcomes Assessment test to exiting PLTS sophomores, W/02-W/08

-Member FSU Library & Historical Archive committee- '02/'03, '03/'04, '05/'06, '06/'07, '07/'08 school years

-Elected as Chair, FSU Library & Historical Archive committee- '03/'04

-Develop & Maintain FSU Plastics Program website

-Integrated webpage design projects into several courses

-PLTS 121

-PLTS 312

-PLTS 411

-Integrated Solids Modeling in PLTS 212 / PLTS 312 courses

-Taught non-PLRU department class ETEC 140 for PLTS students

-Staffed COT Student Picnic- F/02-F/07

-Staffed PLRU Career Days- F/04-F/07

-Summer 2001-2007 contracts following FSU interns

<u>Memberships in professional organizations (list office held, if any):</u>

-SPE (Society of Plastics Engineers)

-Elected to SPE Board of Directors, Western Michigan Section Education Committee Chair

-Elected to SPE Board of Directors, Western Michigan Section Website Committee Chair

Curriculum Vitae

Gregory J. Conti
320 Tomahawk Lane
Reed City, MI 49677
(231) 832-3813 – Home Phone (231) 591-2963 – Work Phone

E d u c a t i o n

1988-
B.S. Applied Mathematics, Ferris State College

1986-
B.S. Plastics Engineering Technology, Ferris State College, Highest Distinction

1985-
AAS Pre-Engineering, Ferris State College, Highest Distinction

1985-
AAS Plastics Technology, Ferris State College, Highest Distinction

Additional Training:
1997 - Mako Controller Training
1997 - C-Mold – Flow Analysis Training
1995 - Vickers Hydraulics Training
1990 - MoldFlow – Flow Analysis Training
1990 – RJG & Associates – Scientific Injection Molding Seminars
1989 - TMC – flow Analysis Training
1989 - Personal designer CAD Training Course
1988 - RJG & Associates – Injection Molding Training Seminars
1986 - SPC and Taguchi (DOE) Training Seminars

E d u c a t i o n a l H o n o r s a n d S c h o l a r s h i p s

B.S. Applied Mathematics, Highest Distinction – 1988
Ferris State University, Big Rapids, Michigan 49677

B.S. Plastics Engineering Technology, Highest Distinction – 1986
Ferris State University, Big Rapids, Michigan 49677

AAS Pre-Engineering, Highest Distinction – 1985
Ferris State University, Big Rapids, Michigan 49677

AAS Plastics Technology, Highest Distinction – 1985
Ferris State University, Big Rapids, Michigan 49677

National Plastics Brotherhood Scholarship Award – 1984-85

Society of Plastics Engineers Scholastic Scholarship – 1985

P r o f e s s i o n a l E x p e r i e n c e

Technology Transfer Center at Ferris State 1993 - Present
Big Rapids, MI
Trainer-
Conducted numerous training sessions in plastics processing for engineers, managers at all levels, technicians, and set-up personnel. Some locations were: Delphi at the Adrian facility; United Automotive Technologies at various North American locations including the Ferris State University plastics building; Soo Plastics at the Sault Ste Marie facility, ACS Exteriors at the East Tawas facility

Guiness Technologies, Inc. 1998 – Present
Rockford, MI
Lead Process and Set-up Technician Trainer-
Conducted numerous training sessions in plastics processing and mold set-up for technicians, set-up personnel, engineers, and managers at all levels. Some locations were: Venture Industries, Inc.; Soo Plastics at the Sault Ste Marie facility; Donnelly at the Newago facility; Union Tools in Hebron, Ohio; Lexamar at the Boyne City facility; Delphi at the Adrian facility

Baylock Manufacturing Corp. / ITT 1986 - 1987
Oscoda, MI
Industrial/Plant Engineer-
Supervisor over the engineering and prototype departments
Set-up work standards and procedures
Designed, conducted and analyzed various processing experiments
Conducted process capability studies
Designed and developed new processes and the associated tooling
Technical advisor to the quality circles
Established various computer systems for tracking ‘efficiences’
Established a system for production scheduling
Wrote-up FMEAs, control plans, production flow charts, etc.

Keeler Brass Company **1984 – 1986**
Grand Rapids, MI
Injection Molding Technician/ Set-up-
Set-up injection molding presses for production runs
Trouble-shot production problems

T e a c h i n g   E x p e r i e n c e

Ferris State University **November 1987 – Present**
Big Rapids, Michigan 49307
Assistant Professor, Plastics Programs

Courses Taught under Quarters:
PLT 111 - Introduction to Plastics Technology
PLT 121 - Plastics Forming Processing (aka. Processing I)
PLT 131 - Physical Properties of Plastics (aka. Plastics Testing)
PLT 203 - Composites Structures
PLT 204 - Production Processes (aka. Processing II)
PLT 411 - Advanced Plastics Processes
PLT 412 - Plastics Projects I
PLT 431 - Plastics Projects II
PLT 141/341 - Internships in Plastics Technology

Courses Taught under Semesters:
PLTS 110 - Introduction to Plastics Technology
PLTS 211 - Plastics Processing #2
PLTS 223 - Plastics Testing and Properites
PLTS 321 - Plastics Processing #3
PLTS 325 - Plastics Technology for MET
PLTS 342 - Plastics Materials Selection for PDET
PLTS 193/393 - Industrial Internships

*All courses listed above include teaching both lectures and labs for every course with the obvious exceptions of the industrial internships.

C o n s u l t i n g   A c t i v i t i e s

Spring of 1996

Soo Plastics
6 sessions of Process Training taught at the Sault Ste Marie facility and the local Ramada Inn and attended by all set-up, process technicians, and process and design engineers.
2 sessions on the Physical Properties and Quality Control taught at the Sault Ste Marie facility attended by all QC/QA personnel

January to September 1997
United Technologies Automotive – Interiors (North American Division)
12 session of Process Training taught at Ferris State plastics facilities and attended by process technicians, process and tooling engineers, managers and supervisors, and corporate staff
2 sessions of Process Training taught at the Iowa City facility and attended by process technicians, process engineers, managers and supervisors
1 executive session held at Ferris State University and attended by UTA president and his corporate staff

March 1998
Venture Industries
3 sessions of Injection Mold Set-up Training taught at the St. Clair facility and sttended by all mold set-up personnel along with 2 corporate trainers and some process technicians

October 1998
Union Tools – Injection Molding Division
3 sessions of Injection Mold Set-up Training taught at the Cincinnati, OH facility and attended by all mold set-up personnel along with the plant supervisor

December 1999
Donnelly Corporation
3 sessions of Process Training taught at the Newago facility and attended by all process technicians and process engineers

Summer 2000/2001
Delphi at Adrian
5 sessions of Process Training taught at the Adrian facility and attended by all process technicians and some key supervisors and process engineers and managers
1 executive session at the Adrian facility and attended by high level managers and key engineers, supervisors and union representatives

July 2001
Soo Plastics
2 sessions of Process Training taught at the Saulte Ste Marie facility and attended by all process technicians and mold set-up personnel

Summer 2001
Vitrolite
Conducted material testing and analysis of a proprietary additive for plastics processing

March 2002
ASC Exteriors
1 session of Process Training taught at the East Tawas facility and attended by all plastics process personnel

Spring/Summer 2002
Lexamar
2 sessions of Process Training taught at the Boyne City facility and attended by most plastics processing personnel and tool room personnel

Summer 2005
Lear Corp
2 sessions of Process Training taught at the Iowa City facility and attended by process technicians, process engineers, managers and supervisors

Summer 2005
Lexamar
2 sessions of Process Training taught at the Boyne City facility and attended by most plastics processing personnel and tool room personnel

Summer 2006
Delphi at Adrian
2 sessions of Process Training taught at the Adrian facility and attended by all process technicians and some key supervisors and process engineers and managers

March 2008
EverReady
1 session of Process Training taught at the St. Albans, VT facility and attended by most plastics processing personnel and tool room personnel

Professional Memberships

The Society of Plastics Engineers
Member from 1982 - 1996

Curriculum Vitae

Stephen R. Wolfer
10486 Scenic Pines Ct.
Rockford, MI 49307
(231)-591-2636 (W) (616)-863-9892 (H)

Education

Pittsburg State University
Pittsburg, Kansas

Bachelor of Science(BS) in Engineering Technology, *1987*
Plastics Engineering Technology Major.

Master of Science(MS) in Technology, Plastics Major. *1988*

Specialist in Education(Ed.S.), Industrial Education Major. *2002*

Educational Honors and Scholarships

Pittsburg State University Plastics Academic
Pittsburg State University, Pittsburg, Kansas 1987.

Chicago Society of Plastics Engineers Scholastic
Pittsburg State University, Pittsburg, Kansas 1986.

Wilcox Memorial Scholarship
Pittsburg State University, Pittsburg, Kansas 1986.

84th District General Assembly Scholastic
Pittsburg State University, Pittsburg, Kansas 1985.

Professional experience

Rubbermaid Inc. **1990-1992**
Wooster, Ohio

Mold Development Leader

Responsible for coordination of process engineers, laboratory, and mold sampling activities such as setting priorities, scheduling, and consulting. Also responsible for part quality and optimized molding conditions for new molds released to production, in addition to production repairs and support.

Machine familiarity with HPM, Husky, Cincinnati, Farrell, and Van Dorn (400-3000 ton). Processing familiarity with polyethylene, polypropylene, polystyrene, ABS, and SAN.

Square D Company **1988-1990**
Columbia, Missouri
Plastics Project Engineer

Responsible for purchasing plastic equipment, sampling new and rebuilt molds and equipment, optimizing molding cycles and processing parameters, and serving a liaison with custom molders. Also initiated new thermoplastic department, training programs, cost reduction teams, and quick mold change systems.

Machine Familiarity with Bucher, Arburg, and Cincinnati (80-500 tons). Processing familiarity with phenolics, polyesters, BMC, SMC, PPO, acetal, and nylon resins.

General Dynamics **1985-1986**
Fort Worth, Texas
Research and Development Engineer

Responsible for identifying and validating innovative manufacturing and tooling techniques applicable to the fabrication of high performance thermoplastic structure and identifying and transferring technologies related to the repair of advanced composite structure.

Consumer Savings **1978-1982**
Lockport, Illinois
Supervisor

Responsible for supervising plastic processing and packaging operations.

Teaching Experience

Ferris State University **1992-Present**
Big Rapids, Michigan 49307
Professor, Plastics Programs

Plastics Processing 1
This course provides basic knowledge and awareness of injection molding, thermoforming, blow molding, rotational molding, compression/transfer molding, extrusion, and ancillary equipment. Emphasis is on data collecting techniques and familiarization with the basic plastics processing techniques used in industry today.

Plastics Processing 2
This course provides the student with knowledge and experience in solving common problems encountered in operating plastic production equipment. The course relates the machine control parameters to the effects on the process and the final part quality. Emphasis is placed on primary troubleshooting, process optimization, and the application of standard quality control techniques.

Plastics Processing 3
Here students learn a theoretical approach to injection molding, blow molding, compression molding, and extrusion processing. Plastics processing is examined from a molecular perspective. Various engineering plastics are described in rheological terms of flow response to forces applied. Advanced troubleshooting and process optimization is dealt with in terms of process monitoring.

Plastics Research Project Management
Students develop project management skills through the selection of a pertinent project, writing the project proposal, and performing research. This research concerns some aspect of plastics processing and/or applications.

Senior Plastics Research Project
The student executes the previously proposed project in Plastics Research Project Management. Research, preparation of written reports, and an oral presentation of the research are required.

Capstone Project/Plastics Seminar
A series of special presentations designed to prepare the prospective plastics engineering technology graduate for entry into the plastics industry work force.

Pittsburg State University
Pittsburg, Kansas 66762
Instructional Graduate Assistant , Department of Plastics Engineering Technology
Responsible for planning, organizing, and teaching lecture and laboratory courses.

Publications

S.R. Wolfer, "The Use of Personal Computer Spreadsheet Software in a Plastics Testing Laboratory"
Proceedings of the 46th Annual Technical Conference of the Society of Plastics Engineers, Atlanta. April 1988, paper # 620.

S.R. Wolfer, Ferris State Internship Manual
Ferris State University, December 1993.

S.R. Wolfer, "Hire an Intern and Gain an Advantage"
Injection Molding, April 1994, p. 8.

S.R. Wolfer, "Ferris State Internship Manual"
Plastics Engineering, April 1994, p. 48.

S.R. Wolfer, "Ferris State Offers Internship Manual"
Plastics Engineering, May 1994, p. 96.

S.R. Wolfer, Injection Molding Set-Up Manual
Guiness Technologies, May 1994.

S.R. Wolfer, "Injection Molding Set-Up Manual Offered"
Plastic News, October 25, 1995.

S.R. Wolfer, "Here's a Guide to Injection Machine Set-Up"
Plastics Technology, February 1995, p. 14.

S.R. Wolfer, Manual Para Moldeadores De Plastico Por Inyeccion
Guiness Technologies, Jan 1996.

S.R. Wolfer, 'Removing the Obstacles- Teaching Thermoset Processing"
Proceedings of the Thermoset Regional Technical Conference of the Society of Plastics Engineers, Research Triangle Park, NC. March 1997, p. 1-6.

Consulting activities

"Injection Molding Processing Training
Energizer Battery Corporation, St. Albans, VT, 2008
Decoma Lexamar, Boyne City, MI, 2006
Engineered Plastic Components, Grinnell, IA, 2004
Decoma Lexamar, Boyne City, MI, 2003
ASC Exteriors, East Tawas, MI, 2002
Delphi Adrian, Adrian, MI, 2001
Soo Plastics, Sault St. Marie, MI, 2000
Donnelly Corporation, Newaygo, MI, 1999

"Thermoplastic Injection Molding Set-Up Training"
Summit Polymers, Vicksburg Facility, Vicksburg, MI 1996-1997
Summit Polymers, East Facility, Portage, MI, 1996-1997
Summit Polymers, Valley Facility, Portage, MI, 1997
Summit Polymers, Sturgis Facility, Sturgis, MI, 1997
Summit Polymers, Kalamazoo Facility, Kalamazoo, MI, 1998

"Thermoset Injection Molding Training"
GMI Composites, Muskegon, MI, 1996
Bucher Inc., Buffalo Grove, IL, 1995
Cytec Industries, Perrysburg, OH, 1995

"Basic Injection Molding" Interactive CD ROM
Evart Products, Evart, MI, 1995

"Basic Injection Molds" Interactive CD ROM
Evart Products, Evart, MI, 1995

"Injection Molding" Interactive Computer Training Disks
DME Company, Detroit, MI, 1996

Site Visit and Training Assessment
United Technologies Automotive, Detroit, MI, 1996

"Basic Injection Molding Training for Operators"
Soo Plastics, Sault St. Marie, MI, 2000
United Technologies Automotive- Monterey, Mexico, 1997
United Technologies Automotive- Alma, Alma, MI, 1997
United Technologies Automotive- Edinbourg, Edinbourg, IN, 1997

Bucher National Plastics Exhibition (NPE) Sales Lead Qualification
Bucher, Inc., Buffalo Grove, IL, 1997

Bucher Machine Database
Bucher, Inc., Buffalo Grove, IL, 1997

Bucher Customer Survey
Bucher, Inc., Buffalo Grove, IL, 1997

Bucher Thermoset Injection Molding Training Program
Bucher, Inc., Buffalo Grove, IL, 1997

"Injection Mold Set-Up Training"
Venture Industries, Inc. Clinton Township, MI 1998
Union Tools, Hebron, OH, 1998

Professional memberships

The Society of Plastics Engineers
Member (on and off) since 1985.
Student Chapter Advisor, 1992-1993.
National Education Chairperson, 1993 - 1994.

The Society of Plastics Industry
Member (on and off) since 1986.

Section 3I

SERVICE TO NON-MAJORS

A minor degree has been established within the Plastics and Rubber Engineering Technology Department to initially service the College of Business. However, there is increasing interest from several different areas. The degree is a minor in Polymer Materials Technology. A check sheet is included within this section.

Another area of service to non majors has been the teaching of coursework outside of our immediate program for related, technical required coursework such as engineering graphics and manufacturing classes. As we are able, the faculty has taken over load in several areas to assist with filling overload situations for other departments.

The program also has a plastics course for non majors, entitled "PLTS100 – Plastics and Elastomers For Non Majors". The course has been very well received. The program has acquired numerous new students within the plastics major as a result.

Two courses are taught for the Mechanical Design Department – PLTS325 and PLTS 342. These two courses introduce the design students to the overall Plastics Industry and familiarize them with plastics materials. They are required courses within the Mechanical Design Department.

COLLEGE OF TECHNOLOGY

PLASTICS AND RUBBER DEPARTMENT

Polymer Materials Technology

MINOR CHECKSHEET (18 Credits)

Prerequisite:

- **Chemistry 121 Science elective (5 credits) or equivalent**
  (University Scientific understanding)
- **Math 116/115 or equivalent**

Required Courses:	**Credits**
PLTS 100 Survey of Plastics & Elastomers	**2 ____**
RUBR 110 Intro to Rubber Technology	**3 ____**
PLTS 110 Intro to Plastics Technology	**3 ____**
PLTS 223 Plastics Testing & Properties (Math 116(115)/ CHEM 121 / *PLTS 110)*	**5 ____**
PLTS 342 Material Selection	**3 ____**
PLTS 361 Plastics Composites	**2 ____**

Meeting the requirements for this minor is the responsibility of the student. The student is also responsible for meeting all FSU General Education requirements as outlined in the university catalog. Your advisor is available to assist you.

Section 3J

DEGREE PROGRAM COST AND PRODUCTIVITY DATA

A breakdown of the student credit hour cost and the full time equated faculty information (SCH/FTEF) will be used to assess the cost and productivity information discussed here. The university data relative to this synopsis is included within the appendices. See Appendix "E".

Using the university generated data relative to the 2006-2007 year as a basis, the university wide SCH/FTEF 443.06. In comparison, the SCH/FTEF for the College of Technology shows the aggregate for the college at 335.50. When looking at the Plastics Program for comparison, it was at 272.95.

There are several reasons for the lower SCH/FTEF value within the plastics program. These include the following points:

- Laboratory sections are small (10-15) in size and long (3-8) in hours.
- The nature of the equipment (number of pieces due to size and expense) is a contributor.
- The nature of the subject matter (highly technical with hundreds of dollars of equipment that students could destroy) is a contributor.
- The safety of the student (using equipment with potentially fatal outcomes if an accident were to occur) is another contributor.
- The necessity for many different technical classes that cover all aspects of the Plastics Industry in general is also a reason for lower productivity numbers. The student is able to be a positive contributor (productive0 for the company he/she goes to work for right from day one. That is a very positive attribute for them and for the program in the future

The Plastics Industry is also getting more diverse and expansive every year. At this point, the student gets a good and solid foundational education. However, the foundation is broadening and more areas of the industry will need to be covered in the future. See Appendix "F" for a synopsis of the Plastics Industry.

Section 3K

ASSESSMENT AND EVALUATION

The AAS Plastics Program currently utilizes an outcomes assessment test for program improvement. The test is given to incoming freshmen to the program (during the first core class – PLTS110) and again (same test) to second semester sophomores (during the PLTS223 course) of the AAS Plastics Degree Program. The initial purpose is to see if the students learn and retain the subject matter out of each of the courses that they have taken in the AAS Degree Program.

Evaluation of this information (overall test score performance – before and after) is periodically published. However, the true utilization of the information and the degree of reaction to it is still being considered.

See Appendix G for the instrument and results currently published.

Section 3L

ADMINISTRATION EFFECTIVENESS

Throughout the review process, just a couple of issues arose that need to be addressed in relationship to the effectiveness of how the program is run. First of all, the current curriculum does not contain provisions for the development of and then re-current delivery of new classes for possible inclusion as directed electives or core curriculum coursework. Such existing (3 total) courses that have been taught on a very successful experimental basis end up in competition for students who currently have only one slot to take them in (for program credit).

Secondly, the department and faculty have not produced a workable plan as to how to handle the relationship between the Plastics and Rubber curriculums/programs. Generation of students for the Rubber Program remains at a starting level. With only 1 faculty member currently, the Plastics Program is assisting by teaching rubber courses currently. The enrollment and career path needs to be evaluated.

Section 4

FACILITIES AND EQUIPMENT

The information contained within this section is made up of data acquired form a survey given to the program faculty. Individual response frequencies, charts of the date, and a summary of the significant responses are given. This section is divided up into several areas. The front of the section contains the actual survey, followed by the responses to the survey. After the responses is found the interpretation and reporting of the findings (sections 4A through 4D). The section is informational in its intent, and final conclusions as a result of the information are left for Section #5 per the report guidelines.

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Facilities

As part of the Academic Program Review (APR) process, the Plastics Department is asking utilizers of the Ferris State University Plastics facilities to please take a few minutes to complete this survey. Your responses will help us evaluate the program's facilities and equipment, see where the strengths are and show us where changes need to be made. Thank you for your feedback in this important process.

Q1 **Is the building name National Elastomer Center appropriate?**

- ◯ Yes
- ◯ No
- ◯ I don't know

Q2 **Please indicate your level of satisfaction with the *lecture rooms*.**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	Don't Know or Not Applicable
PC/Digital systems	◯	◯	◯	◯	◯
Projection systems	◯	◯	◯	◯	◯
White board	◯	◯	◯	◯	◯
Room lighting	◯	◯	◯	◯	◯
HVAC	◯	◯	◯	◯	◯

A. Instructional Environment

The National Elastomer Center (NEC) Facility houses both the Plastics Engineering Technology programs as well as the Rubber Engineering Technology Programs. The entire building went through a multimillion dollar renovation and expansion in 1997.

The four main lecture rooms are state-of-the art with all the latest infrastructure to allow lecturers to utilize a full range of multimedia delivery systems. Additionally, there are four main laboratory prep rooms that can also serve as adjunct lecture rooms as required.

The main open-area laboratories are house stat-of-the art manufacturing equipment that allows the student to experience the same technology that is used in the plastics industry. Plenary laboratory, of which there are six, provide an environment for smaller more specialized equipment.

B. Computer Access and Availability

Computers are available for all students to use through the NEC facilities and they are a 2007 level of technology. One room is a dedicated PC lab with 15 work stations that are primarily used for design analyses and project management. The main tiered lecture room has power and LAN outlets at each of the 85 seats.

In December 2007, the NEC had its wireless network completed and is now utilized by students and faculty that have laptops. It is expected that the wireless network will become a significant resource for future instruction

C. Other Instructional Technology

The instruction of Plastics Engineering Technology requires a significant amount of capital equipment as well as costly resins. It is through both donations and consignments from companies that have partnered with the program that allows us to avoid purchasing this costly equipment. The consignment arrangement also allow for the consigning company to remove the older equipment after several year and to replace it with newer more technically relevant equipment. It is this arrangement that keeps the laboratory technically current.

Additional partnerships have been nurtured to allow companies to set up unique equipment, such as a state-of –the – art robotic system. The donating company will use this equipment for their customer's technical training and, when not in use by them, allow students and faculty to utilize these systems.

D. Library Resources

The Plastics Engineering Technology programs have developed a solid working relationship with FLITE (library). This includes providing the latest references and online resources. Our students actively utilize all of the library resources including the CAD (Computer Aided Design) software at FLITE. Additionally, the NEC has one room dedicated as a student resource room that acts as both a depository for esoteric publications and as a student meeting room.

Interpretation of Facilities and Equipment Survey

The assessment tool was developed by the Plastics Engineering Technology faculty and taken by the faculty.

The results are as follows:

The consensus indicates that the perception of the condition of the class rooms as well as the availability of equipment and the support aspect of the building maintenance and equipment maintenance is generally favorable

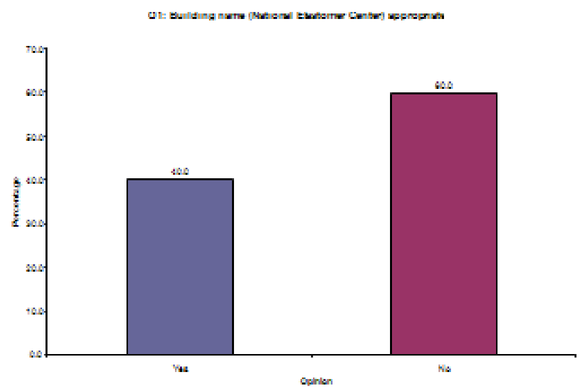
While a broad group of written comments is included within the charts and summary, a few areas received multiple comments: PLTS-110 was highlighted as needing attention in terms of upgraded/additional equipment,

Key Areas of Attention

- Students should have a separate copier available, and student mail should be distributed in a different area then faculty mail
- The name National Elastomer Center is considered to be inappropriate
- Areas receiving predominately negative ratings include
- Building HVAC
- Hand Tool Availability
- Mold Inventory and Control Systems
- Mold Availability (Injection and Non Injection)
- Material (Resin) availability
- Molded Sample Availability) Test Bars etc.)
- Building Air Pressure and Power availability
- Equipment Currency (Up-to-date)
- Disposition of unneeded equipment

Q1 Building name (NEC) appropriate

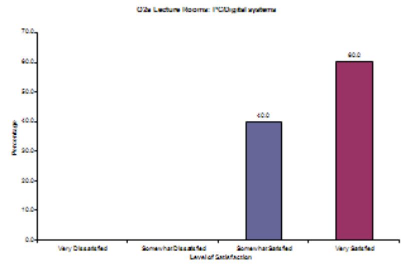
Yes	40.0
No	60.0



Q2 Level of satisfaction: Lecture rooms

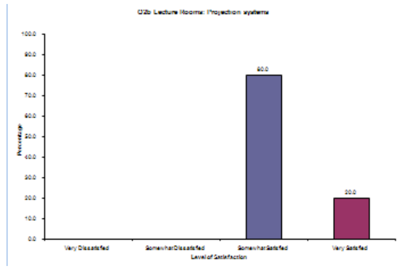
a.) PC/Digital systems

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	40.0
Very Satisfied	60.0



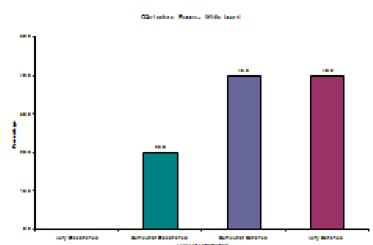
b.) Projection systems

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	80.0
Very Satisfied	20.0



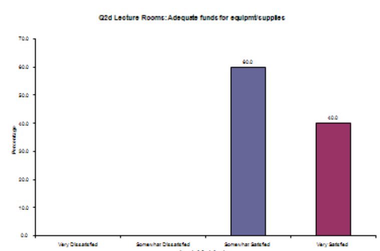
c.) White board

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	40.0
Very Satisfied	40.0



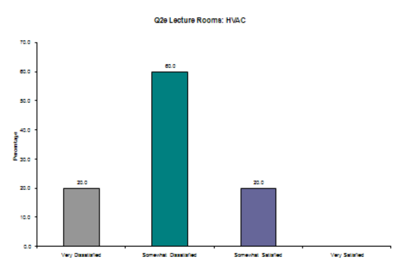
d.) Room lighting

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	60.0
Very Satisfied	40.0



e.) HVAC

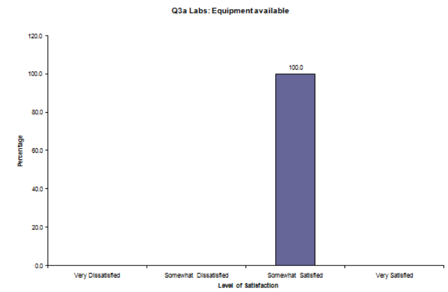
Very Dissatisfied	20.0
Somewhat Dissatisfied	60.0
Somewhat Satisfied	20.0
Very Satisfied	



Q3 Level of satisfaction: Labs

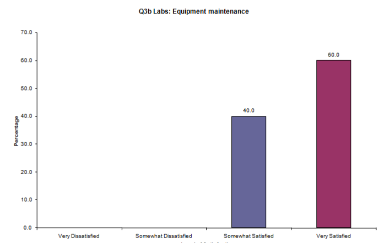
a.) Equipment available

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	100.0
Very Satisfied	



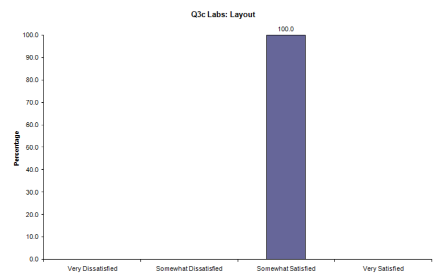
b.) Equipment maintenance

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	40.0
Very Satisfied	60.0



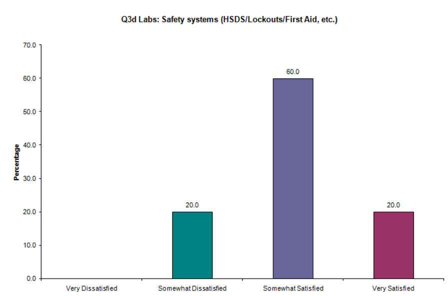
c.) Layout

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	100.0
Very Satisfied	



d.) Safety systems (HSDS/Lockouts/First Aid, etc.)

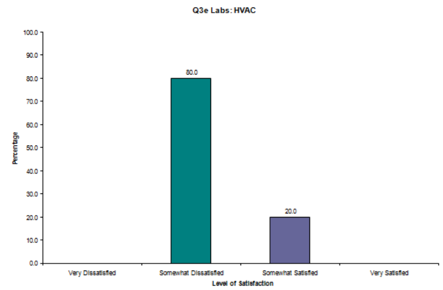
Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	60.0
Very Satisfied	20.0



Q3 Level of satisfaction: Labs (continued)

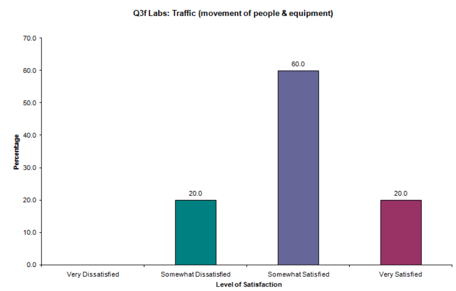
e.) HVAC

Very Dissatisfied	
Somewhat Dissatisfied	80.0
Somewhat Satisfied	20.0
Very Satisfied	



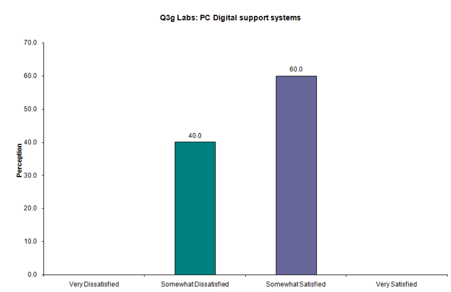
f.) Traffic (movement of people & equipment)

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	60.0
Very Satisfied	20.0



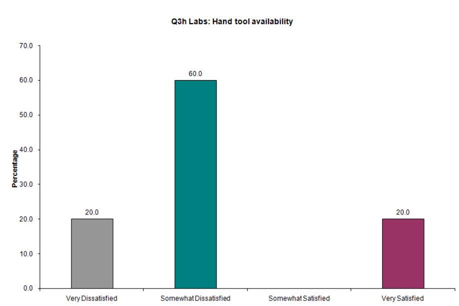
g.) PC Digital support systems

Very Dissatisfied	
Somewhat Dissatisfied	40.0
Somewhat Satisfied	60.0
Very Satisfied	



h.) Hand tool availability

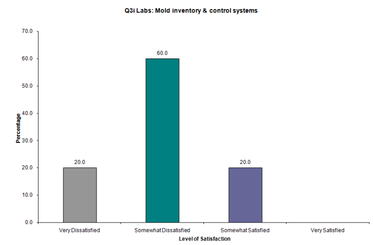
Very Dissatisfied	20.0
Somewhat Dissatisfied	60.0
Somewhat Satisfied	
Very Satisfied	20.0



Q3 Level of satisfaction: Labs (continued)

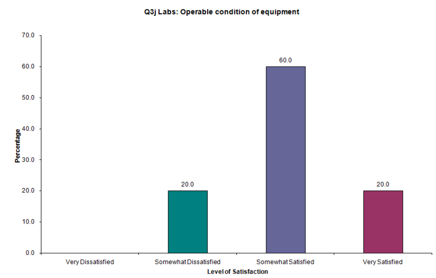
i.) Mold inventory & control systems

Very Dissatisfied	20.0
Somewhat Dissatisfied	60.0
Somewhat Satisfied	20.0
Very Satisfied	



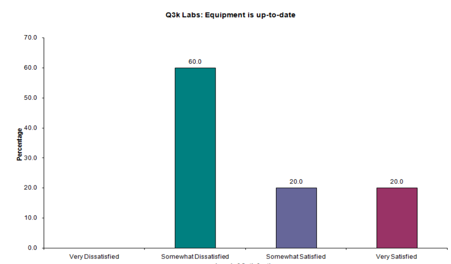
j.) Operable condition of equipment

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	60.0
Very Satisfied	20.0



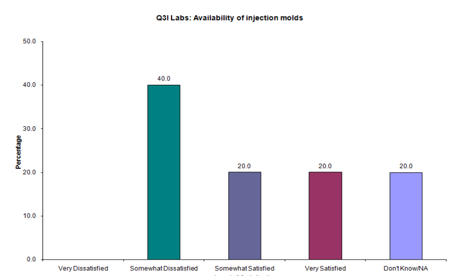
k.) Equipment is up-to-date

Very Dissatisfied	
Somewhat Dissatisfied	60.0
Somewhat Satisfied	20.0
Very Satisfied	20.0



l.) Availability of injection molds

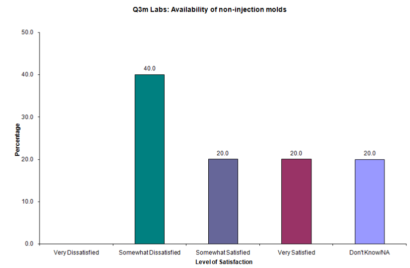
Very Dissatisfied	
Somewhat Dissatisfied	40.0
Somewhat Satisfied	20.0
Very Satisfied	20.0
Don't Know/NA	20.0



Q3 Level of satisfaction: Labs (continued)

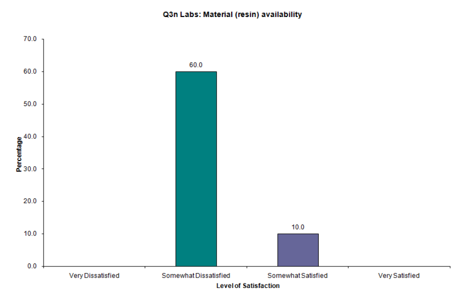
m.) Availability of non-injection molds

Very Dissatisfied	
Somewhat Dissatisfied	40.0
Somewhat Satisfied	20.0
Very Satisfied	20.0
Don't Know/NA	20.0



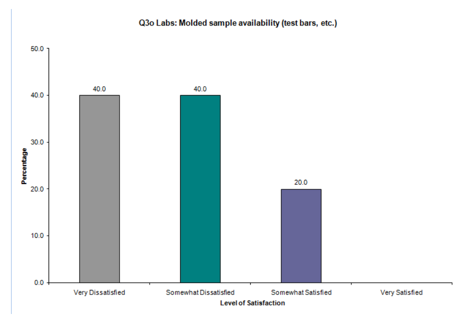
n.) Material (resin) availability

Very Dissatisfied	
Somewhat Dissatisfied	60.0
Somewhat Satisfied	10.0
Very Satisfied	



o.) Molded sample availability (test bars, etc.)

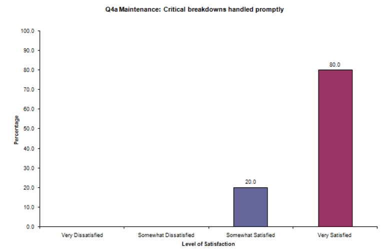
Very Dissatisfied	40.0
Somewhat Dissatisfied	40.0
Somewhat Satisfied	20.0
Very Satisfied	



Q4 Maintenance

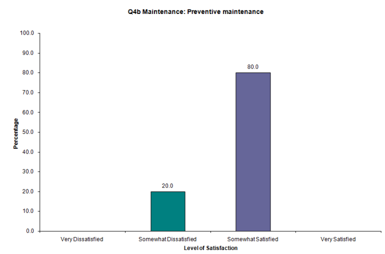
a.) Critical breakdowns handled promptly

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	20.0
Very Satisfied	80.0



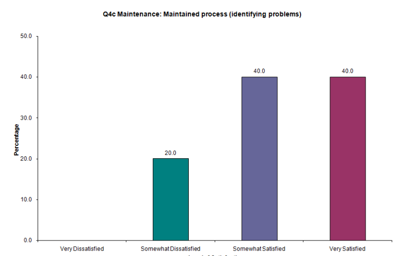
b.) Preventive maintenance

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	80.0
Very Satisfied	



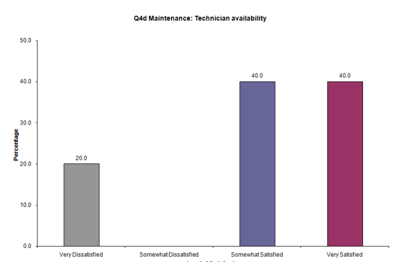
c.) Maintained process (identifying problems)

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	40.0
Very Satisfied	40.0



d). Technician availability

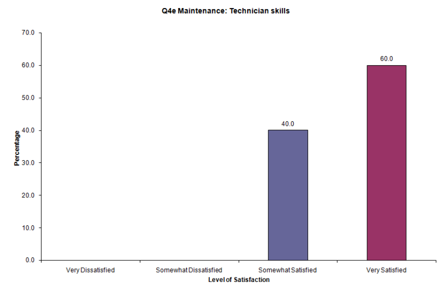
Very Dissatisfied	20.0
Somewhat Dissatisfied	
Somewhat Satisfied	40.0
Very Satisfied	40.0



Q4 Maintenance (continued)

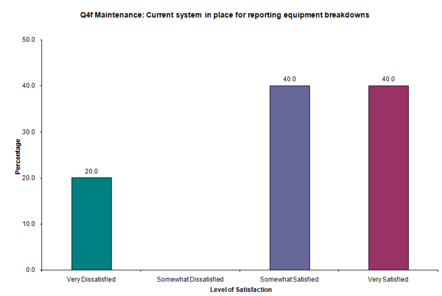
e.) Technician skills

Very Dissatisfied	
Somewhat Dissatisfied	
Somewhat Satisfied	40.0
Very Satisfied	60.0



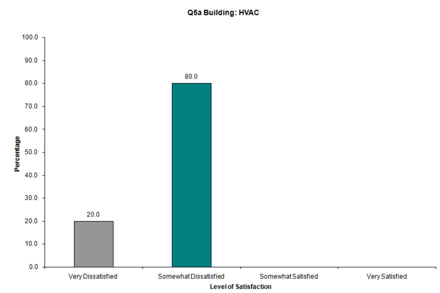
f.) Current system in place for reporting equipment breakdowns

Very Dissatisfied	20.0
Somewhat Dissatisfied	
Somewhat Satisfied	40.0
Very Satisfied	40.0

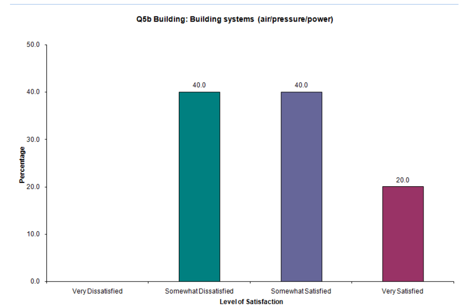


Q5 Building

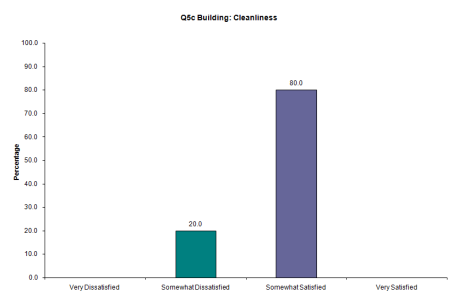
	a). HVAC
Very Dissatisfied	20.0
Somewhat Dissatisfied	80.0
Somewhat Satisfied	
Very Satisfied	



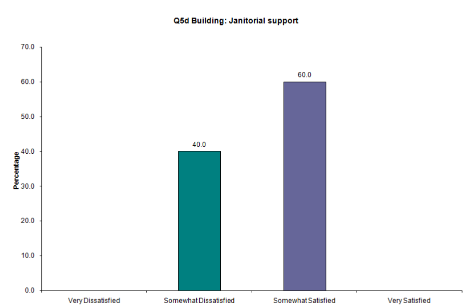
	b.) Building systems (air/pressure/power)
Very Dissatisfied	
Somewhat Dissatisfied	40.0
Somewhat Satisfied	40.0
Very Satisfied	20.0



	c.) Cleanliness
Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	80.0
Very Satisfied	



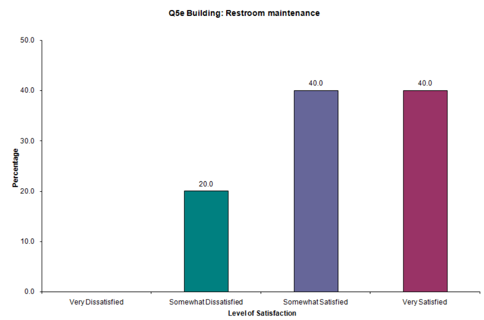
	d.) Janitorial support
Very Dissatisfied	
Somewhat Dissatisfied	40.0
Somewhat Satisfied	60.0
Very Satisfied	



Q5 Building (continued)

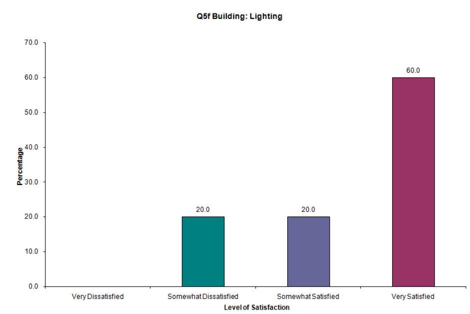
e.) Restroom maintenance

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	40.0
Very Satisfied	40.0



f.) Lighting

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	20.0
Very Satisfied	60.0



q6 Top 3 issues/concerns: Lab equipmt

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Cleanliness; 2. Safety; 3. Location	*1*	*20.0*	*20.0*	*20.0*
	1. Keeping equipment current/up-to-date; 2. Recognizing the knowledge/skills/equipment exposure our students need to be effective in 2015; 3. Keeping it organized & picked up before, during & after labs	*1*	*20.0*	*20.0*	*40.0*
	1. Lack of a system in place for reporting equipment problems, work status & final resolutions; 2. Having a tech available during the actual lab hours. Change schedules of either the lab or the tech to fit-this is potentially a very serious problem; 3. Lack of a current inventory of materials, molds, lab supplies, etc. This should be updated once/yr during the summer months. We currently have no such inventory in existence or in the case of molds it hasn't been updated in 10+ yrs.	*1*	*20.0*	*20.0*	*60.0*
	1. Organize the tool crib/maintain sufficient stock of tools; 2. Develop an organized system for mold storage	*1*	*20.0*	*20.0*	*80.0*
	1. Updating PLTS110 equipment; 2. Obtaining more testing equipment; 3. Obtaining more non-injection equipment	*1*	*20.0*	*20.0*	*100.0*
	Total	*5*	*100.0*	*100.0*	

q7 Top 3 issues/concerns: NEC bldg

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	20.0	20.0	20.0
	1. HVAC system; 2. Inventory & storage efficiency; 3. Roof leaks	1	20.0	20.0	40.0
	1. HVARC system; 2. Building needs to be painted (it has been 20 years); 3. Facility needs to be better organized regarding tools, molds, ancillary equipment	1	20.0	20.0	60.0
	1. Roof leaks; 2. Corridor lighting; 3. Name	1	20.0	20.0	80.0
	1. The processing labs have always been treated as a warehouse for the COT & other programs; 2. Numerous cracks/leaks in the bldg foundation, walls & roof--some are quite alarming; 3. Climate controls within the bldg are erratic with wide swings in temperature possible; however, this is nothing new & has always been a major problem with this bldg & at times represents major hinderance to the learning process	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

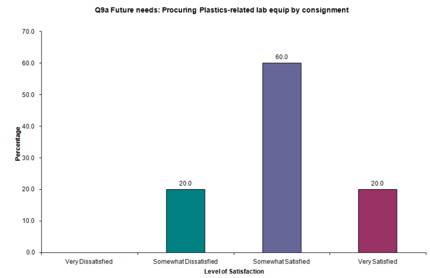
q8 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	60.0	60.0	60.0
	Look at student-proofing areas - heating registers by 2nd floor windows	1	20.0	20.0	80.0
	Student Groups tape signs in overkill manner	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Q9 Future needs

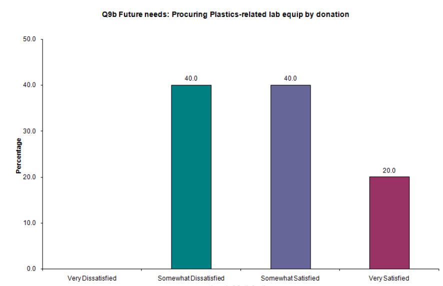
a.) Procuring Plastics-related lab equipment by consignment

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	60.0
Very Satisfied	20.0



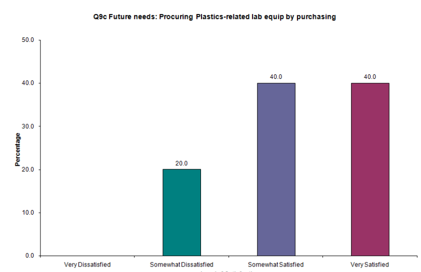
b.) Procuring Plastics-related lab equipment by donation

Very Dissatisfied	
Somewhat Dissatisfied	40.0
Somewhat Satisfied	40.0
Very Satisfied	20.0



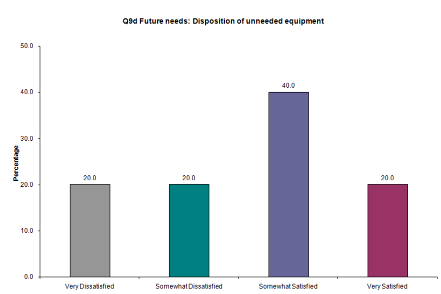
c.) Procuring Plastics-related lab equipment by purchasing

Very Dissatisfied	
Somewhat Dissatisfied	20.0
Somewhat Satisfied	40.0
Very Satisfied	40.0



d.) Disposition of unneeded equipment

Very Dissatisfied	20.0
Somewhat Dissatisfied	20.0
Somewhat Satisfied	40.0
Very Satisfied	20.0



q10 Lab equipmt most in need of replacement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PLTS110	2	40.0	40.0	40.0
	PLTS110/121	1	20.0	20.0	60.0
	Rosade blow molder	1	20.0	20.0	80.0
	Testing lab needs additional equipment	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

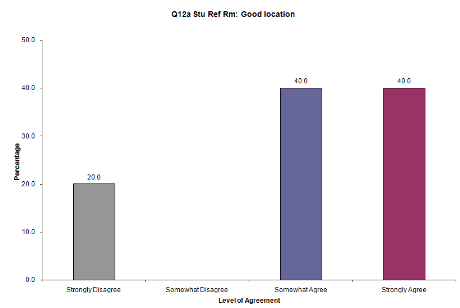
q11 Lab equipmt 2nd most in need of replacement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	40.0	40.0	40.0
	Decoration & assembly lab need additional equipment	1	20.0	20.0	60.0
	PLTS223	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

Q12 Student Reference Room (NEC207)

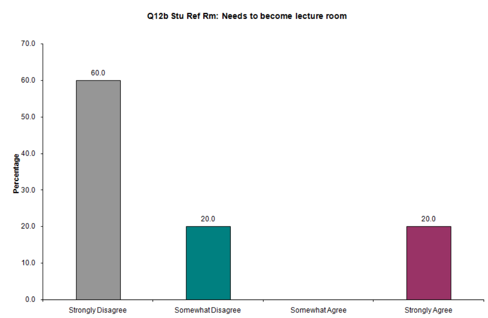
a.) Good location

Strongly Disagree	20.0
Somewhat Disagree	
Somewhat Agree	40.0
Strongly Agree	40.0



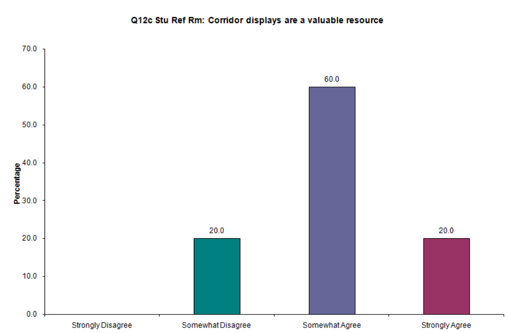
b.) Needs to be converted to lecture room

Strongly Disagree	60.0
Somewhat Disagree	20.0
Somewhat Agree	
Strongly Agree	20.0



c.) Corridor displays are valuable resource

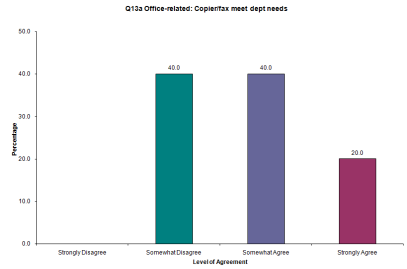
Strongly Disagree	
Somewhat Disagree	20.0
Somewhat Agree	60.0
Strongly Agree	20.0



Q13 Office-related areas

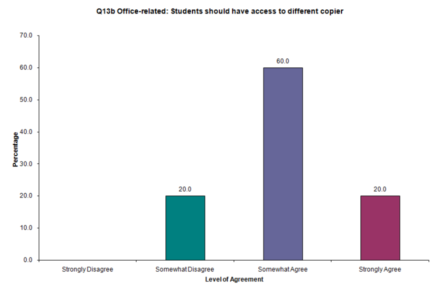
a.) Copier/fax resources meet dept needs

Strongly Disagree	
Somewhat Disagree	40.0
Somewhat Agree	40.0
Strongly Agree	20.0



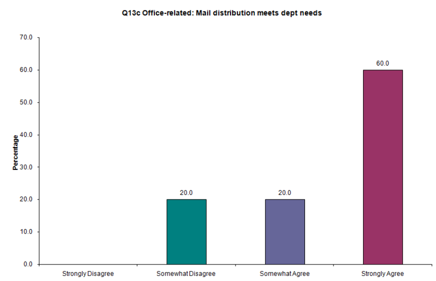
b.) Students should have access to different copier in bldg

Strongly Disagree	
Somewhat Disagree	20.0
Somewhat Agree	60.0
Strongly Agree	20.0



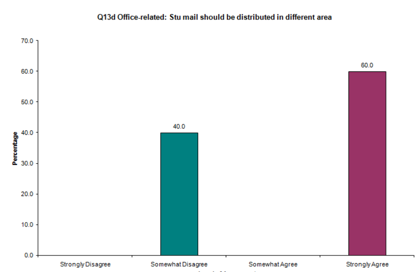
c.) Mail distribution meets dept needs

Strongly Disagree	
Somewhat Disagree	20.0
Somewhat Agree	20.0
Strongly Agree	60.0



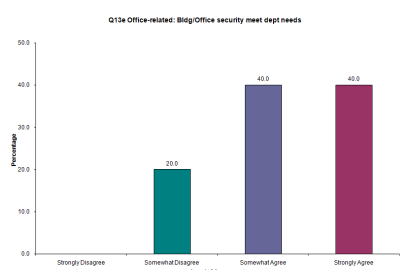
d.) Student mail should be distributed in different area from faculty mail

Strongly Disagree	
Somewhat Disagree	40.0
Somewhat Agree	
Strongly Agree	60.0



e.) Bldg/Office security meet dept needs

Strongly Disagree	
Somewhat Disagree	20.0
Somewhat Agree	40.0
Strongly Agree	40.0



q14 Comments/Suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	80.0	80.0	80.0
	Hand tool control is still an issue. Individual boxes are still accessible to everybody.	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Plastics Program APR...Facilities

Frequencies

Prepared by: Institutional Research & Testing, 04/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1 Building name (NEC) appropriate	5	0	1.60	2.00	.548
q2a Lec: PC/Digital systems	5	0	3.60	4.00	.548
q2b Lec: Projection systems	5	0	3.20	3.00	.447
q2c Lec: White board	5	0	3.20	3.00	.837
q2d Lec: Room lighting	5	0	3.40	3.00	.548
q2e Lec: HVAC	5	0	2.00	2.00	.707
q3a Labs: Equipment available	5	0	3.00	3.00	.000
q3b Labs: Equipment maintenance	5	0	3.60	4.00	.548
q3c Labs: Layout	5	0	3.00	3.00	.000
q3d Labs: Safety systems	5	0	3.00	3.00	.707
q3e Labs: HVAC	5	0	2.20	2.00	.447
q3f Labs: Traffic	5	0	3.00	3.00	.707
q3g Labs: PC Digital support systems	5	0	2.60	3.00	.548
q3h Labs: Hand tool availability	5	0	2.20	2.00	1.095
q3i Labs: Mold Inventory & Control Systems	5	0	2.00	2.00	.707
q3j Labs: Operable Condition of Equipment	5	0	3.00	3.00	.707
q3k Labs: Equipment is up-to-date	5	0	2.60	2.00	.894
q3l Labs: Availability of injection molds	5	0	3.20	3.00	1.304
q3m Labs: Availability of non-injection molds	5	0	3.20	3.00	1.304
q3n Labs: Material (resin) availability	5	0	2.40	2.00	.548
q3o Labs: Molded sample availability	5	0	1.80	2.00	.837
q4a Maintenance: Critical breakdowns handled promptly	5	0	3.80	4.00	.447
q4b Maintenance: Preventive maintenance	5	0	2.80	3.00	.447
q4c Maintenance: Maintained process	5	0	3.20	3.00	.837
q4d Maintenance: Technician availability	5	0	3.00	3.00	1.225
q4e Maintenance: Technician skills	5	0	3.60	4.00	.548
q4f Maintenance: Current system for reporting equipmt breakdowns	5	0	3.00	3.00	1.225
q5a Bldg: HVAC	5	0	1.80	2.00	.447
q5b Bldg: Building systems	5	0	2.80	3.00	.837
q5c Bldg: Cleanliness	5	0	2.80	3.00	.447
q5d Bldg: Janitorial support	5	0	2.60	3.00	.548
q5e Bldg: Restroom maintenance	5	0	3.20	3.00	.837
q5f Bldg: Lighting	5	0	3.40	4.00	.894
q6 Top 3 issues/concerns: Lab equipmt	5	0			
q7 Top 3 issues/concerns: NEC bldg	5	0			
q8 Additional comments/suggestions	5	0			
q9a Future: Procuring lab equipmt by consignment	5	0	3.00	3.00	.707
q9b Future: Procuring lab equipmt by donation	5	0	2.80	3.00	.837
q9c Future: Procuring lab equipmt by purchasing	5	0	3.20	3.00	.837
q9d Future: Disposition of unneeded equipment	5	0	2.60	3.00	1.140

q10 Lab equipmt most in need of replacement	*5*	*0*			
q11 Lab equipmt 2nd most in need of replacement	*5*	*0*			
q12a Stu ref rm: Good reference location	*5*	*0*	*3.00*	*3.00*	*1.225*
q12b Stu ref rm: Needs to be converted to lecture room	*5*	*0*	*1.80*	*1.00*	*1.304*
q12c Stu ref rm: Corridor displays are valuable resource	*5*	*0*	*3.00*	*3.00*	*.707*
q13a Office: Copier/fax resources meet dept needs	*5*	*0*	*2.80*	*3.00*	*.837*
q13b Office: Stu's should have different copier	*5*	*0*	*3.00*	*3.00*	*.707*
q13c Office: Mail distribution meets dept needs	*5*	*0*	*3.40*	*4.00*	*.894*
q13d Office: Stu mail should be in different area from fac mail	*5*	*0*	*3.20*	*4.00*	*1.095*
q13e Office: Bldg/Office security meet dept needs	*5*	*0*	*3.20*	*3.00*	*.837*
q14 Comments/Suggestions	*5*	*0*			

Frequency Table
Facilities

q1 Building name (NEC) appropriate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	40.0	40.0	40.0
	No	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q2a Lec: PC/Digital systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	2	40.0	40.0	40.0
	Very Satisfied	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q2b Lec: Projection systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	4	80.0	80.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q2c Lec: White board

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	2	40.0	40.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q2d Lec: Room lighting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	3	60.0	60.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q2e Lec: HVAC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Dissatisfied	3	60.0	60.0	80.0
	Somewhat Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3a Labs: Equipment available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	5	100.0	100.0	100.0

q3b Labs: Equipment maintenance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	2	40.0	40.0	40.0
	Very Satisfied	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q3c Labs: Layout

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	5	100.0	100.0	100.0

q3d Labs: Safety systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	3	60.0	60.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3e Labs: HVAC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	4	80.0	80.0	80.0
	Somewhat Satisfied	1	20.0	20.0	100.0

	Total	5	100.0	100.0	

q3f Labs: Traffic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	3	60.0	60.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3g Labs: PC Digital support systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	40.0	40.0	40.0
	Somewhat Satisfied	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q3h Labs: Hand tool availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Dissatisfied	3	60.0	60.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3i Labs: Mold Inventory & Control Systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Dissatisfied	3	60.0	60.0	80.0
	Somewhat Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3j Labs: Operable Condition of Equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	3	60.0	60.0	80.0
	Very Satisfied	1	20.0	20.0	100.0

	Total	5	100.0	100.0	

q3k Labs: Equipment is up-to-date

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	3	60.0	60.0	60.0
	Somewhat Satisfied	1	20.0	20.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3l Labs: Availability of injection molds

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	40.0	40.0	40.0
	Somewhat Satisfied	1	20.0	20.0	60.0
	Very Satisfied	1	20.0	20.0	80.0
	Don't Know or Not Applicable	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3m Labs: Availability of non-injection molds

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	40.0	40.0	40.0
	Somewhat Satisfied	1	20.0	20.0	60.0
	Very Satisfied	1	20.0	20.0	80.0
	Don't Know or Not Applicable	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q3n Labs: Material (resin) availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	3	60.0	60.0	60.0
	Somewhat Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q3o Labs: Molded sample availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	2	40.0	40.0	40.0
	Somewhat Dissatisfied	2	40.0	40.0	80.0
	Somewhat Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q4a Maintenance: Critical breakdowns handled promptly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	1	20.0	20.0	20.0
	Very Satisfied	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q4b Maintenance: Preventive maintenance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q4c Maintenance: Maintained process

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	2	40.0	40.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q4d Maintenance: Technician availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	2	40.0	40.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q4e Maintenance: Technician skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	2	40.0	40.0	40.0
	Very Satisfied	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q4f Maintenance: Current system for reporting equipmt breakdowns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	2	40.0	40.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q5a Bldg: HVAC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Dissatisfied	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q5b Bldg: Building systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	40.0	40.0	40.0
	Somewhat Satisfied	2	40.0	40.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q5c Bldg: Cleanliness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q5d Bldg: Janitorial support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	40.0	40.0	40.0
	Somewhat Satisfied	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q5e Bldg: Restroom maintenance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	2	40.0	40.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q5f Bldg: Lighting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	1	20.0	20.0	40.0
	Very Satisfied	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q6 Top 3 issues/concerns: Lab equipmt

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. Cleanliness; 2. Safety; 3. Location	1	20.0	20.0	20.0
	1. Keeping equipment current/up-to-date; 2. Recognizing the knowledge/skills/equipment exposure our students need to be effective in 2015; 3. Keeping it organized & picked up before, during & after labs	1	20.0	20.0	40.0
	1. Lack of a system in place for reporting equipment problems, work status & final resolutions; 2. Having a tech available during the actual lab hours. Change schedules of either the lab or the tech to fit-this is potentially a very serious problem; 3. Lack of a current inventory of materials, molds, lab supplies, etc. This should be updated once/yr during the summer months. We currently have no such inventory in existence or in the case of molds it hasn't been updated in 10+ yrs.	1	20.0	20.0	60.0
	1. Organize the tool crib/maintain sufficient stock of tools; 2. Develop an organized system for mold storage	1	20.0	20.0	80.0
	1. Updating PLTS110 equipment; 2. Obtaining more testing equipment; 3. Obtaining more non-injection equipment	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q7 Top 3 issues/concerns: NEC bldg

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	20.0	20.0	20.0
	1. HVAC system; 2. Inventory & storage efficiency; 3. Roof leaks	1	20.0	20.0	40.0
	1. HVARC system; 2. Building needs to be painted (it has been 20 years); 3. Facility needs to be better organized regarding tools, molds, ancillary equipment	1	20.0	20.0	60.0
	1. Roof leaks; 2. Corridor lighting; 3. Name	1	20.0	20.0	80.0
	1. The processing labs have always been treated as a warehouse for the COT & other programs; 2. Numerous cracks/leaks in the bldg foundation, walls & roof--some are quite alarming; 3. Climate controls within the bldg are erratic with wide swings in temperature possible; however, this is nothing new & has always been a major problem with this bldg & at times represents major hinderance to the learning process	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q8 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	60.0	60.0	60.0
	Look at student-proofing areas - heating registers by 2nd floor windows	1	20.0	20.0	80.0
	Student Groups tape signs in overkill manner	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q9a Future: Procuring lab equipmt by consignment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	3	60.0	60.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q9b Future: Procuring lab equipmt by donation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	2	40.0	40.0	40.0
	Somewhat Satisfied	2	40.0	40.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q9c Future: Procuring lab equipmt by purchasing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	20.0	20.0	20.0
	Somewhat Satisfied	2	40.0	40.0	60.0
	Very Satisfied	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q9d Future: Disposition of unneeded equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	1	20.0	20.0	20.0
	Somewhat Dissatisfied	1	20.0	20.0	40.0
	Somewhat Satisfied	2	40.0	40.0	80.0
	Very Satisfied	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q10 Lab equipmt most in need of replacement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PLTS110	2	40.0	40.0	40.0
	PLTS110/121	1	20.0	20.0	60.0
	Rosade blow molder	1	20.0	20.0	80.0
	Testing lab needs additional equipment	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q11 Lab equipmt 2nd most in need of replacement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	40.0	40.0	40.0
	Decoration & assembly lab need additional equipment	1	20.0	20.0	60.0
	PLTS223	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q12a Stu ref rm: Good reference location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	20.0	20.0	20.0
	Somewhat Agree	2	40.0	40.0	60.0
	Strongly Agree	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q12b Stu ref rm: Needs to be converted to lecture room

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	60.0	60.0	60.0
	Somewhat Disagree	1	20.0	20.0	80.0
	Strongly Agree	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q12c Stu ref rm: Corridor displays are valuable resource

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	20.0	20.0	20.0
	Somewhat Agree	3	60.0	60.0	80.0
	Strongly Agree	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q13a Office: Copier/fax resources meet dept needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	40.0	40.0	40.0
	Somewhat Agree	2	40.0	40.0	80.0
	Strongly Agree	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q13b Office: Stu's should have different copier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	20.0	20.0	20.0
	Somewhat Agree	3	60.0	60.0	80.0
	Strongly Agree	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q13c Office: Mail distribution meets dept needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	20.0	20.0	20.0
	Somewhat Agree	1	20.0	20.0	40.0
	Strongly Agree	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q13d Office: Stu mail should be in different area from fac mail

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	40.0	40.0	40.0
	Strongly Agree	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q13e Office: Bldg/Office security meet dept needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	20.0	20.0	20.0
	Somewhat Agree	2	40.0	40.0	60.0
	Strongly Agree	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q14 Comments/Suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	80.0	80.0	80.0
	Hand tool control is still an issue. Individual boxes are still accessible to everybody.	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

Section 5

CONCLUSIONS

The information contained within this section is focused on drawing conclusions from the data and information gathered during the past year and comparing the summaries of the data to the self study program goals identified at the start of the process. The specific topics of this section will be paired with each of the specific goals that were established. These goals can again be found on the first page of Section #1 and are restated at the start of each sub-section discussion here.

To summarize, Section 5A is relative to Goal #3, Section 5B is relative to Goal #7, Section 5C is relative to Goal #6, Section 5D is relative to Goal #1, Section 5E is relative to Goal #4, Section 5F is relative to Goal #2, and Section 5G is relative to Goal #5.

The program analysis from the Plastics Program Department Chair and College of Technology Dean are found in Appendix “H” and Appendix “I” respectively.

Section 5A

RELATIONSHIP TO FSU MISSION

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 3:

The Mission Statement of Ferris State University is as follows:

"Ferris State University prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-oriented, broad-based education, Ferris serves our rapidly changing global economy and society."

The Plastics Program relates perfectly to this mission statement and the current activities of Ferris State University. As witnessed by the summary of the data from the surveys, our graduates are very successful in their careers, demonstrate responsibility as citizens through their commitment to recruitment of new students (and willingness to make presentations to existing classes), and many of them have been or are continuing their education. The curriculum remains broad-based (and future change proposals include widening the student's knowledge base in even more career aspects of the industry) and is structured to produce graduates that fill the changing Plastics Industry primary need of engineering technologists.

The Plastics Program is also structured currently after the Ferris State University model of a 2 + 2 Program, filling the traditional trade/training model with an Associate Degree, and expanding to the educational model of the remaining 2 years of the Bachelor Degree.

The following page also shows the 2008 Unit Action Plan of the Plastics and Rubber Engineering Technology Department which addresses the focus of all three Pillars of success.

5A-2

2008 Unit Action Plan
Division of Academic Affairs

College of TECHNOLOGY- Plastics and Rubber

Significant Areas of Success:

Pillar I: Learning-Centered University

- Freshman enrollments in the AAS Plastics Technology and the AAS Rubber Technology are up (PLRU) roughly 15%.
- Submitted curricular changes for BS in "Plastics Engineering Technology"
  - Provides relevant and current educational experience for plastic student by:
    - PLRU elective sequence allows students latitude within the degree to emphasize interest areas
    - Faculty can offer experimental courses on current industry topics

Challenges to Continued Success:

- Scheduling of course offerings and more productive use of assets, as well as serving students could be achieved by offering courses in both semester versus having multiple faculty teach the same course in the same semester
- Assure ongoing course development and improvement with scheduling to assure ongoing delivery after development
- Develop new/relevant Plastics course offerings
- Stable, consistent leadership at all levels within the COT
- Out-of-state recruiting, expand student recruitment to segments of the industry not traditionally a focus of the PLRU department

Pillar II: Work Together

- PLTS100, Introduction to plastics technology offered to all on campus
- Worked with Manufacturing Engineering Technology to assist in covering work loads (PLRU faculty have taught MFGE 451 the last couple of semesters)
- Worked with Mechanical Design Engineering Technology to assist in covering work loads (PLRU faculty have taught ETEC 140 this semester)
- Rubber and Machine Tool faculty are working together to implement CATIA into the rubber degree design sequence.
- Department personal have participated on multiple college and university committees:
  - COT promotion committee
  - Policies and procedures
  - Sabbatical committee
  - COT marketing committee
  - Library/Historical archival committee
  - Faculty research committee
  - Student judicial services committee
  - COT curriculum Committee
  - COT student scholarship committee

Pillar III: Create an Engaged Campus

Ongoing or Proposed Significant Activities:

- High school career days (3 since last UAP report)
  - In the 2006/2007 academic year the NEC hosted over 425 high school students

where they received instruction on basic polymer concepts

- Department Endowments –
  - Rubber endowment has near $45,000
  - Plastics endowment has $40,000.00 (after Asahi Kasei completes commitment)
    - Efforts are continuing to generate more contributions to both endowments
- Improve the educational environment of the NEC
  - Improve/correct the environmental controls (balance the temperature)
  - Facility requires interior paint – current paint has been on the walls for over 10 years)
- Updating of and replacement of antiquated equipment (Especially PLTS110)
  - Faculty need to devise an acquisition strategy for course specific equipment (testing devices) and software
  - Faculty should review all courses for better integration of their technical related content
  - Obtain additional laboratory equipment
    - Universal Testing machine
    - Small (under 150 t) "All electric" injection molding machine
    - Capillary rheometer
    - "In-line" Thermoforming machine and tooling
- Investigate Assisting non-traditional students obtain degrees with opportunistic course.
- Faculty should develop and implement an equipment organization and storage program for all equipment, tools, and materials
- Out-of-state recruiting, expand student recruitment to industry "cells" of occupation around the country
- Execute Plastics Program Review
- Department should continue to encourage COT to obtain *professional* marketing support
- Develop a strategy for implementation in the curriculum of "wireless" technology recently installed in the NEC

New Equipment acquired:

Husky 90 ton injection molding machine (donation)
"Teaching" blow molding tooling (Perkins grant)
Upgraded control system for Lyle thermoforming machine

Section 5B

CONCLUSIONS RELATIVE TO VISIBILITY AND DISTINCTIVENESS

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 7:

1 – The students within the program indicated that 82% of them were knowledgeable of the placement success and salary range of graduates. Only 61% perceived that their parents were also knowledgeable about these things. Alumni positively refer to the diversity of career opportunities and job titles available

2 – Faculty response supported minor degree offerings as well as on-line course development. Dual entry point into the program (fall and spring) as incoming student population increases was also supported.

3 – Program capacity and incoming students at the AAS as well as BS level are very close, indicating a need for further recruitment efforts.

4 – the program is still one of the few Plastics Engineering Technology Programs within the country.

RECOMMENDATIONS RELATIVE TO VISIBILITY AND DISTINCTIVENESS

Recommendations to goal number 7 as a result of the conclusions:

1 – 72% of the Alumni surveyed indicated that they would assist in improving visibility in their region of the country. Relationships with high schools and community colleges may be established through the use of alumni within areas of the country that have segments of the industry and other markets that have not been developed for recruitment as of yet.

2 – Investigate ways to reach out to parents and others that influence college and career decisions for and with perspective students. Include peers, parents, relatives, etc.

3 – Continue the career days (1 each semester) for high school students coming to our facilities. Also continue the personal contacts with high schools and career centers that have developed over the last several years.

4 – Continue development plans for minor degrees and on-line coursework.

Section 5C

CONCLUSIONS RELATIVE TO PROGRAM VALUE

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 6:

1 – The state of the Plastics Industry nationally and internationally remains strong and growing.

2 – Placement rates remain at 100% per university graduate follow-up studies.

3 – Job solicitations from industry far outnumber the number of graduates yearly from the program.

4 – Beginning salaries rank among the highest of the programs within the College of Technology

5 – There are numerous other markets and segments of the industry that are in need of educated plastics technologists both nationally and internationally that updates in the curriculum can provide new and successful career paths for graduates of the program.

RECOMMENDATIONS RELATIVE TO PROGRAM VALUE

Recommendations to goal number 6 as a result of the conclusions:

1 – Continue the teaching of plastics foundational technology and skills.

2 – Continue to explore and develop other industry segments which have numerous career opportunities for graduates.

3 – Maintain a current and active alumni data base to monitor the ongoing successful trend in program value to students upon graduation.

Section 5D

CONCLUSIONS RELATIVE TO ENROLLMENT

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 1:

1 – The program capacity currently is set at 48 new incoming students accepted to the AAS Degree Program and 36 students accepted into the BS Degree Program. Since the 03/04 school year, the enrollment has been at a lower capacity. Downturns in the economy in Michigan and nationally along with recent negative perceptions of manufacturing jobs in general have contributed to this decline. However, the data shows that this downturn has stabilized, and a slight upward trend is being shown and predicted.
2 – There is an upward trend in student entrance into the BS Degree which supports the stabilization of the AAS Degree enrollment and also indicates improvement in retention (as that data indicates).
3 – The current combined number of students (enrolled from both programs) for the 07/08 school year is 130 students.

RECOMMENDATIONS RELATIVE TO ENROLLMENT

Recommendations to goal number 1 as a result of the conclusions:

1 – Continue the activities of bringing students to the facilities (career days for high school and skill centers).
2 – Create and assess the feasibility of a plan to include willing alumni in recruiting activities.
3 – Work with college and university recruitment personnel to develop recruitment efforts in other areas of the country or the industry where plastics manufacturing activities are thriving.
4 – Develop a plan to educate future students, their peers, and their parent figures to the benefits of a national and possible international Plastics Engineering Technology Degree and career.

Section 5E

CONCLUSIONS RELATIVE TO STUDENTS – CHARACTERISTICS, QUALITY, AND EMPLOYABILITY

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 4:

1 – 43% of the fall 2007 incoming students to the program had a high school GPA of 3.50 or higher.

2 – The range of ACT composite scores for incoming students for 2007 was from 18 to 27, with 20% at 22, 15% at 24, and 15% at 25.

3 – The program has an approximate graduation rate of 60% after 4 years. The persistence rate is over 75% after 4 years also.

4 – The Alumni Survey indicates that the respondents support keeping GPA requirements for acceptance into the BS Program by 96%

5 – The Alumni Survey also indicated that 88% of the respondents were more likely to recommend the Plastics Program to others today than 2 years ago, and 84% are still employed in the Plastics Industry versus any other industry.

6 – The Employer Survey indicated that 81% of the respondents were satisfied with FSU Plastics Program graduate's performance, 89% indicated that the graduates had adequate technical preparation for the jobs they are doing.

RECOMMENDATIONS RELATIVE TO STUDENTS

Recommendations to goal number 4 as a result of the conclusions:

1 – Investigate addition of coursework that broadens the curriculum to cover segments of the industry that are developing and growing to increase student marketability.

2 – Continue with current curriculum development and delivery relative to plastics foundational knowledge and skills.

Section 5F

CONCLUSIONS RELATIVE TO QUALITY OF CURRICULUM AND INSTRUCTION

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 2:

1 – The students have a required internship in both the AAS Degree and BS Degree Programs (2 total for the BS Degree). Positive feedback from employers (and the number of returning employers requesting interns for the summer) regarding the students, as well as positive feedback from the students indicate the quality level of curriculum and instruction.

2 – The Employer Survey indicated that 81% of the respondents were satisfied with FSU Plastics Program graduate's performance, 89% indicated that the graduates had adequate technical preparation for the jobs they are doing.

3 – 97% of alumni respondents indicated in the survey that they had a positive internship experience, and 98% of the current students surveyed indicated that the internships were indispensible and augment learning.

4 – 96% of students surveyed indicated that courses were consistent one to another, and 99% felt that the coursework is related.

5 – 100% of current students indicated that instructors are qualified to teach courses, 94% agreed that the course content is well taught, and 92% agreed that the coursework is in line with their interests.

6 – A high percentage of current students surveyed indicated that the laboratory experiences reinforced course principles.

7 – The faculty feel that the knowledge and skill base of the curriculum matches the needs of the industry, as does the advisory board.

RECOMMENDATIONS RELATIVE TO CURRICULUM AND INSTRUCTION QUALITY

Recommendations to goal number 2 as a result of the conclusions:

1 – Continue with current requirement of an internship experience in both the AAS and BS Degree Programs.

5F-2

2 – Continue with the interjection of faculty consultant and industry work experiences integrated into classroom presentations and work.

3 – Continue to upgrade laboratory experiences and hands-on learning.

4 – Continue developing relevant and changing coursework for currency.

5 – Continue faculty development through coursework, seminars, and sabbatical leave

Section 5G

CONCLUSIONS RELATIVE TO THE COMPOSITION AND QUALITY OF THE FACULTY

Applicable Current Study Program Goals:

1 – Maintain incoming student numbers consistent with the program capacity
2 – Assure a safe, current, (and also technically appropriate new) curriculum that remains in line with the needs of the Plastics Industry today as well as in the future, using appropriate methods.
3 – Center the educational experience around the mission of Ferris State University.
4 – Manage and integrate change into the programs in an efficient and effective way, from curriculum to facilities to expand degree offerings.
5 – Assure ongoing, consistent, and relative faculty development per program/curricula needs.
6 – Maintain a high placement percentage rate for graduates of the programs.
7 – Maintain and expand our visibility in order to remain a key leader in supplying future Plastics Industry professionals.

Conclusions appropriate to goal number 5:

1 – The faculty continue a superior relationship with industry partners as seen by donations and consignments of materials and equipment.

2 – Faculty continue to participate in current and relevant consulting activities within the Plastics Industry.

3 – The Alumni Survey indicates that 94% of the respondents were satisfied with the availability and interest of the faculty as advisors, and 96% were satisfied with the availability for extra help.

4 – 100% of current students indicated that instructors are qualified to teach courses, 94% agreed that the course content is well taught, and 92% agreed that the coursework is in line with their interests.

RECOMMENDATIONS RELATIVE TO THE FACULTY

Recommendations to goal number 5 as a result of the conclusions:

1 – Laboratory equipment updates are needed in several areas.

2 – The facilities need updated, especially the HVAC system in the National Elastomer Center.

3 – Continue faculty development through coursework, seminars, and sabbatical leaves as appropriate.

APPENDICES

Listing of included appendices:

Appendix A – Collection of survey frequencies – validity indicators

Appendix B – State of the Plastics Industry

Appendix C – Table S-4: State rankings for the Plastics Industry

Appendix D – Race, Gender, Enrollment, Graduates, Degrees Awarded and Retention Fact Book

Appendix E – Companies consistently offering internships to students

Appendix F – Program Costs

Appendix G – Diversity of the Plastics Industry

Appendix H – Assessment Testing

Appendix I – Program Analysis by Plastics and Rubber Engineering Technology Department Chair

Appendix J – Program Analysis by College of Technology Dean

Plastics Program APR...Alumni

Frequencies

Prepared by: Institutional Research & Testing, 04/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1 When receive PLTS AAS from FSU	50	0			
q2 When receive PLTS BS from FSU	50	0			
q3 Your highest degree	49	1	2.39	2.00	.862
q4 Institution & year earned highest degree	50	0			
q5 Currently employed in Plastics industry	50	0	1.16	1.00	.370
q6 Why did you leave	50	0			
q7 Number of yrs employed in Plastics industry	50	0			
q8 Number of job changes since graduating from FSU	50	0			
q9 Best describes the function you perform	49	1	5.96	4.00	4.699
q9a Job function Other specified	50	0			
q10 "Management Title" title	50	0			
q11 Title closest to yours	50	0	4.52	2.50	4.220
q11a Title Other specified	50	0			
q12a In-house Process: Injection Molding	44	6	.86	1.00	.347
q12b In-house Process: Compression Molding	44	6	.09	.00	.291
q12c In-house Process: Transfer Molding	44	6	.05	.00	.211
q12d In-house Process: Thermoforming	44	6	.09	.00	.291
q12e In-house Process: RIM	44	6	.07	.00	.255
q12f In-house Process: Decorating	44	6	.41	.00	.497
q12g In-house Process: Assembly	44	6	.70	1.00	.462
q12h In-house Process: Blow Molding	44	6	.16	.00	.370
q12i In-house Process: Composite Constr.	44	6	.05	.00	.211
q12j In-house Process: Extrusion	44	6	.32	.00	.471
q12k In-house Process: Other	44	6	.32	.00	.471
q12l In-house Process: Other specified	50	0			
q13a External Process: Injection Molding	40	10	.68	1.00	.474
q13b External Process: Compression Molding	40	10	.13	.00	.335
q13c External Process: Transfer Molding	40	10	.13	.00	.335
q13d External Process: Thermoforming	40	10	.25	.00	.439
q13e External Process: RIM	40	10	.13	.00	.335
q13f External Process: Decorating	40	10	.48	.00	.506
q13g External Process: Assembly	40	10	.40	.00	.496
q13h External Process: Blow Molding	40	10	.20	.00	.405
q13i External Process: Composite Constr.	40	10	.13	.00	.335
q13j External Process: Extrusion	40	10	.30	.00	.464
q13k External Process: Other	40	10	.25	.00	.439
q13l External Process: Other specified	50	0			
q14 City & state of employment	50	0			

q15a Industry segment: Automotive	*47*	*3*	*.66*	*1.00*	*.479*
q15b Industry segment: Furniture	*47*	*3*	*.09*	*.00*	*.282*
q15c Industry segment: Medical	*47*	*3*	*.23*	*.00*	*.428*
q15d Industry segment: Computers/Electronics	*47*	*3*	*.09*	*.00*	*.282*
q15e Industry segment: Recreational products	*47*	*3*	*.06*	*.00*	*.247*
q15f Industry segment: Household goods	*47*	*3*	*.09*	*.00*	*.282*
q15g Industry segment: Packaging	*47*	*3*	*.15*	*.00*	*.360*
q15h Industry segment: Other	*47*	*3*	*.21*	*.00*	*.414*
q15i Industry segment: Other specified	*50*	*0*			
q16 Attended courses/seminars since leaving FSU	*46*	*4*	*1.52*	*2.00*	*.505*
q17 Title of course/seminar	*50*	*0*			
q18 Interested in "refresher" course	*46*	*4*	*1.48*	*1.00*	*.505*
q19 Course(s) interested in	*50*	*0*			
q20a The economy	*49*	*1*	*1.78*	*2.00*	*.715*
q20b Environmental issues affecting your company	*48*	*2*	*2.81*	*3.00*	*.641*
q20c Ability to hire additional technical employees	*48*	*2*	*2.35*	*2.00*	*.785*
q20d Salaries	*48*	*2*	*2.65*	*2.50*	*.838*
q20e Benefits	*48*	*2*	*2.58*	*2.00*	*.919*
q20f Career choice	*49*	*1*	*3.02*	*3.00*	*.829*
q20g Health of the Plastics industry	*47*	*3*	*2.55*	*2.00*	*.775*
q20h Job change opportunities within the industry	*48*	*2*	*2.46*	*2.00*	*.898*
q20i Career growth opportunities	*48*	*2*	*2.81*	*3.00*	*.842*
q21a Advisor availability & interest	*49*	*1*	*3.59*	*4.00*	*.574*
q21b Preparation for leadership & advancement	*49*	*1*	*3.31*	*3.00*	*.683*
q21c Quality of classroom instruction	*49*	*1*	*3.73*	*4.00*	*.446*
q21d Number of students in Plastics lectures	*49*	*1*	*3.84*	*4.00*	*.373*
q21e Number of students in Plastics labs	*49*	*1*	*3.82*	*4.00*	*.391*
q21f Number of students in other courses attended	*48*	*2*	*3.42*	*3.00*	*.613*
q21g Plastics faculty availability for extra help	*49*	*1*	*3.71*	*4.00*	*.500*
q21h Understanding of the internship program	*49*	*1*	*3.61*	*4.00*	*.533*
q21i Availability of internship positions	*49*	*1*	*3.41*	*3.00*	*.643*
q22a Increase the global focus of the curriculum	*49*	*1*	*3.22*	*3.00*	*.715*
q22b Increase entrance requirement for all incoming freshmen	*48*	*2*	*2.63*	*3.00*	*.733*
q22c Increase entrance requirements for all Plastics freshmen	*48*	*2*	*2.71*	*3.00*	*.771*
q22d Reduce entrance requirements for all Plastics freshmen	*46*	*4*	*1.80*	*2.00*	*.582*
q22e Reduce/eliminate GPA requirements AAS to BS	*49*	*1*	*1.59*	*2.00*	*.643*
q22f Increase leadership development	*49*	*1*	*3.37*	*3.00*	*.602*
q23a Assist: Influence employer-financial donation	*25*	*25*	*.28*	*.00*	*.458*
q23b Assist: Influence employer-equipment donation	*25*	*25*	*.24*	*.00*	*.436*
q23c Assist: Developing student scholarships	*25*	*25*	*.08*	*.00*	*.277*
q23d Assist: Recruiting local prospective students	*25*	*25*	*.56*	*1.00*	*.507*
q23e Assist: Improve visibility on campus	*25*	*25*	*.28*	*.00*	*.458*
q23f Assist: Improve visibility in your region	*25*	*25*	*.72*	*1.00*	*.458*
q23g Assist: Make video to be used in class/promotions	*25*	*25*	*.12*	*.00*	*.332*
q24 Less likely to recommend FSU PLTS program	*49*	*1*	*1.90*	*2.00*	*.306*
q25a Yes: Lack of employment security	*5*	*45*	*.60*	*1.00*	*.548*
q25b Yes: Too much stress in this industry	*5*	*45*	*.60*	*1.00*	*.548*

q25c Yes: Concerns regarding quality of FSU PLTS prog	*5*	*45*	*.00*	*.00*	*.000*
q25d Yes: Other	*5*	*45*	*.20*	*.00*	*.447*
q25e Yes: Other specified	*50*	*0*			
q26 Name	*50*	*0*			
q27 Address	*50*	*0*			
q28 E-mail address	*50*	*0*			
q29 Telephone	*50*	*0*			
q30 Company name and address	*50*	*0*			

Plastics Program APR...Employers

Frequencies

Prepared by: Institutional Research & Testing, 02/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1 Company's hiring	35	0	2.57	3.00	.608
q2 Hired (full-time) PLTS grad	33	2	1.39	1.00	.556
q3 Number grads employed in company	28	7	2.43	2.00	.997
q4 Overall level of satisfaction with grads	27	8	3.48	4.00	1.122
q5 Overall assessment of their technical preparation	29	6	3.69	4.00	.850
q6 Visited the FSU Plastics Program	32	3	1.56	2.00	.504
q7 Hire additional FSU PLTS grads in future	32	3	1.19	1.00	.592
q8a Importance: Processing	32	3	3.53	4.00	1.047
q8b Importance: Design	31	4	3.16	3.00	1.003
q8c Importance: Composites	31	4	2.71	3.00	1.131
q8d Importance: Materials	31	4	3.35	4.00	.950
q8e Importance: Decorating & Assembly	31	4	2.94	3.00	.929
q8f Importance: Ancillary Equipment	31	4	2.97	3.00	1.048
q8g Importance: Rubber	31	4	2.52	2.00	1.122
q8h Importance: Elastomers	30	5	3.30	3.00	.952
q8i Importance: Other	19	16	4.37	5.00	1.012
q9 Importance: Other specified	35	0			
q10a Need for PLTS grads in my company will	33	2	2.58	3.00	.663
q10b Need for PLTS grads within a 100 mile radius	32	3	2.34	2.00	.937
q11 Knowledge of International aspects	32	3	1.53	1.50	.567
q12 2 or 3 most important personal attributes	35	0			
q13 2 or 3 most important technical skills	35	0			
q14 Hired (full time) summer PLTS intern	31	4	1.58	2.00	.502
q15 Number interns employed in company last 2 yrs	28	7	2.25	2.00	1.076
q16a Skill set: Communication	29	6	.97	1.00	.186
q16b Skill set: Problem solving	29	6	.93	1.00	.258
q16c Skill set: Processing	29	6	.93	1.00	.258
q16d Skill set: Design	29	6	.45	.00	.506
q16e Skill set: Materials knowledge	29	6	.69	1.00	.471
q16f Skill set: Other	29	6	.10	.00	.310
q16g Skill set: Other specified	35	0			
q17a Satisfaction: Communication	22	13	3.41	3.00	.908
q17b Satisfaction: Problem solving	22	13	3.32	3.00	.894
q17c Satisfaction: Processing	22	13	3.55	4.00	.858
q17d Satisfaction: Design	19	16	3.37	3.00	1.065
q17e Satisfaction: Materials knowledge	21	14	3.52	3.00	.928
q17f Satisfaction: Other	6	29	4.33	4.50	.816
q18 Satisfaction: Other specified	35	0			
q19 Plastics interns are valuable to my company	32	3	2.53	3.00	.718

q20 Next 5 years, need for interns will	*30*	*5*	*2.50*	*2.50*	*.731*
q21 Additional comments/suggestions	*35*	*0*			

Plastics Program APR...Current Students

Frequencies

Prepared by: Institutional Research & Testing, 03/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1 Degree	90	1	2.36	2.00	.676
q2 Internships	91	0	1.88	2.00	.953
q3 Transfer status	91	0	1.63	1.00	.770
q4 Plans/goals	91	0	2.29	2.00	.583
q5 Placement data/salaries	91	0	3.67	4.00	.775
q6 Parents aware of data/salaries	91	0	3.08	4.00	1.249
q7 Relevant: PLTS110	91	0	3.55	4.00	.703
q8 Relevant: PLTS121	90	1	3.49	4.00	.851
q9 Relevant: PLTS211	89	2	2.87	4.00	1.408
q10 Relevant: PLTS223	91	0	2.97	3.00	1.233
q11 Relevant: PLTS212	91	0	2.71	3.00	1.336
q12 Relevant: PLTS312	91	0	2.13	1.00	1.343
q13 Relevant: PLTS320	90	1	2.29	1.00	1.463
q14 Relevant: PLTS321	91	0	2.32	1.00	1.460
q15 Relevant: PLTS300	91	0	2.01	1.00	1.278
q16 Relevant: PLTS411	91	0	1.56	1.00	1.056
q17 Relevant: PLTS499	91	0	1.68	1.00	1.114
q18 Relevant: PLTS410	90	1	1.96	1.00	1.280
q19 Relevant: PLTSXXX (Add'l electives)	91	0	2.09	1.00	1.305
q20 Necessary: PLTS110	90	1	4.34	5.00	.938
q21 Necessary: PLTS121	91	0	4.29	5.00	1.068
q22 Necessary: PLTS211	91	0	3.47	4.00	1.822
q23 Necessary: PLTS223	91	0	3.55	4.00	1.621
q24 Necessary: PLTS212	91	0	3.30	4.00	1.696
q25 Necessary: PLTS312	91	0	2.54	1.00	1.715
q26 Necessary: PLTS320	91	0	2.79	1.00	1.924
q27 Necessary: PLTS321	90	1	2.76	1.00	1.916
q28 Necessary: PLTS300	91	0	2.32	1.00	1.591
q29 Necessary: PLTS411	91	0	1.92	1.00	1.485
q30 Necessary: PLTS499	91	0	1.97	1.00	1.472
q31 Necessary: PLTS410	91	0	2.21	1.00	1.567
q32 Necessary: PLTSXXX (Add'l electives)	91	0	2.31	1.00	1.443
q33 Level of satis w/ train/educ from PLTS	91	0	3.42	4.00	.831
q34 Courses help develop necessary skills	91	0	3.40	3.00	.492
q35 Labs necessary to develop skills	90	1	3.67	4.00	.519
q36 Lab/Lec: Processing courses	88	3	3.61	4.00	.596
q37 Lab/Lec: Product & Tooling Design courses	87	4	3.45	4.00	.643
q38 Lab/Lec: Testing course	87	4	3.52	4.00	.588
q39 Lab/Lec: Plastics Eng Mgmt course	77	14	3.08	3.00	.791

q40 Lab/Lec: Plastics Decorating & Assembly course	74	17	3.26	3.00	.684
q41 Material consistency course to course	91	0	3.40	3.00	.612
q42 PLTS courses related to each other	89	2	2.72	3.00	.476
q43 Student/teacher ratio in PLTS classes	91	0	2.84	3.00	.522
q44 How qualified instructors are	90	1	4.44	4.00	.563
q45 Equipmt: Testing Lab	84	7	2.87	3.00	.617
q46 Equipmt: Tooling Lab	82	9	2.76	3.00	.730
q47 Equipmt: CAD & Flow Analysis	80	11	3.03	3.00	.811
q48 Equipmt: Processing Lab	84	7	2.94	3.00	.608
q49 Equipmt: Decorating & Assembly Labs	76	15	2.84	3.00	.634
q50 Equipmt: Project Mgmt Software	74	17	2.99	3.00	.749
q51 Agree: Instructors well qualified	90	1	3.66	4.00	.478
q52 Agree: Content taught very well	90	1	3.48	4.00	.604
q53 Agree: PLTS prog good value	90	1	3.50	4.00	.640
q54 Agree: Content in line w/ needs/interests	90	1	3.28	3.00	.636
q55 Agree: Enough workstations in lab	90	1	3.58	4.00	.653
q56 Agree: Feel safe in non-computer labs	89	2	3.84	4.00	.366
q57 Agree: Lab equip in test lab well-maintained	86	5	3.60	4.00	.559
q58 Agree: Lab equip in D&A labs well-maintained	74	17	3.51	4.00	.646
q59 Agree: Lab equip in computer labs well-maintained	88	3	3.57	4.00	.691
q60 Agree: Internship exper(s) valuable	72	19	3.63	4.00	.659
q61 Agree: Advisor valuable	89	2	3.19	4.00	.976
q62 Agree: Made right choice selecting PLTS	89	2	3.63	4.00	.610
q63 Agree: Comfortable recommending prog	89	2	3.73	4.00	.559

Plastics Program APR...Faculty

Frequencies

Prepared by: Institutional Research & Testing, 02/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1a Prog: Should have only 1 instructor per course when possible	6	0	2.17	2.00	1.329
q1b Prog: 1 instructor to teach the lecture & 1 to conduct the lab	6	0	1.17	1.00	.408
q1c The Associate's prog should have 2 entry points (Fall & Spring)	6	0	2.83	3.00	1.329
q1d Prog: Should operate year-round	6	0	2.00	2.00	.632
q1e Prog: Should be involved w/ certifying various skills	6	0	2.33	2.50	1.211
q1f Prog: Should offer certificates in Plastics	6	0	2.17	2.50	.983
q1g Prog: Should offer some of its credit-bearing courses on-line	6	0	3.00	3.00	.632
q1h Prog: Should offer some of its courses at off-campus locations	6	0	1.83	1.50	.983
q1i An advanced degree is needed in the Plastics program	6	0	2.33	2.50	.816
q1j A minor should be offered within the Plastics program	6	0	2.83	3.00	.408
q1k Currently too many classes offered with the program	6	0	1.67	1.50	.816
q1l Applicable supportive courses are relevant	6	0	2.50	2.00	.837
q1m The Plastics & Rubber programs should be a single department	6	0	2.83	3.50	1.472
q1n The student to faculty ratio is sufficient	6	0	3.17	3.00	.753
q2a Faculty has access to adequate funds for faculty development	6	0	2.67	3.00	1.033
q2b Program has adequate leadership	6	0	1.83	1.50	.983
q2c Advisory board has adequate input & influence	6	0	1.83	2.00	.753
q2d Adequate funds for equipment & supplies are available	6	0	2.00	2.00	.894
q2e Program computer labs have adequate hardware	6	0	3.17	3.00	.408
q2f Aides & lab assts are available & provide appropriate support	6	0	3.50	3.50	.548
q2g Office & clerical assistance is available	6	0	2.83	3.00	1.169
q2h Equipment within the program is representative	5	1	2.80	3.00	.447
q2i Equipment within the program is in adequate supply	6	0	2.33	2.50	.816
q2j Equipment is operational, safe & well-maintained	6	0	3.00	3.00	.000
q2k Instructional facilities meet program objectives	6	0	3.50	3.50	.548
q2l Scheduling of facilities & equip is planned & consistent	6	0	2.17	2.50	.983
q2m Materials & supplies readily available & in sufficient quantity	6	0	2.00	2.00	.632
q2n Adequate funds are available for new equipment and/or repair	6	0	1.83	2.00	.753
q2o Fund allocation consistent w/ prog objectives & instructor input	6	0	2.67	3.00	.516
q2p Number of students assigned to each advisor is manageable	6	0	3.67	4.00	.516
q3a Current labor market/employment data utilized	6	0	2.00	2.00	1.095
q3b Current job skills & trends are systematically utilized	6	0	2.00	2.00	.894
q3c Current grad follow-up data are systematically utilized	6	0	1.83	2.00	.753
q3d Adequate opportun's are available for relevant student co-op, etc.	6	0	3.83	4.00	.408
q3e Student internships are adequately coordinated	6	0	2.50	3.00	.837
q3f Prog curriculum is relevant to students once enter the workforce	6	0	3.17	3.00	.753
q3g University has an effective system for job placement	6	0	2.83	3.00	.408
q3h Student supervision at internships should be centralized	6	0	1.83	1.50	.983

q4 Additional comments/suggestions	*6*	*0*			

Plastics Program APR...Advisory Board

Frequencies

Prepared by: Institutional Research & Testing, 01/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1 Number of years served on Advisory Board	11	0			
q2 Number of years worked in the industry	11	0			
q3 Current job title	11	0			
q4 Attend classes in PLTS program	11	0	1.36	1.00	.505
q5 Company hired FSU PLTS grads/interns	11	0	1.18	1.00	.405
q6a Prog: Industry trends & changes	11	0	3.18	3.00	.405
q6b Prog: Broad range of industries	11	0	3.36	3.00	.505
q6c Prog: Good balance of hands-on & theory	11	0	3.91	4.00	.302
q7a Equip: Updated to reflect latest technology	11	0	3.00	3.00	.632
q7b Equip: Maintained in good running condition	11	0	3.55	4.00	.522
q7c Equip: Sufficient for number of students enrolled	11	0	2.91	3.00	.944
q7d Equip: Meets health & safety standards	11	0	3.64	4.00	.505
q7e Equip: Appropriately funded by university	11	0	2.64	3.00	.505
q7f Equip: Represents sound industry standards	11	0	3.45	3.00	.522
q8a Place: Knows level of need in industry	11	0	3.64	4.00	.505
q8b Place: Valuable for finding employment, etc.	11	0	3.64	4.00	.505
q8c Place: Shows industry comes looking for students	11	0	3.82	4.00	.405
q9a Staff: Adequate in student to instructor ratio	11	0	3.73	4.00	.467
q9b Staff: Sufficient opportunity to grow w/ industry	11	0	3.36	3.00	.674
q9c Staff: Strong leadership practices	11	0	3.27	3.00	.647
q9d Staff: Actively promotes program to industry	11	0	3.18	3.00	.874
q10a Adv: Time used wisely, input is considered/utilized	11	0	3.45	3.00	.522
q10b Adv: Meeting agendas are appropriate	11	0	3.36	3.00	.674
q10c Adv: Meets often enough	11	0	3.09	3.00	.539
q10d Adv: Provided adequate & proper direction	11	0	3.00	3.00	.632
q11 Additional comments/suggestions	11	0			

Plastics Program APR...Facilities

Frequencies

Prepared by: Institutional Research & Testing, 04/08

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1 Building name (NEC) appropriate	5	0	1.60	2.00	.548
q2a Lec: PC/Digital systems	5	0	3.60	4.00	.548
q2b Lec: Projection systems	5	0	3.20	3.00	.447
q2c Lec: White board	5	0	3.20	3.00	.837
q2d Lec: Room lighting	5	0	3.40	3.00	.548
q2e Lec: HVAC	5	0	2.00	2.00	.707
q3a Labs: Equipment available	5	0	3.00	3.00	.000
q3b Labs: Equipment maintenance	5	0	3.60	4.00	.548
q3c Labs: Layout	5	0	3.00	3.00	.000
q3d Labs: Safety systems	5	0	3.00	3.00	.707
q3e Labs: HVAC	5	0	2.20	2.00	.447
q3f Labs: Traffic	5	0	3.00	3.00	.707
q3g Labs: PC Digital support systems	5	0	2.60	3.00	.548
q3h Labs: Hand tool availability	5	0	2.20	2.00	1.095
q3i Labs: Mold Inventory & Control Systems	5	0	2.00	2.00	.707
q3j Labs: Operable Condition of Equipment	5	0	3.00	3.00	.707
q3k Labs: Equipment is up-to-date	5	0	2.60	2.00	.894
q3l Labs: Availability of injection molds	5	0	3.20	3.00	1.304
q3m Labs: Availability of non-injection molds	5	0	3.20	3.00	1.304
q3n Labs: Material (resin) availability	5	0	2.40	2.00	.548
q3o Labs: Molded sample availability	5	0	1.80	2.00	.837
q4a Maintenance: Critical breakdowns handled promptly	5	0	3.80	4.00	.447
q4b Maintenance: Preventive maintenance	5	0	2.80	3.00	.447
q4c Maintenance: Maintained process	5	0	3.20	3.00	.837
q4d Maintenance: Technician availability	5	0	3.00	3.00	1.225
q4e Maintenance: Technician skills	5	0	3.60	4.00	.548
q4f Maintenance: Current system for reporting equipmt breakdowns	5	0	3.00	3.00	1.225
q5a Bldg: HVAC	5	0	1.80	2.00	.447
q5b Bldg: Building systems	5	0	2.80	3.00	.837
q5c Bldg: Cleanliness	5	0	2.80	3.00	.447
q5d Bldg: Janitorial support	5	0	2.60	3.00	.548
q5e Bldg: Restroom maintenance	5	0	3.20	3.00	.837
q5f Bldg: Lighting	5	0	3.40	4.00	.894
q6 Top 3 issues/concerns: Lab equipmt	5	0			
q7 Top 3 issues/concerns: NEC bldg	5	0			
q8 Additional comments/suggestions	5	0			
q9a Future: Procuring lab equipmt by consignment	5	0	3.00	3.00	.707
q9b Future: Procuring lab equipmt by donation	5	0	2.80	3.00	.837
q9c Future: Procuring lab equipmt by purchasing	5	0	3.20	3.00	.837
q9d Future: Disposition of unneeded equipment	5	0	2.60	3.00	1.140

q10 Lab equipmt most in need of replacement	*5*	*0*			
q11 Lab equipmt 2nd most in need of replacement	*5*	*0*			
q12a Stu ref rm: Good reference location	*5*	*0*	*3.00*	*3.00*	*1.225*
q12b Stu ref rm: Needs to be converted to lecture room	*5*	*0*	*1.80*	*1.00*	*1.304*
q12c Stu ref rm: Corridor displays are valuable resource	*5*	*0*	*3.00*	*3.00*	*.707*
q13a Office: Copier/fax resources meet dept needs	*5*	*0*	*2.80*	*3.00*	*.837*
q13b Office: Stu's should have different copier	*5*	*0*	*3.00*	*3.00*	*.707*
q13c Office: Mail distribution meets dept needs	*5*	*0*	*3.40*	*4.00*	*.894*
q13d Office: Stu mail should be in different area from fac mail	*5*	*0*	*3.20*	*4.00*	*1.095*
q13e Office: Bldg/Office security meet dept needs	*5*	*0*	*3.20*	*3.00*	*.837*
q14 Comments/Suggestions	*5*	*0*			

Appendix B

STATE OF THE PLASTICS INDUSTRY

(Probe Economics, Inc. Sept. 26, 2007

Plastics Industry shipments compared with Other Manufacturing Industries

The size ranking of manufacturing industries with respect to shipments depends, to some extent, on how the industries are defined. Using data at the 4-digit NAICS level, Table 1 shows that Plastics Products (NAICS 3261) accounted for $160.3 billion in shipments in 2005, which made it the fifth largest manufacturing industry, after Petroleum and Coal Products, Motor Vehicles, Motor Vehicle Parts, and Animal slaughtering and Processing. The latter category, which has been growing rapidly, overtook Plastics Products for fourth place in 2005. The rankings are in current dollars and are, therefore, sensitive to inflation as well as to industry cycles. The recent rise in energy prices has boosted the shipments and ranking of Petroleum and Coal Products.

TABLE 1

TOP 25 INDUSTRIES RANKED BY SHIPMENTS
(CURRENT DOLLARS, 4-DIGIT NAIC BASIS)

NAIC Code	Industry Description	2005 Shipments $Millions	1998 Rank	2001 Rank	2003 Rank	2004 Rank	2005 Rank
3241	Petroleum And Coal Products	405,297	3	1	1	1	1
3361	Motor Vehicles	262,377	1	2	2	2	2
3363	Motor Vehicle Parts	196,627	2	3	3	3	3
3116	Animal Slaughtering and Processing	161,720	8	7	7	5	4
3261	**Plastics Products**	**160,347**	**6**	**4**	**4**	**4**	**5**
3251	Basic Chemicals	152,936	9	9	9	7	6
3254	Pharmaceuticals And Medicines	149,061	10	6	6	6	7
3364	Aerospace Products And Parts	143,615	4	5	5	8	8
3344	Semiconductors And Other Electronic Components	120,713	5	8	8	9	9
3345	Navigational, Measuring, Electromedical, And Control Instruments	107,634	12	12	12	10	10
3231	Printing, Publishing And Similar Products	90,176	11	11	11	11	11
3222	Converted Paper Products	86,827	13	14	14	12	12
3252	**Resin, Synthetic Rubber, & Artificial & Synthetic Fibers & Filiment**	**78,883**	**18**	**21**	**21**	**15**	**13**
3311	Iron And Steel And Ferroalloy	77,265	23	33	33	26	14
3121	Beverages	75,090	20	17	17	16	15
3115	Dairy Products	74,734	19	18	18	13	16
3256	Soaps, Cleaning Compounds, And Toilet Preparations	72,451	25	23	23	19	17
3391	Medical Equipment And Supplies	72,052	29	24	24	17	18
3221	Pulp, Paper, And Paperboard Mill Products	71,851	15	15	15	18	19
3399	Miscellaneous Manufactured Commodities	71,358	24	22	22	20	20
3339	Other General Purpose Machinery	71,092	17	19	19	25	21
3331	Agriculture And Construction Machinery	69,523	21	28	28	23	22
3323	Architectural And Structural Metals	69,449	22	20	20	21	23
3119	Foods, Nesoi	65,538	26	27	27	24	24
3341	Computer Equipment	65,872	7	13	13	14	25
	All Others	1,577,847					
	Total	4,550,463					

* Includes rubber and manmade fibers. Plastics Materials & Resins represented 83 percent of NAICS 3252 category shipments in 2005.

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Resin, Synthetic Rubber, and Artificial and Synthetic fibers and Filaments (NAICS 3252) ranked thirteenth in 2005, an improvement from 2004. A key component of the plastics industry, Plastics Materials and Resins accounted for 83 percent of NAICS 3252 shipments in 2005.

The Size of the US Plastics Industry

This study measures the plastics industry primarily in terms of employment and the value of shipments. It also uses measures such as payroll, value added, new capital expenditures and the number of establishments. See Table 2.

TABLE 2

SELECTED DATA ON THE PLASTICS INDUSTRY, 2006

	Number of Estabs	Number Employees (Thous)	Annual Payroll ($Mill)	Average Production Workers (Thous)	Production Worker Wages ($Mill)	Value Added ($Mill)	Cost of Materials ($Mill)	Value of Industrial Shipments ($Mill)	New Capital Expenditures ($Mill)
Plastics Manufacturing									
Plastics Materials and Resins, NAICS 325211	720	58.5	4,006.1	38.2	2,331.1	27,477.4	52,249.3	78,741.8	2,487.5
Custom Compounding, NAICS 325991	610	19.8	967.1	13.3	535.4	4,066.5	6,543.4	10,587.0	193.7
Plastics Bags, NAICS 326111	393	31.5	1,266.8	24.9	881.6	4,145.0	5,396.9	9,461.9	269.3
Plastics Packaging Film & Sheet, NAICS 326112	309	23.3	1,065.4	18.3	741.1	4,207.6	4,815.6	9,001.2	243.8
Plastics (Except Pkg) Film & Sheet, NAICS 326113	694	43.4	2,037.9	31.5	1,294.4	6,873.1	10,290.7	17,088.8	559.9
Plastics Profile Shapes, NAICS 326121	642	26.1	1,093.1	20.2	691.8	3,494.9	3,427.3	6,922.2	286.0
Plastics Pipe & Pipe Fittings, NAICS 326122	421	20.6	874.3	15.7	557.5	4,142.9	7,053.9	11,286.8	227.5
Laminated Plate, Sheet & Film, NAICS 326130	258	10.0	431.9	7.4	277.1	1,428.7	1,283.1	2,715.8	68.1
Polystyrene Foam Products, NAICS 326140	556	32.6	1,184.3	26.1	860.7	3,904.7	4,728.3	8,629.0	237.2
Urethane & Other Foam Products, NAICS 326150	625	35.3	1,284.5	27.4	807.9	3,862.9	5,507.1	9,348.1	169.3
Plastics Bottles, NAICS 326160	379	29.9	1,156.8	24.7	881.3	4,063.1	5,568.3	9,576.4	442.3
Other Plástics Product Manufacturing, NAICS 32619	8,102	476.4	17,025.5	370.6	11,086.0	48,251.6	47,875.6	95,727.2	3,708.6
Plastics Working Machinery, NAICS 3332201	432	12.2	632.3	6.9	267.0	1,355.2	1,326.4	2,658.6	47.3
Molds for Plastics, NAICS 33351105	1,335	24.9	1,212.0	19.1	855.8	2,156.9	1,104.8	3,219.4	206.2
Total Plastics Manufacturing	15,476	844.2	34,238.3	644.2	22,068.7	119,430.5	157,170.7	274,964.3	9,146.6
Wholesale Trade for Plastics Materials, Forms and Shapes (NAICS 424610)*	3,109	32.6	1,637.7	#N/A	#N/A	#N/A	#N/A	39,342.3	#N/A
Government Documented Plastics Industry	18,585	876.8	35,876.0	#N/A	#N/A	#N/A	#N/A	314,306.6	#N/A
Captive Plastic Products	#N/A	253.5	9,612.7	196.4	6,287.4	29,961.4	34,755.9	64,520.2	2,167.3
Plastics Industry Totals	#N/A	1,130.3	45,488.6	#N/A	#N/A	#N/A	#N/A	378,826.8	#N/A

* The Wholesale Trade for Plastics Materials, Forms and Shapes "shipments" figure of $39,342.3 million is actually a "sales" number and therefore does not include shipments among establishments of the same enterprise or company.

In 2006, the Plastics industry, including Plastics Materials and Resins, Government-Documented Plastics Products, Plastics Working Machinery, Molds for Plastics, Plastics Wholesale Trade and Captive Plastics Products, generated $378.8 billion in shipments and employed 1.13 million people, who had a total payroll of $45.5 billion.

The data are more complete for Plastics Manufacturing than for the entire Plastics Industry. Plastics Manufacturing employed 644 thousand production workers, which was 76 percent of all Plastics Manufacturing employees. The others were researchers, supervisors and various "white color" personnel.

Plastics Manufacturing generated $275.0 billion in shipments, which was make up of the cost of materials purchased and the value that was added to those materials. Plastics Manufacturing establishments purchased about 57 cents worth of materials for every dollar of goods that they shipped in 2006. The cost of materials purchased has been rising recently as a percentage of shipments.

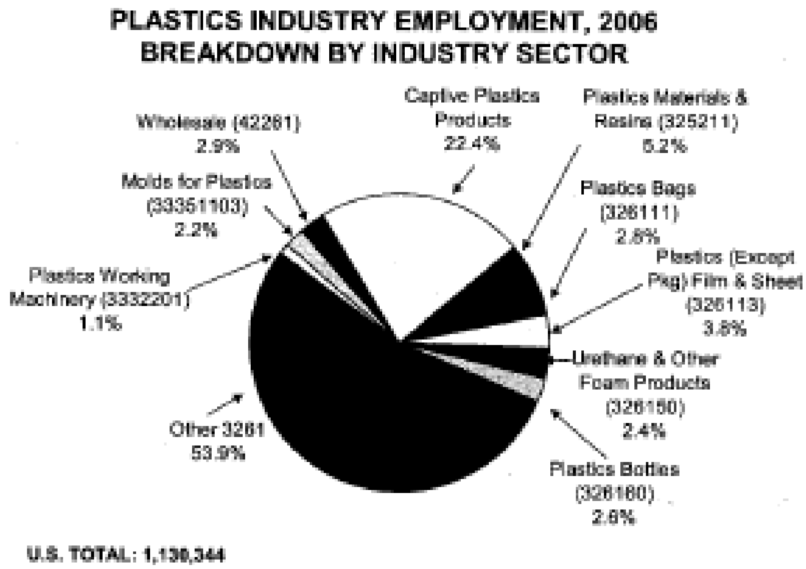
The plastics industry has been shrinking in recent years, in terms of employees and numbers of establishments. The industry was negatively affected by the economic downturn of 2000-2001. It continued to experience a slowdown during the latest economic recovery, although employment actually increased in 2006. The plastics industry appears to be consolidating, with fewer establishments, and declining domestic customer base. In some cases, plastics industry customers are moving their operations abroad or losing business to manufacturers in low-wage countries. Declines in employment and the number of establishments were experienced by most Plastics Industry sectors from 2002-2006. [1] Total plastics manufacturing shipment levels kept growing in 2006, although that was partly due to higher raw material prices rather than increases in real output.

[1] The government no longer gathers data for NAICS codes 326191, 326192, and 326199, using an aggregate category instead – NAICS 32619. The discontinued growth rates are marked "NA" for the most recent period.

The plastics industry is still one of the economy's largest and fastest growing. This report will show that the industry was hit hard by the economic downturn of 2000-2001 and by the loss of manufacturing jobs to other countries. Most plastics are used in manufacturing. The shrinking number of establishments probably also indicates a long-term consolidation trend in the plastics industry. Despite these negative factors, the industry regained some of its strength in 2006.

- The plastics industry is large, accounting for 1.1 million jobs and $379 billion in shipments during 2006.
- California, the largest state, has the largest plastics industry. As a percentage of total employment, the plastics industry is most important to Indiana, where it accounts for 19.2 of every 1,000 non-agricultural jobs.
- When suppliers to the plastics industry are considered, jobs grow to 2.0 million, and total shipments grow to $509 billion.

- The plastics products portion of the plastics industry is the fifth largest 4-digit NAICS industry in the US. The plastics materials and synthetics portion of the plastics industry (including rubber and fiber) is the thirteenth largest 4-digit NAICS industry.
- Employment in the plastics manufacturing segment of the industry grew 1.1 percent per year from 1980 to 2006.
- Employment growth slowed during the 1995-2000 period and went into reverse from 2000-2006 – falling at a 2.9 percent annual rate. (see following pie chart)
- Real shipments grew at a 3.4 percent annual rate from 1980-2006.
- The problems in the plastics industry largely reflect problems in the manufacturing sector as a whole – mostly caused by the outsourcing of manufacturing jobs.



Rate of Growth

- Over the last 26 years, plastics industry employment, real shipments and real value added grew significantly faster than manufacturing as a whole. This is because plastics are relatively new and dynamic compared to other materials and other methods of manufacturing.
- Employment in the Plastics Manufacturing Industry grew 1.1 percent per year between 1980 and 2006. Employment in the larger category, Plastics Manufacturing plus Plastics Wholesale Trade, also grew 1.1 percent per year. (Growth rate data are not available for captive and upstream industries.)
- Real value added in the Plastics Manufacturing Industry grew 3.2 percent per year from 1980 to 2006. The real value of shipments by this Industry grew 3.4 percent per year.

- By one measure – the real shipments growth rate minus the employment growth rate (3.4 – 1.1) – productivity in Plastics Manufacturing grew 2.3 percent per year from 1980 to 2006, which is a little faster than productivity growth for manufacturing as a whole.
- The growth of Plastic Industry employment and number of establishments went into reverse towards the end of the 1990's and into 2006. This slowdown mirrored what happened to the rest of the manufacturing sector as a result of rising energy costs, the high value of the dollar, the deterioration of the trade deficit, an the 2000-2001 recession.
- The effects of the recession have ended, but the Plastics Industry continues to suffer from the migration of manufacturing activities to low-wage countries. Manufacturers, after all, buy and process most plastics.
- From 2000 – 2006, Plastics Manufacturing employment fell at a 2.9 percent annual rate, and real shipments grew at a 2.0 percent annual rate.
- Employment actually grew a little in 2006, and real shipments grew 5.0 percent. It remains to be seen whether this is just a temporary, top-of-the-cycle phenomenon, or the beginnings of fundamental improvement.

Segment-specific Trends

A. Resins

- The US resin industry had a $12.2 billion surplus in 2006, which was a 21.9 percent increase from the surplus in 2005.
- Resin exports increased by 14.5 percent, and imports increased by only 7.9 percent. Parts of these increases were due to increased resin prices. After correction for inflation, for instance, the resulting annual increase in "real" resin exports was 11.7 percent.
- The resin industry has a $3.9 billion surplus with Mexico, followed by a $1.7 billion surplus with China, an a $1.3 billion surplus with Belgium.
- The resin industry had its largest trade deficit with Germany at $533 million.
- Resin exports accounted for 30.5 percent of domestic shipments, while imports were 15.8 percent.
- Apparent consumption of plastics resin grew by 3.5 percent, from $64.9 billion in 2005 to $67.2 billion in 2006. Inflation in resin prices accounted for 2.8 percentage points of the increase.

- In 2006, US resin producers held 81.4 percent market share, down from 82.2 percent in 2005. Imports held 18.6 percent market share, up from 17.8 percent in 2005.
- The estimated value of plastics resins contained in exported goods was $13.9 billion, and the estimated value of plastics resins contained in imported goods was $26.9 billion, which meant that the segment had a $13.0 billion deficit in contained resin trade.

A. Plastics Products

- The growing deficit in plastics products trade finally stabilized, at least for a year, reaching $4.7 billion in 2006, which was just slightly down from the 2005 deficit.
- Exports of plastics products grew by 10.3 percent, while imports grew at a slower 7.9 percent rate.
- The US had its largest plastics product surplus with Mexico, at $3.4 billion.
- China accounted for the largest plastics product trade deficit, at $6.5 billion, a figure that had grown by 12.9 percent from 2005.
- Exports of plastics products were 9.2 percent of domestic shipments, and imports were 12.4 percent.
- Apparent consumption of plastics products grew by 9.4 percent, from $179.6 billion in 2005 to $196.5 billion in 2006. Inflation in plastics product prices accounted for 8.3 percentage points of the increase.
- US producers of plastics products held 88.0 percent market share, and imports held 12.0 percent market share. Imports of plastics products lost 0.2 percentage points in market share during 2006, after several years of gains.
- The estimated value of plastics products contained in exports was $20.0 billion, and the estimated value contained in imports was $43.7 billion, which means that the United States had a $23.7 billion deficit in contained plastics product trade.

C. Molds

- The US moldmaking industry had a $721 million trade deficit in 2006, which was an 18.8 percent increase from the $607 million deficit it had in 2005.
- Mold exports were flat, while imports expanded by 9.0 percent.
- The US moldmaking industry had its largest surplus with Mexico, at $329 million. It had its largest deficit with Canada at $513 million.

- Exports of molds were 20.5 percent of domestic shipments, and imports were 43.7 percent.
- Apparent consumption of molds for plastics grew by 1.1 percent, from $3.9 billion in 2005 to $4.0 billion in 2006. Domestic shipments <u>fell</u> by 2.2 percent, which means that all of the growth in apparent consumption, and then some, was facilitated by increased imports.
- US moldmakers held a 64.5 percent market share and imports held 35.5 percent market share in 2006. Mold imports gained 2.6 percentage points in market share during the year.

D. Machinery

- The US plastics machinery industry registered a $896 million trade deficit in 2006, a 5.8 percent decrease (improvement) from 2005.
- Exports grew by 6.3 percent, and imports grew by only 0.9 percent.
- The industry had its largest surplus with Mexico at $234 million, and its largest deficit with Germany at $442 million.
- Exports of machinery were 46.8 percent of domestic shipments, and imports were 82.6 percent.
- Apparent consumption of plastics machinery fell by 3.5 percent, from $3.7 billion in 2005 to $3.6 billion in 2006. Shipments fell, but at a slower rate because of the increase in exports.
- US machinery producers held 39.2 percent market share, and imports held 60.8 percent market share. Machinery imports gained 2.6 percentage points in market share during 2006.

Filename: State of PLTS Industry

TABLE S-4

TOP STATES FOR PLASTICS CONCENTRATION (PLASTICS INDUSTRY, 2006)

Rank	State	Plastics Employees per 1,000 Non-Agricul. Employees
1	Indiana	19.4
2	Michigan	17.9
3	Ohio	16.6
4	Wisconsin	13.9
5	Kentucky	13.5
6	South Carolina	12.6
7	Illinois	12.0
8	Rhode Island	11.8
9	Mississippi	11.7
10	Tennessee	11.3
	U.S. Average	8.3

Appendix D Enrollment

Appendix E Intern companies

PLASTICS INTERNSHIP EMPLOYERS

UPDATED 9/2006

Company Name	Company Address	Company City	Company State	Company Zip Code	Company Phone #	Company Comments	Human Resource Contact	Human Resource Phone #	Human Resource FAX#	Contact Email	Last Interested In	Region	Last Updated
21ST CENTURY PLASTICS	345 WRIGHT PARKWAY	POTTERVILLE	MI	48876-0188	(517) 645-2695	Fax Resumes INJECTION MOLDING COMPANY HAS 12 INJECTION MOLDING MACHINES(40-400TON). GOOD SHOP FLOOR EXPERIENCE.	Linda Murphy	517-645-2695 X102	(517) 645-7029		193	CM	4/1/2005
3M							Wayne Paucy	651-737-1218		paulyusj@mmm.com			9/18/2006
ABSOLUTE PRODUCT INC.	2275 W. MIDWAY BLVD.	BROOMFIELD	CO	80020			TRAVIS DeKRYGER				193	OS	12/14/2001
ACCURATE MOLDING & ENGINEERING INC.	2860 MARLIN CT. N.W.	GRAND RAPIDS	MI	49544			SAM FLANERY				193	WM	12/14/2001
ACI PLASTICS	2945 DAVISON RD	FLINT	MI	48506	(810)767-3800		M. SCOTT MELTON		(810)767-3883	SMELTON@ACIPLASTICS.COM			9/18/2006
ACRA, INC.	2525 AERO PARK DR.	TRAVERSE CITY	MI	49686-9180	(231) 947-8733	INJECTION MOLDING TECHNITION WORK	Mike Brown, Eng. Manager	231-218-1362			193 & 393	NM	3/1/2005
ACSYS Technologies	25200 Telegraph	Southfield	MI	48034		Engineering center is in Southfield, manufacturing is in Oshawa, Ontario (suburb of Toronto). They are an automotive supplier that makes bumper fasciae, body side moldings, etc. Web site is www.acsys-tech.com				khouser@ acsys-tech.com		EM	10/2/2002
ADAC PLASTICS	2929 32nd ST.	GRAND RAPIDS	MI	49588	(616) 957-0311		Cindy Vermetti	616 957-3800, 957-0520 X5694	(616) 957-9509	cvermetti@ADACplastics.com	393	WM	3/1/2005
ADAPT PLASTICS, INC.	7949 FOREST HILLS RD.	ROCKFORD	IL	61111-	(815) 633-9263	Not interested in interns 2005	JAMES THOMPSON, VP	815-633-9263	(815) 654-2817			OS	4/1/2005
ADVANCED AUTO TRENDS, INC	3485 METAMORA RD.	OXFORD	MI	48371-	(248) 628-4850		Stephanie				393	EM	12/19/2001
ADVANCED DRAINAGE SYSTEMS, INC	P.O. BOX 648	LONDON	OH	43140	plant 800-733-2981	Locations: LONDON, OH & WOOSTER, OH., CINCINNATI	RON COX, REGIONAL MFG MGR	corporate 800-733-7473	740-852-3092		193 & 393	OS	2/16/2000
AFTECH	687 Byrne Industrial Drive	Rockford	MI	49341	(616)866-1650			(616)866-3018					9/20/2006
AGAPE PLASTICS, INC	11474 1ST AVE. NW	GRAND RAPIDS	MI	49544	(616) 735-4092		Sue Baughman				393	WM	3/1/2005
American Compounding		Fowlerville	MI	48836	(810)623-3930		David W. Doniet						9/20/2006
AMERICAN METALS & PLASTICS INDUSTRIES	450 32ND STREET SW	GRAND RAPIDS	MI	49548	(616) 452-6061		BILL BULTEMA	616 452-6061 x235 or 210			393	WM	12/14/2001
ANDOVER INDUSTRIES	MAPLE ST. EXTENSION, PO BOX 459	ANDOVER	OH	44003-	440-293-5900	In Bankruptcy 3/2005	Kim Southerland					OS	3/1/2005
ASAHI KASEI PLASTICS NORTH AMERICA, INC.	ONE THERMOFIL WAY	FOWLERVILLE	MI	48836	(517)2235130		RICHARD C. CURRIE	(517)294-0254	(517)223-5245	RCCURRIE@ASAHIKASEIPLASTICS.COM			9/18/2006
ATEK	8393 RAWSONVILLE RD.	BELLEVILLE	MI	48111	(734) 461-2425		BOB PARSONS MICHELE PIERZCHALA		(734) 461-2428		393	EM	12/19/2001
AVEILLE INC	3333 N KENMORE	SOUTH BEND	IN	46628	(616) 684-5337		PAUL GENSORESKI				193	OS	12/19/2001
AZDEL, INC.	658 WASHBURN SWITCH RD.	SHELBY	NC	28150-	(704) 482-3441							OS	
B&B MOLDERS	58471 FIR ROAD SOUTH	MISHAWAKA	IN	46544-								OS	
BATTELLE	505 KING AVENUE	COLUMBUS	OHIO	43201-2693			JOHN D. CLAY		(614)424-7479	CLAYJ@BATTELLE.ORG			9/18/2006
BAYER PLASTICS	2401 Walton Blvd	Auburn Hills	MI	48326	(248) 475-7700		Terry Davis	517-647-2417	(517) 647-7331	terry.davis@bayermaterialscience.com	193 & 393	CM	3/1/2005
BRAUN	901 MARCON BOULEVARD	ALLENTOWN	PA	18109-9341	(610)266-0500		JAMES P. ROMA		(810)266-6294	JIM.ROMA@BBRAUN.COM		OS	9/18/2006
BD Diagnostics-Preanalytical Systems	1575 Airport Road, P.O. Box 2128	Sumter	SC	29151-2128	(803)469-1979		Paul Burchell		(803)469-1922	paul_burchell@bd.com			9/20/2006
BEACH MOLD & TOOL, INC	999 PROGRESS BLVD. P.O. BOX227	NEW ALBANY	IN	47150	(812)945-2688		DAVID BATLINER		(812)944-3705	DAVID_BATLINER@BEACHMOLD.COM		OS	9/18/2006
BISSELL INC.-HOMECARE DIV.	2345 WALKER N.W.	GRAND RAPIDS	MI	49544	(616) 735-1412		STEVE BRUMMER	616 735-1412			193	WM	12/14/2001
BLACKHAWK AUTOMOTIVE PLASTICS	1111 W LONG LAKE ROAD, Ste 102	TROY	MI	48098	(248) 641-5959		Barb Trudel				393	EM	3/1/2005
BMW MANUFACTURING CO. LLC	P.O.BOX 11000	SPARTANBURG	SC	29304-4100	(864)989-6693		JEAN-MICHEL ROSSET		(864)989-6290	JEAN-MICHEL.ROSSET@BMWMC.COM		OS	9/18/2006
Byrne Electrical Specialist	320 Byrne Industrial Dr	Rockford	MI	49341	(616)866-3461		Bridgette Ludtke			bludtke@byrne-electrical.com			9/20/2006
CADILLAC PRODUCTS	29784 LITTLE MACK AVENUE	ROSEVILLE	MI	48066-			DON SAWYER	810-774-1700				EM	
CADILLAC PRODUCTS, INC	4858 WILLIAMS RD.	ROGERS CITY	MI	49779-								NM	
CADILLAC PRODUCTS, INC	50550 CORPORATE DRIVE	SHELBY TOWNSHIP	MI	48315-			KEVIN MORSE				193/393	EM	1/23/1998
CADILLAC PRODUCTS, INC	5800 CROOKS ROAD	TROY	MI	48098-		locations: ROSEVILLE, STERLING HEIGHTS AND TROY	HUMAN RESOURCES-COOP		(248) 879-7420		193 & 393	EM	1/23/1998
CAPSONIC GROUP LLC					(847)888-7240		MIKE LAJUN	(847)652-5848	(847)888-7543	MLAJUN@CAPSONICGROUP.COM			9/18/2006
CARLISLE ENGINEERED PRODUCTS	290 McCORMICK	LAPEER	MI	48446-	(810) 664-7212		ELAINE CHANEY		(810) 664-3665		193 & 393	EM	1/23/1998
CARLISLE ENGINEERED PRODUCTS	17187 N. LAUREL PARK DR., SUITE 208	LIVONIA	MI	48152-	(724) 542-8228		LARRY BUTTERFIELD, DIR OF ENG. DEV.	724-542-8228	(724) 542-0303		393	EM	4/13/1998
CASCADE ENGINEERING	5175 36TH ST., SE	GRAND RAPIDS	MI	49512-2009	(616) 975-4864							WM	
CASCADE ENGINEERING, INC.	4950 THIRTY-SEVENTH ST. SE	GRAND RAPIDS	MI	49512-4072	(616) 975-4800		MIKE PRINS	616-975-4800				WM	
CASMER & SONS MFG	7211 N. SAGINAW	MT. MORRIS	MI	48458-	(810) 686-8550	Not interested in interns 2005	KURT		(810) 686-8683			EM	3/1/2005
CertainTeed Corp	803 BELDON	JACKSON	MI	49203		VINYL SIDING EXTRUDER	JENIFFER MALLEY		517-787-1740			EM	2/6/2000
Chase Plastics					(248)620-2120		Kim Skellenger	(248)620-8331	(248)620-2342	kskellenger@chaseplastics.com			9/20/2006
CHIVAS PRODUCTS, LTD	8595 RONDA DRIVE	CANTON	MI	48187-								EM	
CLARIANT							DINESH PANDYA			DINESH.PANDYA@CLARIANT.COM			7/1/2005
CLARIANT- REED - SPECTRUM	926 ELLIOT RD.	ALBION	MI	49224-	(800) 897-1418		Tina Dalani	800-897-1418	(517) 629-5877		193 & 393	CM	3/1/2005
CLARION TECHNOLOGIES	6719 PINE RIDGE COURT	JENISON	MI	49428	616-754-4645		Jody Flinton	616-669-6800 ext. 3189	616-669-9912	jflinton@clariontechnologies.com	393	WM	10/13/2000
Clarion Technologies		Greenville	MI							kvisser@clariontechnologies.com			9/20/2006
Coleman		Wichita					Gail	(316)832-3010					9/22/2006
Collins and Aikman		Port Huron					Mark Neitzke	(586)201-3959					9/20/2006
CONCORD PLASTICS, INC	5566 GRAND HAVEN RD.	MUSKEGON	MI	49441-								WM	
Cooper Standard		Gaylord	MI		(989)732-0158		Ruth Miller			Rmiller@cooperstandard.com			9/20/2006
Cooper Standard Automotive	4700 N Industrial Drive	Oscoda	MI	48750			Tammy Coulson	(989)739-6209		tcoulson@cooperstandard.com			9/22/2006
CREATIVE TECHNIQUES	2441 N. OPDYKE RD	AUBURN HILLS	MI	48326-2442	(800) 473-0284		Mark Metzger (FSU Plastics grad)	248-475-9501		metzgerm@ creativetechniques.com	193	EM	3/1/2005
Credential Essentials	210 1/2 Main St	Murray	KY	42071			Thomas M. Rasinen	(270)761-4422	(270)759-0420	thomas@credentialessentials.com			9/20/2006
CRU CAM	38099 SCHONLCRAFT	LIVONIA	MI	48150-	( ) 953-1270							EM	
CS MANUFACTURING INC	PO BOX 230 K, 299 W. CHERRY ST	CEDAR SPRINGS	MI	49319-	(616) 696-2772	Tracy Bongard former grad works here	AMY REED					WM	
CSC PLASTICS SERVICES	3685 JACKSON RD	ANN ARBOR	MI	48103-								EM	
CTS, CORPORATION-AUTOMOTIVE PROD	1142 W. BEARDSLEY AVENUE	ELKHART	IN	46514-			BARB GAMBLE		(219) 293-9841		393 ONLY	OS	2/16/2000
Custom Profile	3110 Wilson Dr NW	GRAND RAPIDS	MI	49534			Jenny Redes	(616)735-4410 ext. 12		jredes@custom-profile.com			9/22/2006
DARTER PLASTICS, INC.	13990 INDUSTRY AVE., PO BOX 278	BECKER	MN	55308-			JOHN KNUTSON, PRES.		(612) 261-5010		193 & 393	OS	1/20/1998
DAYS MOLDING & MACHINERY	485 FLORANCE ROAD PO BOX 188	CONSTANTINE	MI	49042			SARAH SMITH	X14			193		12/14/2001
DAYTONA PLASTIX, INC.	1870 MASON AVE.	DAYTONA BEACH	FL	32117-			JOHN KIRKMAN, HR MGR.		(904) 274-1938			OS	
DELPHI DELCO ELECTRONICS	3224 DAVIDSON ROAD	FLINT	MI	48556-	(810) 257-5444		DAVE ARNOTT	810-257-5444	(810) 257-8959			NM	
Delphi Instrument Cluster Assembly							Nichole Felton (Charbeneau)	(810)257-7717					9/20/2006
DELPHI SAGINAW STEERING SYSTEMS	3900 HOLLAND RD.	SAGINAW	MI	48601-9499								NM	
DELPHI/DELCO ELECTRONICS	2151 E. LINCOLN RD., MAIL STATION CT 70C	KOKOMO	IN	46904-9005	(800) 428-0645		KAREN ALENDER					OS	
DISPLAY PACK	1340 MONROE AVE NW	GRAND RAPIDS	MI	49505-		THERMOFORMING	JAYNE DE JONG, HR SPECIALIST					WM	
Display Pack		GRAND RAPIDS	MI				Mike Hellman	(616)574-6184					9/20/2006
DONATELLE	501 COUNTY ROAD E-2 EXTENSION	NEW BRIGHTON	MN	55112	(651)254-4018		RAGHU VADLAMUDI		(651)254-4058	RAGHU.VADLAMUDI@DONATELLE.NET		OS	9/18/2006
DOTT INDUSTRIES/DECO PLATE	395 DEMILLE ROAD	LAPEER	MI	48446-	(810) 667-3460		Joe Braultor, HR					EM	
DOTT MANUFACTURING	3768 N MAIN STREET	DECKERVILLE	MI	48427	(810) 376-2445		MIKE BALL	X532			193		12/19/2001
DOUBLE J MOLDING	200 LOVEJOY	SOUTH HAVEN	MI	49090-		40 INJECTION MACHINES,MOLDING ABS AND PC	MIKE DOYLE, ENG. MGR.	616-637-3943	(616) 639-9363		193 AND 393	WM	2/16/1998
DOW CHEMICAL	BUILDING 47	MIDLAND	MI	48667	(989) 636-3563		JACK LITTLE					EM	12/14/2001
DOW CORNING CORPORATION	2200 W. SALZBERG RD.	AUBURN	MI	48611-			DAVE ROMENESKO	517-496-5428				CM	
DRUG PLASTICS & GLASS INC.	1 BOTTLE DRIVE	BOYERTOWN	PA	19512-			MIKE FETTERMAN					OS	3/24/1998
DURA AUTOMOTIVE SYSTEMS, INC.	34000 AUTRY ST.	LIVONIA	MI	48150-			VAL CHAMBERS, HR COORDINATOR		(313) 425-6677		193 & 393	EM	1/22/1998
EATON CORPORATION, MIRROR ACTUATOR DIVISION	1100 W. BROADWAY	THREE RIVERS	MI	49093-			PHILLIP H. JOHNSON, HR SUPERVISOR	616-279-9661 X216	(616) 278-8023	PHILLIPHJOHNSON@EATON.COM	393 ONLY	WM	1/22/1998
ECLIPSE	23155 15 MILE RD.	CLINTON TOWNSHIP	MI	48035-3173			LAURA PETZ (H.R.)	(586)7923320	(586)792-6545		193 & 393	EM	12/19/2001
ELECTROLUX HOME PRODUCTS	635 WEST CHARLES STREET	GREENVILLE	MI	48838	(616) 754-7131		Laurie	X504			193	WM	12/18/2001
EMHART AUTOMOTIVE	PO BOX 868	MT. CLEMENS	MI	48046-		COMPANY DESIGNS AND MANUFACTURES AUTOMOTIVE FASTENERS. 65 INJECTION MOLDING MACHINES	ROYCE TOFFOLO, DIR. OF HR.	810-949-0440	(810) 598-2160		393	EM	2/20/1998
ENGINEERED PLASTIC COMPONENTS		MATTAWAN	MI				JOHN STURGEON					WM	1/23/1998
ENGINEERED PRODUCTS	4603 MACKS DR., P.O. BOX 6197	BOSSIER CITY	LA	71171-			CARL DAVIS, PLT. MANAGER		(318) 746-3881		193/393	OS	1/23/1998
Entegris, Inc.		Colorado Springs	CO				Pamela Green	(719)528-2770	(719)528-2747				9/20/2006
ESS TEC INC	128 ANLINE	HOLLAND	MI	49424	(616) 394-0230		Elliot Essenberg				193	WM	3/1/2005
EVART PRODUCTS	601 W. 7TH ST.	EVART	MI	49631-		AUTOMOTIVE INJECTION MOLDING COMPANY	ED CATENACCI, HR MGR.		(616) 668-9237		193 & 393	NM	1/21/1998
FABRI-KAL	PLASTICS PLACE	KALAMAZOO	MI	49001-4880					(616) 385-0197		193/393	CM	
FEDERAL MOGUL CORPORATION	9104 ALEX HARVIN HIGHWAY	SUMMERTON	SC	29148	(803) 478-9514		THOMAS ANDERSON		(803)478-2023	THOMAS_ANDERSON@FMO.COM		OS	9/18/2006
FERRO CORP	103 RAILROAD AVE	STRYKER	OH	43557	800-521-9094		Melissa	800-521-9094	419-682-3109			OS	3/1/2005
FIAMM TECHNOLOGIES, INC.	1550 LEESON AVE.	CADILLAC	MI	49601-	(231) 775-2900		Brenda Goldamamar HR Manager	231-779-3518	(231) 775-6162		193	NM	3/1/2005
Ford Motor Company		Dearborn	MI				Stan Staniszewski	(313)248-7357		sstanisz@ford.com			9/22/2006
FRANCHINO MOLD AND ENGINEERING	5867 W GRAND RIVER AVE.	LANSING	MI	48906-	(517) 321-5609		Bill Elliot					CM	3/1/2005
FREUDENBERG NOK	47690 EAST ANCHOR COURT	PLYMOUTH	MI	48170	(734) 354-5448		Terry Fry				193	EM	3/1/2005
G1 LLC	702 ADVANCE STREET	BRIGHTON	MI	48116			ADAM GENEI				393	EM	12/19/2001
GDC, INC		GOSHEN	IN		(574)533-3128		CHRISTOPHER A. MILLER	(574)596-9069		CHRISM@GDC-CORP.COM			9/18/2006
GE PLASTICS	25900 TELEGRAPH	SOUTHFIELD	MI	48086-5011								EM	
GEMTRON CORPORATION	1455 LINCOLN AVENUE	HOLLAND	MI	49423-	(616) 395-3634		BOB KURTZ	616-395-3634 EXT. 216	(616) 395-9855		193 & 393	WM	12/14/2001
Genesis Plastics & Engineering, LLC	PO Box 228	Scottsburg	IN		(812)752-6742		Kathy Shaw	ext. 222	(812)752-1156	humanresources@genesisllc.com			9/20/2006
Gentex Corporation							Deb DeVries	(616)772-1800 x4596		deb.devries@gentex.com			9/20/2006
GHSP	1500 N. INDUSTRIAL PARK DR	HART	MI	49420	(231) 873-6505		MIKE FORBES PROCESS ENG.				393		12/19/2001
GM LAKE ORION PLANT, CADILLAC LUXURY CAR DIV.	4555 GIDDINGS	LAKE ORION	MI	48359-	(810) 377-5550							EM	
GMI COMPOSITE	1355 W.SHERMAN BLVD.	MUSKEGON	MI	49444-	(231) 755-1611	THERMOSET AND THERMOPLASTIC INJECTION AND COMPRESSION MOLDER	JOHN UNSER		(231) 775-1613		193 & 393	WM	12/14/2001
GOUGEON BROS. INC.	100 PATTERSON AVE.	BAY CITY	MI	48707	(989) 684-7286	Mail to PO Box 908	TIM ATKINSON				193	EM	3/1/2005
Graco Children's Products Inc.		Exon	PA				Melissa Landis	(610)884-8448	(610)884-8746	melissa_landis@gracobaby.com			9/20/2006
Graham Packaging Co		Holland	MI		(616)355-0479		Keith Strohschein			keith.strohschein@grahampackaging.com			9/20/2006
GRAND HAVEN PLASTICS	1425 AERIAL VIEW DR	GRAND HAVEN	MI	49417	(616) 846-4950		Jim Vukits				193	WM	3/1/2005
GRAND RAPIDS PLASTICS	4050 ROGER B. CHAFFEE MEM. DR. SE	GRAND RAPIDS	MI	49548-								WM	
GREAT LAKES PLASTICS	7941 SALEM RD.	SALEM	MI	48175-		CUSTOM INJECTION MOLDING Locations: SALEM AND PLYMOUTH MICHIGAN	Gerald McClure, General Manager	734 451-0076			193 & 393	EM	3/22/2000
GT INDUSTRIES, LLC	50471 E. RUSSELL SCHMIDT	CHESTERFIELD	MI	48051			BRIAN WHITFIELD	(586)598-2800	(586)598-2939	BRIAN.WHITFIELD@GTINDUSTRIES-LLC.COM			
GUARDIAN AUTOMOTIVE	23751 AMBER AVE	WARREN	MI	48089		EXTERIOR AUTOMOTIVE, INJECTION MOLDING AND EXTRUSION	HONEY HOLBROOK	810-757-7800	810-757-4045		193 & 393	EM	2/6/2000
H & L Advantage	2500 Busch Drive	Grandville	MI	49418			Steve Beurkens	(616)534-7916		sbeurken@hladvantage.com			9/20/2006
H S DIE & ENGINEERING, INC.	0-215 LAKE MICHIGAN DRIVE N.W.	GRAND RAPIDS	MI	49544-	(616) 453-5451		Kent Hanson		(616) 453-7872			CM	1/23/1998
HANSEN MFG.	1304 GREELY ST.	HOLLAND	MI	49424-			SARA WINESMA				193 &393	WM	1/22/1998
HARBOR INDUSTRIES INC.	14170 172ND	GRAND HAVEN	MI	49417			DAVE SANDERS	X5331			193	WM	12/14/2001
Hedman and Associates							Kent Hedman	(817)277-0888		1khedman@comcast.net			9/20/2006
HICKS PLASTICS COMPANY INC	51308 INDUSTRIAL	MACOMB	MI	48042-4025			ROD OCHRING PLANT MANAGER				393	WM	12/19/2001
Hilco Technologies		Romeo	MI		(616)957-1081		Troy Smith		(616)957-5069	TSMITH@hilcotech.com			9/20/2006
HOLLAND PLASTICS CORP	14000 172ND AVENUE	GRAND HAVEN	MI	49417-								WM	
HOWMET CORPORATION-OPERHALL RESEARCH CENTER	1500 S. WARNER ST	WHITEHALL	MI	49461-			BILL SIKKENGA	616-894-7656				WM	
Huhtamaki Packaging Worldwide	5700 W. Shaffer Rd	Colemen	MI	48618		Bottle blow molder	Kent Allen	989-633-8900	989-465-1916	kent.allen@us.huhtamaki.com	393	NM	4/19/2002
HUSKY INJECTION MOLDING SYSTEMS, INC.	45145 W. 12 MILE RD	NOVI	MI	48377	(248)735-6433		KATRINA GREER		(248)735-6343	SSAHUSKYHR@HUSKY.CA			9/19/2006
II STANLEY CO. INC.	1500 HILL-BRADY ROAD	BATTLE CREEK	MI	49015-		PLASTIC PROCESSING/TOOLING			(616) 660-2464		193/393	CM	1/23/1998
ILLINOIS VALLEY PLASTICS	300 NORTH CUMMINGS LANE	WASHINGTON	IL	61571-	(309) 444-8884		Nick Scibona	309-444-8884	(309) 444-8883	nscibona@ivplastic.com		OS	3/1/2005
INDUSTRIAL ELEMENTS	4374 DONKER CT, S.E.	KENTWOOD	MI	49512		VACUUM FORMER, FABRICATION & ASSEMBLY - FURNITURE & HEALTH CARE INDUSTRIES	CAM STREIDL	616-974-0044	616-974-0050	camst@ietforms.com	193 & 393	WM	5/1/2000
INFINITE CONCEPTS, INC	4630 PLAINFIELD, N.E.	GRAND RAPIDS	MI	49505-	(616) 365-8080		STEVE COLE	616-365-8080				WM	

APPENDIX F SCH

APPENDIX G

APPENDIX H Outcomes Assessment Test

APPENDIX I

Plastics Technology and Plastics Engineering Technology APR 2008

<u>Department Chair Report</u>

Program objective in relation to FSU mission

FSU Mission Statement
Ferris State University prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-oriented, broad-based education, Ferris serves our rapidly changing global economy and society.

The plastics program continually prepares its graduates for successful careers. This is supported by 100% placement of graduates with starting salaries at the top of the College of Technology and the University. Plastics graduates gain employment in global corporations and are asked to travel internationally, in fact some even enjoy foreign positions. Additionally, the successful career notion can be supported by the success of the department's alumni.

Program's value

The program has great value for the State and the Nation, it is one of five programs nationally that focus on plastics. Contrary to conventional wisdom the plastics industry is still vital in Michigan; this is supported by 45% of our graduates being placed in Michigan companies and another 25% in the immediate surrounding states. The department alumni survey supports the value of the plastics program for the State with an indication that over 80% of the alumni reporting are in Michigan.

Health of the Plastics Program

The program is strong and stable; a significant drop in freshmen enrollment from 1998 through 2003 has stabilized and in fact has increased slightly. The program enjoys an average of 38 freshmen starting and graduates (BS) between 30-35. Industry has continued to support the program through monetary, equipment and materials donations and often supplies frequent guest speakers.

Goals of the Plastics program

Goal 1: Improve the educational infrastructure to benefit the students by obtaining Equipment, tooling, material donations and consignments

- *An all electric injection molding machine*
- *Obtain, through consignment, a modern injection molding machine*
- *Obtain plastics materials for laboratory use exceeding $25, 000*
- *Obtain additional blow molding equipment*

Goal 2: Strengthen programmatic enrollment through retention activities.

- Faculty are encouraged to improve relationships with the existing student population To reduce the number of students who leave the program.
- In 2007/08 the department

- Continue to host “Plastics and Rubber Career Days” where 250 high school students visited.
- Expand articulation with out-of-state schools (community colleges)

Goal 4: Increase financial support for students and faculty, specifically increase the Plastics endowment funds
Currently there is Plastics endowment: $40,000 (over $2500 gained in summer 2008)
This continuing effort was achieved by developing an industrial partnership which allows companies to use our facilities.

- **Wittman** robot training center
- **Paulson Training** where they host training workshops in FSU labs
- **Bata Plastics** – developed a recycling center to recycle laboratory waste

Goal 5: Expand plastics and rubber offerings through minors, certificates and internet courses:

- PTOM – “Plastics materials Technology minor has been approved by the University (currently 6 students declared)
- PCAF submitted and accepted for “Plastics Packaging Engineering Technology”. Formal curriculum submission planned for Fall 2008
- PCAF submitted and accepted for “Medical Device Engineering Technology”. Formal curriculum submission planned for Fall 2008

Resource Allocation

Current resources allocated to the plastics program are adequate. There are 5 full time faculty and a department chair along with a department secretary and administrative technician. When the proposed programs (Packaging and Medical Device) are started there will be additional faculty lines required.

Facilities and Equipment adequacy

The National Elastomer Center (NEC) is an excellent educational facility. There is adequate room with laboratory space for all the plastics and rubber courses. When the proposed new programs are launched, there will be some issues with laboratory space and it will be necessary for the Dean’s office to step-up and assign areas.

The faculty has worked hard to obtain equipment through donations and consignments but often these machines are not “state-of-the-art”. In order to stay current, the University should develop a larger equipment budget and develop a system which allows departments to carry over excess S & E so a sizable fund can be assembled to purchase higher cost equipment.

Quality and employability of students

Academically, entering students have improved over the past few years. Average ACT scores have gone up almost 1 point in the last 4 years, currently averaging a 21.8. This has translated into improved retention of our students and has also improved the quality of the internships and permanent positions.

As previously stated, the department students are very employable, they enjoy virtually 100% placement with some student obtaining international positions.

APPENDIX J

MEMORANDUM

TO: Doug Haneline, Chair, Academic Program Review Council

FROM: Tom Oldfield, Dean, College of Technology

SUBJ: Analysis of Plastics Technology and Plastics Engineering Technology Programs

DATE: August 6, 2008

Upon review of the Plastics Technology and Plastics Engineering Technology Self-Study document, I make the following observations:

1. The program provides a comprehensive education in plastics that prepares our graduates for the rigors of today's industrial demands. This is in keeping with the mission of Ferris State University.
2. The Plastics Engineering Technology program continues as one of a few programs in the country. The program faculty have developed minors in response to requests from the College of Business B.S. in Business Administration and are supporting the development of on-line courses which will increase enrollment in program courses.
3. The program faculty must continue to aggressively recruit students for the program. They should continue to host high school career days, make use of the college marketing materials and the college recruiter, and develop a plan to educate future students and their parents to the opportunities in the plastics industry.
4. The program faculty maintain ties to alumni in business and industry as a mechanism for in-kind gifts of equipment and consumable materials for lab, student scholarships, internships and employment opportunities.
5. The program faculty must continue to develop coursework so that the curriculum reflects the latest trends in industry which provides a meaningful learning experience for our students and prepares them to meet the expectations of the plastics industry.
6. The faculty are dedicated to the success of their students. The employer survey indicated that 89% of the graduates had adequate technical preparation. Through intense advising 75% of the students persisted after four years.
7. Plastics graduates have 100% job placement and competitive salaries being the 5^{th} highest average starting salary of all FSU undergraduate programs according to the latest salary information.

In summary, I believe that the self-study is an accurate reflection of the Plastics Technology and Plastics Engineering Technology programs and will work with the Vice President to address the recommendations.

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Plastics Engineering Technology
BS

	Gender				Ethnicity						Full/Part Time	
Term	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full Time	Part Time
200308	74	61	13	1	2	1	0	2	68	0	71	3
200408	66	58	8	3	2	1	0	2	57	1	60	6
200508	42	34	8	2	0	0	0	3	37	0	35	7
200608	45	41	4	0	1	0	0	1	41	2	39	6
200708	51	46	5	0	1	1	0	0	48	1	45	6

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Plastics Technology
AAS

		Gender					Ethnicity				Full/Part Time	
Term	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full Time	Part Time
200308	77	66	11	3	1	0	0	3	70	0	73	4
200408	63	58	5	1	0	0	0	2	60	0	62	1
200508	81	78	3	1	2	0	0	0	76	2	77	4
200608	66	62	4	2	2	0	1	0	60	1	60	6
200708	57	52	5	0	1	0	0	0	56	0	53	4

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Pre-Plastics Technology
AAS

Term	Enrolled	Gender: Male	Female	Unknown	Ethnicity: Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full/Part Time: Full Time	Part Time
200308	4	4	0	1	0	0	0	0	3	0	4	0
200408	2	2	0	0	0	0	0	0	2	0	2	0
200508	4	4	0	0	1	0	0	0	3	0	3	1
200608	4	3	1	2	0	0	0	0	2	0	3	1
200708	8	6	2	0	0	0	0	0	8	0	7	1

Ferris State University

Retention and Graduation Rates of Full-Time FTIAC Students - By Major

Two-Year Degree Programs

Entering Fall Term	Major	*N*		Fall Term					
				Year 2	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**
200308	PLAW	12							
			% Graduated By	0	8	8	33		
			% Still Enrolled In	58	42	34	9		
			% Persisters	58	50	42	42		
			% Non-Persisters	42	50	58	58		
200408	PLAW	6							
			% Graduated By	0	17	17			
			% Still Enrolled In	50	33	33			
			% Persisters	50	50	50			
			% Non-Persisters	50	50	50			
200508	PLAW	7							
			% Graduated By	0	0				
			% Still Enrolled In	43	43				
			% Persisters	43	43				
			% Non-Persisters	57	57				
200608	PLAW	3							
			% Graduated By	0					
			% Still Enrolled In	67					
			% Persisters	67					
			% Non-Persisters	33					

Entering Fall Term	Major	*N*		Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
199708	PLTT	24							
			% Graduated By	0	42	71	75	75	75
			% Still Enrolled In	88	46	12	8	8	8
			% Persisters	88	88	83	83	83	83
			% Non-Persisters	12	12	17	17	17	17
199808	PLTT	35							
			% Graduated By	0	31	51	57	63	69
			% Still Enrolled In	77	40	18	3	6	0
			% Persisters	77	71	69	60	69	69
			% Non-Persisters	23	29	31	40	31	31
199908	PLTT	32							
			% Graduated By	0	31	53	72	72	78
			% Still Enrolled In	84	50	28	6	6	0
			% Persisters	84	81	81	78	78	78
			% Non-Persisters	16	19	19	22	22	22

Ferris State University

Retention and Graduation Rates of Full-Time FTIAC Students - By Major

Two-Year Degree Programs

Entering Fall Term	Major	N		Fall Term Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
200008	PLTT	44							
			% Graduated By	0	41	70	73	75	75
			% Still Enrolled In	86	41	5	2	0	0
			% Persisters	86	82	75	75	75	75
			% Non-Persisters	14	18	25	25	25	25
200108	PLTT	22							
			% Graduated By	0	23	73	82	82	86
			% Still Enrolled In	91	68	18	9	9	5
			% Persisters	91	91	91	91	91	91
			% Non-Persisters	9	9	9	9	9	9
200208	PLTT	22							
			% Graduated By	0	27	50	59	68	
			% Still Enrolled In	91	55	27	9	0	
			% Persisters	91	82	77	68	68	
			% Non-Persisters	9	18	23	32	32	
200308	PLTT	19							
			% Graduated By	0	16	47	68		
			% Still Enrolled In	89	63	27	0		
			% Persisters	89	79	74	68		
			% Non-Persisters	11	21	26	32		
200408	PLTT	17							
			% Graduated By	0	24	41			
			% Still Enrolled In	88	58	35			
			% Persisters	88	82	76			
			% Non-Persisters	12	18	24			
200508	PLTT	19							
			% Graduated By	0	32				
			% Still Enrolled In	84	47				
			% Persisters	84	79				
			% Non-Persisters	16	21				
200608	PLTT	11							
			% Graduated By	0					
			% Still Enrolled In	82					
			% Persisters	82					
			% Non-Persisters	18					

Ferris State University

Retention and Graduation Rates of Full-Time FTIAC Students - By Major

Four-Year Degree Programs

Entering Fall Term	Major	N		Fall Term Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
200008	PLTE	1							
			% Graduated By	100	100	100	100	100	100
			% Still Enrolled In	0	0	0	0	0	0
			% Persisters	100	100	100	100	100	100
			% Non-Persisters	0	0	0	0	0	0
200608	PLTE	1							
			% Graduated By	0					
			% Still Enrolled In	100					
			% Persisters	100					
			% Non-Persisters	0					

DEGREES CONFERRED BY PROGRAM

ACADEMIC YEAR (SUMMER, FALL, WINTER SEMESTERS)

	2004-05				2005-06				2006-07			
TECHNOLOGY	CERT	AS	BS	MS	CERT	AS	BS	MS	CERT	AS	BS	MS
MANUFACTURING ENGINEERING												
Industrial Practices									1			
Manufacturing Engineering Technology			24				23				21	
Manufacturing Tooling Technology		17				17				11		
Quality Engineering Technology			2				3				1	
Quality Technology	13				20				23			
TOTAL	**13**	**17**	**26**	**0**	**20**	**17**	**26**	**0**	**24**	**11**	**22**	**0**
MECHANICAL DESIGN												
CAD Drafting & Tool Design Tecnology		21				21				14		
Mechanical Engineering Technology		17	16			31	18			21	25	
Product Design Engineering Technology			23				32				23	
TOTAL	**0**	**38**	**39**	**0**	**0**	**52**	**50**	**0**	**0**	**35**	**48**	**0**
PLASTICS & RUBBER ENG TECHNOLOGY												
Plastics Engineering Technology			45				32				22	
Plastics Technology		32				25				29		
Rubber Engineering Technology			5				8				4	
Rubber Technology		7				3				6		
TOTAL	**0**	**39**	**50**	**0**	**0**	**28**	**40**	**0**	**0**	**35**	**26**	**0**
PRINTING & IMAGING TECHNOLOGY MGMT												
New Media Printing & Publishing			6				6				10	
Printing & Digital Graphic Imaging		17				25				15		
Printing Management			12				12				16	
TOTAL	**0**	**17**	**18**	**0**	**0**	**25**	**18**	**0**	**0**	**15**	**26**	**0**
SURVEYING ENGINEERING												
Geographic Information	7				8				4			
Surveying Engineering			19				20				17	
Surveying Technology		8				17				13		
TOTAL	**7**	**8**	**19**	**0**	**8**	**17**	**20**	**0**	**4**	**13**	**17**	**0**
WELDING ENGINEERING TECHNOLOGY												
Welding Engineering Technology			24				33				28	
Welding Technology		30				24				24		
TOTAL	**0**	**30**	**24**	**0**	**0**	**24**	**33**	**0**	**0**	**24**	**28**	**0**
COLLEGE TOTAL	**65**	**352**	**345**	**0**	**104**	**403**	**382**	**0**	**110**	**380**	**386**	**0**

Source: Office of Institutional Research and Testing

Ferris State University
Administrative Program Review 2007
Graduates

TE
Plastics Engineering Technolog
BS

Graduate Headcount

Academic Year	On Campus	Off Campus	Total
2002-2003	46	0	46
2003-2004	57	1	58
2004-2005	46	0	46
2005-2006	32	0	32
2006-2007	22	0	22

Ferris State University
Administrative Program Review 2007
Graduates

TE
Plastics Technology
AAS

Graduate Headcount

Academic Year	On Campus	Off Campus	Total
2002-2003	49	0	49
2003-2004	31	0	31
2004-2005	32	0	32
2005-2006	25	0	25
2006-2007	29	0	29

PLASTICS INTERNSHIP EMPLOYERS

UPDATED 9/2006

Company Name	Company Address	Company City	Com pany State	Company Zip Code	Company Phone #	Company Comments	Human Resource Contact	Human Resource Phone #	Human Resource FAX#	Contact Email	Last Interested In	Region	Last Updated
21ST CENTURY PLASTICS	345 WRIGHT PARKWAY	POTTERVILLE	MI	48876-0188	(517) 645-2695	Fax Resumes INJECTION MOLDING COMPANY HAS 12 INJECTION MOLDING MACHINES(40-400TON). GOOD SHOP FLOOR EXPERIENCE.	Linda Murphy	517-645-2695 X102	(517) 645-7029		193	CM	4/1/2005
3M							Wayne Paucy	651-737-1218		paulyusj@mmm.com			9/18/2006
ABSOLUTE PRODUCT INC.	2275 W. MIDWAY BLVD.	BROOMFIELD	CO	80020			TRAVIS DeKRYGER				193	OS	12/14/2001
ACCURATE MOLDING & ENGINEERING INC.	2860 MARLIN CT. N.W.	GRAND RAPIDS	MI	49544			SAM FLANERY				193	WM	12/14/2001
ACI PLASTICS	2945 DAVISON RD	FLINT	MI	48506	(810)767-3800		M. SCOTT MELTON		(810)767-3883	SMELTON@ACIPLASTICS.COM			9/18/2006
ACRA, INC.	2525 AERO PARK DR.	TRAVERSE CITY	MI	49686-9180	(231) 947-8733	INJECTION MOLDING TECHNITION WORK	Mike Brown, Eng. Manager	231-218-1362			193 & 393	NM	3/1/2005
ACSYS Technologies	25200 Telegraph	Southfield	MI	48034		Engineering center is in Southfield, manufacturing is in Oshawa, Ontario (suburb of Toronto). They are an automotive supplier that makes bumper fasciae, body side moldings, etc. Web site is www.acsys-tech.com				khouser@ acsys-tech.com		EM	10/2/2002
ADAC PLASTICS	2929 32nd ST.	GRAND RAPIDS	MI	49588	(616) 957-0311		Cindy Vermetti	616 957-3800, 957-0520 X5694	(616) 957-9509	cvermetti@ADACplastics.com	393	WM	3/1/2005
ADAPT PLASTICS, INC.	7949 FOREST HILLS RD.	ROCKFORD	IL	61111-	(815) 633-9263	Not interested in interns 2005	JAMES THOMPSON, VP	815-633-9263	(815) 654-2817			OS	4/1/2005
ADVANCED AUTO TRENDS, INC	3485 METAMORA RD.	OXFORD	MI	48371-	(248) 628-4850		Stephanie				393	EM	12/19/2001
ADVANCED DRAINAGE SYSTEMS, INC	P.O. BOX 648	LONDON	OH	43140	plant 800-733-2981	Locations: LONDON, OH & WOOSTER, OH., CINCINNATI	RON COX, REGIONAL MFG MGR	corporate 800-733-7473	740-852-3092		193 & 393	OS	2/16/2000
AFTECH	687 Byrne Industrial Drive	Rockford	MI	49341	(616)866-1650			(616)866-3018					9/20/2006
AGAPE PLASTICS, INC	11474 1ST AVE. NW	GRAND RAPIDS	MI	49544	(616) 735-4092		Sue Baughman				393	WM	3/1/2005
American Compounding		Fowlerville	MI	48836	(810)623-3930		David W. Doniet						9/20/2006
AMERICAN METALS & PLASTICS INDUSTRIES	450 32ND STREET SW	GRAND RAPIDS	MI	49548	(616) 452-6061		BILL BULTEMA	616 452-6061 x235 or 210			393	WM	12/14/2001
ANDOVER INDUSTRIES	MAPLE ST. EXTENSION, PO BOX 459	ANDOVER	OH	44003-	440-293-5900	In Bankruptcy 3/2005	Kim Southerland					OS	3/1/2005
ASAHI KASEI PLASTICS NORTH AMERICA, INC.	ONE THERMOFIL WAY	FOWLERVILLE	MI	48836	(517)2235130		RICHARD C. CURRIE	(517)294-0254	(517)223-5245	RCCURRIE@ASAHIKASEIPLASTICS.COM			9/18/2006
ATEK	8393 RAWSONVILLE RD.	BELLEVILLE	MI	48111	(734) 461-2425		BOB PARSONS MICHELE PIERZCHALA		(734) 461-2428		393	EM	12/19/2001
AVEILLE INC	3333 N KENMORE	SOUTH BEND	IN	46628	(616) 684-5337		PAUL GENSORESKI				193	OS	12/19/2001
AZDEL, INC.	658 WASHBURN SWITCH RD.	SHELBY	NC	28150-	(704) 482-3441							OS	
B&B MOLDERS	58471 FIR ROAD SOUTH	MISHAWAKA	IN	46544-								OS	
BATTELLE	505 KING AVENUE	COLUMBUS	OHIO	43201-2693			JOHN D. CLAY		(614)424-7479	CLAYJ@BATTELLE.ORG			9/18/2006
BAYER PLASTICS	2401 Walton Blvd	Auburn Hills	MI	48326	(248) 475-7700		Terry Davis	517-647-2417	(517) 647-7331	terry.davis@bayermaterialscience.com	193 & 393	CM	3/1/2005
BRAUN	901 MARCON BOULEVARD	ALLENTOWN	PA	18109-9341	(610)266-0500		JAMES P. ROMA		(810)266-6294	JIM.ROMA@BBRAUN.COM		OS	9/18/2006
BD Diagnostics-Preanalytical Systems	1575 Airport Road, P.O. Box 2128	Sumter	SC	29151-2128	(803)469-1979		Paul Burchell		(803)469-1922	paul_burchell@bd.com			9/20/2006
BEACH MOLD & TOOL, INC	999 PROGRESS BLVD. P.O. BOX227	NEW ALBANY	IN	47150	(812)945-2688		DAVID BATLINER		(812)944-3705	DAVID_BATLINER@BEACHMOLD.COM		OS	9/18/2006
BISSELL INC.-HOMECARE DIV.	2345 WALKER N.W.	GRAND RAPIDS	MI	49544	(616) 735-1412		STEVE BRUMMER	616 735-1412			193	WM	12/14/2001
BLACKHAWK AUTOMOTIVE PLASTICS	1111 W LONG LAKE ROAD, Ste 102	TROY	MI	48098	(248) 641-5959		Barb Trudel				393	EM	3/1/2005
BMW MANUFACTURING CO. LLC	P.O.BOX 11000	SPARTANBURG	SC	29304-4100	(864)989-6693		JEAN-MICHEL ROSSET		(864)989-6290	JEAN-MICHEL.ROSSET@BMWMC.COM		OS	9/18/2006
Byrne Electrical Specialist	320 Byrne Industrial Dr	Rockford	MI	49341	(616)866-3461		Bridgette Ludtke			bludtke@byrne-electrical.com			9/20/2006
CADILLAC PRODUCTS	29784 LITTLE MACK AVENUE	ROSEVILLE	MI	48066-			DON SAWYER	810-774-1700				EM	
CADILLAC PRODUCTS, INC	4858 WILLIAMS RD.	ROGERS CITY	MI	49779-								NM	
CADILLAC PRODUCTS, INC	50550 CORPORATE DRIVE	SHELBY TOWNSHIP	MI	48315-			KEVIN MORSE				193/393	EM	1/23/1998

PLASTICS INTERNSHIP EMPLOYERS

UPDATED 9/2006

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21ST CENTURY PLASTICS	345 WRIGHT PARKWAY	POTTERVILLE	MI	48876-0188	(517) 645-2695	Fax Resumes INJECTION MOLDING COMPANY HAS 12 INJECTION MOLDING MACHINES(40-400TON). GOOD SHOP FLOOR EXPERIENCE.	Linda Murphy	517-645-2695 X102	(517) 645-7029		193	CM	4/1/2005
CADILLAC PRODUCTS, INC	5800 CROOKS ROAD	TROY	MI	48098-		locations: ROSEVILLE, STERLING HEIGHTS AND TROY	HUMAN RESOURCES-COOP		(248) 879-7420		193 & 393	EM	1/23/1998
CAPSONIC GROUP LLC					(847)888-7240		MIKE LAJUN	(847)652-5848	(847)888-7543	MLAJUN@CAPSONICGROUP.COM			9/18/2006
CARLISLE ENGINEERED PRODUCTS	290 McCORMICK	LAPEER	MI	48446-	(810) 664-7212		ELAINE CHANEY		(810) 664-3665		193 & 393	EM	1/23/1998
CARLISLE ENGINEERED PRODUCTS	17187 N. LAUREL PARK DR., SUITE 208	LIVONIA	MI	48152-	(724) 542-8228		LARRY BUTTERFIELD, DIR OF ENG. DEV.	724-542-8228	(724) 542-0303		393	EM	4/13/1998
CASCADE ENGINEERING	5175 36TH ST., SE	GRAND RAPIDS	MI	49512-2009	(616) 975-4864							WM	
CASCADE ENGINEERING, INC.	4950 THIRTY-SEVENTH ST. SE	GRAND RAPIDS	MI	49512-4072	(616) 975-4800		MIKE PRINS	616-975-4800				WM	
CASMER & SONS MFG	7211 N. SAGINAW	MT. MORRIS	MI	48458-	(810) 686-8550	Not interested in interns 2005	KURT		(810) 686-8683			EM	3/1/2005
CertainTeed Corp	803 BELDON	JACKSON	MI	49203		VINYL SIDING EXTRUDER	JENIFFER MALLEY		517-787-1740			EM	2/6/2000
Chase Plastics					(248)620-2120		Kim Skellenger	(248)620-8331	(248)620-2342	kskellenger@chaseplastics.com			9/20/2006
CHIVAS PRODUCTS, LTD	8595 RONDA DRIVE	CANTON	MI	48187-								EM	
CLARIANT							DINESH PANDYA			DINESH.PANDYA@CLARIANT.COM			7/1/2005
CLARIANT- REED - SPECTRUM	926 ELLIOT RD.	ALBION	MI	49224-	(800) 897-1418		Tina Dalani	800-897-1418	(517) 629-5877		193 & 393	CM	3/1/2005
CLARION TECHNOLOGIES	6719 PINE RIDGE COURT	JENISON	MI	49428	616-754-4645		Jody Flinton	616-669-6800 ext. 3189	616-669-9912	jflinton@clariontechnologies.com	393	WM	10/13/2000
Clarion Technologies		Greenville	MI							kvisser@clariontechnologies.com			9/20/2006
Coleman		Wichita					Gail	(316)832-3010					9/22/2006
Collins and Aikman		Port Huron					Mark Neitzke	(586)201-3959					9/20/2006
CONCORD PLASTICS, INC	5566 GRAND HAVEN RD.	MUSKEGON	MI	49441-								WM	
Cooper Standard		Gaylord	MI		(989)732-0158		Ruth Miller			Rmiller@cooperstandard.com			9/20/2006
Cooper Standard Automotive	4700 N Industrial Drive	Oscoda	MI	48750			Tammy Coulson	(989)739-6209		tcoulson@cooperstandard.com			9/22/2006
CREATIVE TECHNIQUES	2441 N. OPDYKE RD	AUBURN HILLS	MI	48326-2442	(800) 473-0284		Mark Metzger (FSU Plastics grad)	248-475-9501		metzgerm@ creativetechniques.com	193	EM	3/1/2005
Credential Essentials	210 1/2 Main St	Murray	KY	42071			Thomas M. Rasinen	(270)761-4422	(270)759-0420	thomas@credentialessentials.com			9/20/2006
CRU CAM	38099 SCHONLCRAFT	LIVONIA	MI	48150-	( ) 953-1270							EM	
CS MANUFACTURING INC	PO BOX 230 K, 299 W. CHERRY ST	CEDAR SPRINGS	MI	49319-	(616) 696-2772	Tracy Bongard former grad works here	AMY REED					WM	
CSC PLASTICS SERVICES	3685 JACKSON RD	ANN ARBOR	MI	48103-								EM	
CTS, CORPORATION-AUTOMOTIVE PROD	1142 W. BEARDSLEY AVENUE	ELKHART	IN	46514-			BARB GAMBLE		(219) 293-9841		393 ONLY	OS	2/16/2000
Custom Profile	3110 Wilson Dr NW	GRAND RAPIDS	MI	49534			Jenny Redes	(616)735-4410 ext. 12		jredes@custom-profile.com			9/22/2006
DARTER PLASTICS, INC.	13990 INDUSTRY AVE., PO BOX 278	BECKER	MN	55308-			JOHN KNUTSON, PRES.		(612) 261-5010		193 & 393	OS	1/20/1998
DAYS MOLDING & MACHINERY	485 FLORANCE ROAD PO BOX 188	CONSTANTINE	MI	49042			SARAH SMITH	X14			193		12/14/2001
DAYTONA PLASTIX, INC.	1870 MASON AVE.	DAYTONA BEACH	FL	32117-			JOHN KIRKMAN, HR MGR.		(904) 274-1938			OS	
DELPHI DELCO ELECTRONICS	3224 DAVIDSON ROAD	FLINT	MI	48556-	(810) 257-5444		DAVE ARNOTT	810-257-5444	(810) 257-8959			NM	
Delphi Instrument Cluster Assembly							Nichole Felton (Charbeneau)	(810)257-7717					9/20/2006
DELPHI SAGINAW STEERING SYSTEMS	3900 HOLLAND RD.	SAGINAW	MI	48601-9499								NM	
DELPHI/DELCO ELECTRONICS	2151 E. LINCOLN RD., MAIL STATION CT 70C	KOKOMO	IN	46904-9005	(800) 428-0645		KAREN ALENDER					OS	
DISPLAY PACK	1340 MONROE AVE NW	GRAND RAPIDS	MI	49505-		THERMOFORMING	JAYNE DE JONG, HR SPECIALIST					WM	

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Display Pack		GRAND RAPIDS	MI				Mike Hellman	(616)574-6184					9/20/2006
DONATELLE	501 COUNTY ROAD E-2 EXTENSION	NEW BRIGHTON	MN	55112	(651)254-4018		RAGHU VADLAMUDI		(651)254-4058	RAGHU.VADLAMUDI@DONATELLE.NET		OS	9/18/2006
DOTT INDUSTRIES/DECO PLATE	395 DEMILLE ROAD	LAPEER	MI	48446-	(810) 667-3460		Joe Braultor, HR					EM	
DOTT MANUFACTURING	3768 N MAIN STREET	DECKERVILLE	MI	48427	(810) 376-2445		MIKE BALL	X532			193		12/19/2001
DOUBLE J MOLDING	200 LOVEJOY	SOUTH HAVEN	MI	49090-		40 INJECTION MACHINES,MOLDING ABS AND PC	MIKE DOYLE, ENG. MGR.	616-637-3943	(616) 639-9363		193 AND 393	WM	2/16/1998
DOW CHEMICAL	BUILDING 47	MIDLAND	MI	48667	(989) 636-3563		JACK LITTLE					EM	12/14/2001
DOW CORNING CORPORATION	2200 W. SALZBERG RD.	AUBURN	MI	48611-			DAVE ROMENESKO	517-496-5428				CM	
DRUG PLASTICS & GLASS INC.	1 BOTTLE DRIVE	BOYERTOWN	PA	19512-			MIKE FETTERMAN					OS	3/24/1998
DURA AUTOMOTIVE SYSTEMS, INC.	34000 AUTRY ST.	LIVONIA	MI	48150-			VAL CHAMBERS, HR COORDINATOR		(313) 425-6677		193 & 393	EM	1/22/1998
EATON CORPORATION, MIRROR ACTUATOR DIVISION	1100 W. BROADWAY	THREE RIVERS	MI	49093-			PHILLIP H. JOHNSON, HR SUPERVISOR	616-279-9661 X216	(616) 278-8023	PHILLIPHJOHNSON@EATON.COM	393 ONLY	WM	1/22/1998
ECLIPSE	23155 15 MILE RD.	CLINTON TOWNSHIP	MI	48035-3173			LAURA PETZ (H.R.)	(586)7923320	(586)792-6545		193 & 393	EM	12/19/2001
ELECTROLUX HOME PRODUCTS	635 WEST CHARLES STREET	GREENVILLE	MI	48838	(616) 754-7131		Laurie	X504			193	WM	12/18/2001
EMHART AUTOMOTIVE	PO BOX 868	MT. CLEMENS	MI	48046-		COMPANY DESIGNS AND MANUFACTURES AUTOMOTIVE FASTENERS. 65 INJECTION MOLDING MACHINES	ROYCE TOFFOLO, DIR. OF HR.	810-949-0440	(810) 598-2160		393	EM	2/20/1998
ENGINEERED PLASTIC COMPONENTS		MATTAWAN	MI				JOHN STURGEON					WM	1/23/1998
ENGINEERED PRODUCTS	4603 MACKS DR., P.O. BOX 6197	BOSSIER CITY	LA	71171-			CARL DAVIS, PLT. MANAGER		(318) 746-3881		193/393	OS	1/23/1998
Entegris, Inc.		Colorado Springs	CO				Pamela Green	(719)528-2770	(719)528-2747				9/20/2006
ESS TEC INC	128 ANLINE	HOLLAND	MI	49424	(616) 394-0230		Elliot Essenberg				193	WM	3/1/2005
EVART PRODUCTS	601 W. 7TH ST.	EVART	MI	49631-		AUTOMOTIVE INJECTION MOLDING COMPANY	ED CATENACCI, HR MGR.		(616) 668-9237		193 & 393	NM	1/21/1998
FABRI-KAL	PLASTICS PLACE	KALAMAZOO	MI	49001-4880					(616) 385-0197		193/393	CM	
FEDERAL MOGUL CORPORATION	9104 ALEX HARVIN HIGHWAY	SUMMERTON	SC	29148	(803) 478-9514		THOMAS ANDERSON		(803)478-2023	THOMAS_ANDERSON@FMO.COM		OS	9/18/2006
FERRO CORP	103 RAILROAD AVE	STRYKER	OH	43557	800-521-9094		Melissa	800-521-9094	419-682-3109			OS	3/1/2005
FIAMM TECHNOLOGIES, INC.	1550 LEESON AVE.	CADILLAC	MI	49601-	(231) 775-2900		Brenda Goldamamar HR Manager	231-779-3518	(231) 775-6162		193	NM	3/1/2005
Ford Motor Company		Dearborn	MI				Stan Staniszewski	(313)248-7357		sstanisz@ford.com			9/22/2006
FRANCHINO MOLD AND ENGINEERING	5867 W GRAND RIVER AVE.	LANSING	MI	48906-	(517) 321-5609		Bill Elliot					CM	3/1/2005
FREUDENBERG NOK	47690 EAST ANCHOR COURT	PLYMOUTH	MI	48170	(734) 354-5448		Terry Fry				193	EM	3/1/2005
G1 LLC	702 ADVANCE STREET	BRIGHTON	MI	48116			ADAM GENEI				393	EM	12/19/2001
GDC, INC		GOSHEN	IN		(574)533-3128		CHRISTOPHER A. MILLER	(574)596-9069		CHRISM@GDC-CORP.COM			9/18/2006
GE PLASTICS	25900 TELEGRAPH	SOUTHFIELD	MI	48086-5011								EM	
GEMTRON CORPORATION	1455 LINCOLN AVENUE	HOLLAND	MI	49423-	(616) 395-3634		BOB KURTZ	616-395-3634 EXT. 216	(616) 395-9855		193 & 393	WM	12/14/2001
Genesis Plastics & Engineering, LLC	PO Box 228	Scottsburg	IN		(812)752-6742		Kathy Shaw	ext. 222	(812)752-1156	humanresources@genesisllc.com			9/20/2006
Gentex Corporation							Deb DeVries	(616)772-1800 x4596		deb.devries@gentex.com			9/20/2006
GHSP	1500 N. INDUSTRIAL PARK DR	HART	MI	49420	(231) 873-6505		MIKE FORBES PROCESS ENG.				393		12/19/2001
GM LAKE ORION PLANT, CADILLAC LUXURY CAR DIV.	4555 GIDDINGS	LAKE ORION	MI	48359-	(810) 377-5550							EM	
GMI COMPOSITE	1355 W.SHERMAN BLVD.	MUSKEGON	MI	49444-	(231) 755-1611	THERMOSET AND THERMOPLASTIC INJECTION AND COMPRESSION MOLDER	JOHN UNSER		(231) 775-1613		193 & 393	WM	12/14/2001

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GOUGEON BROS. INC.	100 PATTERSON AVE.	BAY CITY	MI	48707	(989) 684-7286	Mail to PO Box 908	TIM ATKINSON				193	EM	3/1/2005
Graco Children's Products Inc.		Exon	PA				Melissa Landis	(610)884-8448	(610)884-8746	melissa_landis@gracobaby.com			9/20/2006
Graham Packaging Co		Holland	MI		(616)355-0479		Keith Strohschein			keith.strohschein@grahampackaging.com			9/20/2006
GRAND HAVEN PLASTICS	1425 AERIAL VIEW DR	GRAND HAVEN	MI	49417	(616) 846-4950		Jim Vukits				193	WM	3/1/2005
GRAND RAPIDS PLASTICS	4050 ROGER B. CHAFFEE MEM. DR. SE	GRAND RAPIDS	MI	49548-								WM	
GREAT LAKES PLASTICS	7941 SALEM RD.	SALEM	MI	48175-		CUSTOM INJECTION MOLDING Locations: SALEM AND PLYMOUTH MICHIGAN	Gerald McClure, General Manager	734 451-0076			193 & 393	EM	3/22/2000
GT INDUSTRIES, LLC	50471 E. RUSSELL SCHMIDT	CHESTERFIELD	MI	48051			BRIAN WHITFIELD	(586)598-2800	(586)598-2939	BRIAN.WHITFIELD@GTINDUSTRIES-LLC.COM			
GUARDIAN AUTOMOTIVE	23751 AMBER AVE	WARREN	MI	48089		EXTERIOR AUTOMOTIVE, INJECTION MOLDING AND EXTRUSION	HONEY HOLBROOK	810-757-7800	810-757-4045		193 & 393	EM	2/6/2000
H & L Advantage	2500 Busch Drive	Grandville	MI	49418			Steve Beurkens	(616)534-7916		sbeurken@hladvantage.com			9/20/2006
H S DIE & ENGINEERING, INC.	0-215 LAKE MICHIGAN DRIVE N.W.	GRAND RAPIDS	MI	49544-	(616) 453-5451		Kent Hanson		(616) 453-7872			CM	1/23/1998
HANSEN MFG.	1304 GREELY ST.	HOLLAND	MI	49424-			SARA WINESMA				193 &393	WM	1/22/1998
HARBOR INDUSTRIES INC.	14170 172ND	GRAND HAVEN	MI	49417			DAVE SANDERS	X5331			193	WM	12/14/2001
Hedman and Associates							Kent Hedman	(817)277-0888		1khedman@comcast.net			9/20/2006
HICKS PLASTICS COMPANY INC	51308 INDUSTRIAL	MACOMB	MI	48042-4025			ROD OCHRING PLANT MANAGER				393	WM	12/19/2001
Hilco Technologies		Romeo	MI		(616)957-1081		Troy Smith		(616)957-5069	TSMITH@hilcotech.com			9/20/2006
HOLLAND PLASTICS CORP	14000 172ND AVENUE	GRAND HAVEN	MI	49417-								WM	
HOWMET CORPORATION-OPERHALL RESEARCH CENTER	1500 S. WARNER ST	WHITEHALL	MI	49461-			BILL SIKKENGA	616-894-7656				WM	
Huhtamaki Packaging Worldwide	5700 W. Shaffer Rd	Colemen	MI	48618		Bottle blow molder	Kent Allen	989-633-8900	989-465-1916	kent.allen@us.huhtamaki.com	393	NM	4/19/2002
HUSKY INJECTION MOLDING SYSTEMS, INC.	45145 W. 12 MILE RD	NOVI	MI	48377	(248)735-6433		KATRINA GREER		(248)735-6343	SSAHUSKYHR@HUSKY.CA			9/19/2006
II STANLEY CO. INC.	1500 HILL-BRADY ROAD	BATTLE CREEK	MI	49015-		PLASTIC PROCESSING/TOOLING			(616) 660-2464		193/393	CM	1/23/1998
ILLINOIS VALLEY PLASTICS	300 NORTH CUMMINGS LANE	WASHINGTON	IL	61571-	(309) 444-8884		Nick Scibona	309-444-8884	(309) 444-8883	nscibona@ivplastic.com		OS	3/1/2005
INDUSTRIAL ELEMENTS	4374 DONKER CT, S.E.	KENTWOOD	MI	49512		VACUUM FORMER, FABRICATION & ASSEMBLY - FURNITURE & HEALTH CARE INDUSTRIES	CAM STREIDL	616-974-0044	616-974-0050	camst@ietforms.com	193 & 393	WM	5/1/2000
INFINITE CONCEPTS, INC.	4630 PLAINFIELD, N.E.	GRAND RAPIDS	MI	49505-	(616) 365-8080		STEVE COLE	616-365-8080				WM	
INNOTEC GROUP	441 E. ROOSEVELT	ZEELAND	MI	49464	(616)990-6424		Ron Gunter			ronald.gunter@INNOTECGROUP.COM			9/18/2006
Innovative Resin Technologies	3050 Walkent	Walker	MI	49544			Andy Johnson	(616)540-3230		andy.johnson@plyforms.com			9/20/2006
INTEC GROUP	666 SOUTH VERMONT ST.	PALATINE	IL	60067-	(847) 358-0088		Carol Gilbert					OS	3/1/2005
Intec Sales Company	1180 Ottawa Beach Rd	Holland	MI	49424	(616)994-6527		Matt Yanik	(616)994-9561	(616)446-4817	myanik@comcast.net			9/20/2006
INTROTECH, INC.	1737 THUNDERBIRD DRIVE	TROY	MI	48084	(248)269-8911		HIMAT TAANK	(248)854-2649	(248)569-8915	HIMAT.TAANK@INTROTECHUSA.COM			9/18/2006
ITT AUTOMOTIVE	620 9TH AVE	TAWAS CITY	MI	48763-								NM	
ITT INDUSTRIES	4700 N. INDUSTRIAL ROW	OSCODA	MI	48750	(517) 739-1423		DEBBIE BOUGHNER, EMPL REL SUPV	517-739-6209	517-739-0234	DEB.BOUGHNER@ AUTO.ITTINDCOM	193/393	NM	12/14/2001
J.D. Sloane & Associates							Jerry Wilson	(877)218-9166		lpgjerry@charter.net			9/20/2006
JAC PRODUCTS	1801 E. ELLSWORTH	ANN ARBOR	MI	48108-		INJECTION MOLDING LUGGAGE RACKS	PAT BEEBE		(313) 973-8563		193	EM	1/21/1998
JAR-DEN PLASTICS	WOODSIDE INDUSTRIAL PARK PO BOX 240	ST. LOUIS	MI	48880	(989) 681-4303		JEFF STAHL			jstahl@jar/denplastic.com	393	CM	3/1/2005

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JD PLASTICS	1305 RAILROAD AVE	ADRIAN	MI	49221	517-264-6858	INJECTION MOLDER	DAVID EDWARDS	517-264-6858			393	EM	12/9/1999
JOHN DEERE TECHNICAL CENTER	1 John Deere Place	MOLINE	IL	61265	(309) 765-3738		Jay Olson		(309) 765-3807	olsonjayh@johndeere.com	193 & 393	OS	3/1/2005
JOHNSON CONTROLS, INC	88 E 48th St.	HOLLAND	MI	49423	(616) 394-1608	4 plants: Cottonwood, Intier, Brookfield, Maplewood	Paul Dieleman	616-394-8511	616-394-1080		193/393	WM	4/1/2005
JORDAN CREEK PLASTICS	2015 RANGE ROAD, PO BOX 122	ST. CLAIR	MI	48079-	(810) 329-2287		Kim Phonson	810-329-2287				EM	3/1/2005
KAM Plastics		Holland	MI				Kathie Perrault			kperrault@kamplastics.com			9/20/2006
KAMCO PLASTICS		SCHAUMBERG	IL										
KEY PLASTICS	1301 McPHERSON	HOWELL	MI	48843-	(517) 546-1900		Henry Bond	517-546-1900				CM	4/1/2005
KEY PLASTICS	1351 INDUSTRIAL PARK DR.	SAULT STE MARIE	MI	49783	(906) 635-5220		PETE STUDDERS				393	UP	12/18/2001
KEY PLASTICS, INC.	21333 HAGGERTY RD.	NOVI	MI	48375-	(248) 449-6100		KEVIN KOSHOWSKI	248-449-4137	(248) 449-6199			EM	
KIEHL ENGINEERING CO.	529 THOMAS DRIVE	BENSENVILLE	IL	60106-	(630) 766-1852		DOUG MARENO, HR DIR.	630-766-1852 X203	(630) 766-2613		193 & 393	OS	3/15/1998
LACKS INDUSTRIES	4260 AIRWEST SE	KENTWOOD	MI	49512-	(616) 455-5091	Several locations: Airwest, Cascade, 52nd St. Grand Rapids	Michelle Scheidnamtel				193/393	WM	4/1/2005
LAKESHORE DIVERSIFIED PRODUCTS	16685 150TH STREET	SPRING LAKE	MI	49456-	(616) 846-7770		Jane Vanloen					WM	
LAVELLE INDUSTRIES, INC.							ROB BRYSON	(810)531-4590		RBRYSON@LAVELLE.COM			9/18/2006
LAWRENE PLASTICS INC.	3250 OAKLEY PARK RD.	WALLED LAKE	MI	48390-	(248) 475-0186		Jean Nolan					EM	3/1/2005
LDM TECHNOLOGIES	2500 EXECUTIVE HILLS DR.	AUBURN HILLS	MI	48326-	(810) 858-2800	Several locations: Clarkson, Hartland, New Hudson, Port Huron, Romulus, Rochester Hills: Opportunities in Quality, Test Lab, Product Engineering, Concept Design Studios, Manufacturing, Tooling and Project Management	Megan Thurston, Corporate Staffing Specialist	248 858-2800	(248) 858-2811	mthurston@ ldmtech.com	193 & 393	EM	2/13/2002
LEAR CORP	5300 AUTO CLUB DRIVE	DEARBORN	MI	48126-	319-240-3085	**Layoffs, No interns 2005** Corporate Office:Several locations: Iowa City, IA, Bourbon, IN, Bay City, Dearborn, Mendon	SCOTT NORRIS	(269)759-0310	(269)789-2724	SNORRIS@LEAR.COM		EM	9/19/2006
Lear Corporation Mendon	236 West Clark Street	Mendon	MI	49072	(616)496-2215 x378		Kris Kern	(616)496-7652		kkern@lear.com			9/20/2006
		GRAND RAPIDS	MI				Lindsay Million	(616)249-2356		millili@leonplastics.com			9/20/2006
Leon Plastics	4901 CLAY AVE SW	GRAND RAPIDS	MI	49548-3074	(616) 531-7970	AUTOMOTIVE INJECTION MOLDING SUPPLIER	Brandon Lowe		(616) 531-3393		193 & 393	WM	4/1/2005
LEON PLASTICS, INC.		CHARLEVOIX	MI	49720-0498	(616) 547-6584		BOB PERRY	616-547-1593				NM	
LEXALITE INTERNATIONAL CORP.	PO BOX 498 10163 US 31 NORTH	Boyne City	MI	49712	231 582-3163	Automotive injection molder w/ paint lines Looking for 2005 summer	Mike Lange	231 582-3163	231 582-4609	Mike_Lange@magna.on.ca	193 & 393	NM	4/1/2005
LEXAMAR CORP	100 Lexamar Dr												
M.C. MOLDS	125 INDUSTRIAL DR.	WILLIAMSTON	MI	48895-	(517) 655-5481		BOB PALAZOLLO	517-655-5481		bobP@mcmolds.com		CM	4/1/2005
MAGNA DONNELLY CORPORATION	414 EAST 40TH ST	HOLLAND	MI	49423-	(616) 786-7000		Mary Jo Krevy VP of HR	616-786-6202	(616) 786-6236		393	WM	3/1/2005
Magna-Intier		Greenville	MI				Tom Bailey	(616)225-2661		tom.bailey@intier.com			9/20/2006
Makuta Technics	2565 Grissom St	Columbus	IN	48203-1824	(812)379-4696		Stuart Kaplan		(812)375-0847				9/20/2006
Management Recruiters of Tallahassee	743 East Tennessee St	Tallahassee	FL	32308			Jerry Jones	(850)656-8444	(850)942-2793	jerry@mrrecruiter.com			9/20/2006
MANCHESTER PLASTICS	300 ELM ST.	HOMER	MI	49245-	(517) 568-4134	Also St. Joseph						CM	
MAYCO PLASTICS, INC.	PO BOX 180149	UTICA	MI	48318-			JEREMY FELLOWS, PROG. MGR.	810-254-1550 X325	(810) 254-1555		193	EM	4/27/1998
McCORD-WINN TEXTRON	PO BOX 9	LIVONIA	GA	30533-			RANDY ADAMS				193 & 393	OS	1/20/1998
MERIDAN AUTO SYSTEMS	3025 BRETON AVE. S.E. PLANT #4	GRAND RAPIDS	MI	49512-	(616) 949-1250		KATHY	616-949-1250				WM	4/1/2005
Metabolix	21 Erie St	Cambridge	MA	2139			Bob Findlen	(617)192-0505x243					9/20/2006
METAMORA PRODUCTS CORPORATION	4057 SOUTH OAK STREET	METAMORA	MI	48455-	(810) 678-2295	Want interns summer 2005	Clyde Allen			clyde_allen@tapcoint.com		EM	4/1/2005
MGS MFG. Group	W188N11707 Maple Road	Germantown	WI	53022			Patrick Moerchen	(262)255-5790		Pat.moerchen@mgstech.com			9/22/2006

PLASTICS INTERNSHIP EMPLOYERS

UPDATED 9/2006

Company Name	Company Address	Company City	Company State	Company Zip Code	Company Phone #	Company Comments	Human Resource Contact	Human Resource Phone #	Human Resource FAX#	Contact Email	Last Interested In	Region	Last Updated
21ST CENTURY PLASTICS	345 WRIGHT PARKWAY	POTTERVILLE	MI	48876-0188	(517) 645-2695	Fax Resumes INJECTION MOLDING COMPANY HAS 12 INJECTION MOLDING MACHINES(40-400TON). GOOD SHOP FLOOR EXPERIENCE.	Linda Murphy	517-645-2695 X102	(517) 645-7029		193	CM	4/1/2005
MID-AMERICAN PRODUCTS, INC.	1623 WILDWOOD AVE., PO BOX 983	JACKSON	MI	49204		CUSTOM PLASTICS ENGINEERING DESIGN, THERMOPLASTIC MOLDING AND ASSEMBLY	JIM BREINING		(517)796-2309	JBREINING@MID-AMERICAN.COM			9/19/2006
MIDWEST MOLD SERVICES		ROSEVILLE	MI		(586) 855-0560 X107	injection molding automotive	John Hill			johnhill@midwestmold.com			7/1/2005
Midwest Plastic Components	7309 West 27th St	Minneapolis	MN	55426-3181	(925)927-2436		Frank Routhier		(952)929-8404				9/20/2006
MILACRON INC.	4165 HALFACRE ROAD	BATAVIA	OH	45103	513-536-2721		MICHAEL ARNOLD	513-536-3428			193	OS	4/1/2005
MOBILE, INC	600 N. U.S. HWY 45	LIBERTYVILLE	IL	60048	(847)523-0579		BILL WHALING			BILLWHALING@MOTOROLA.COM		OS	9/18/2006
MODERN SILICONE TECHNOLOGIES INC.	5777 MYER LAKE CIRCLE	CLEARWATER	FL	33760	(727)507-9800		WILLIAM R. MCFADDEN		(813)830-7480	WMCFADDEN@MODERNSILICONE.COM		OS	9/18/2006
MOLEX AUTOMOTIVE	2025 TAYLOR RD.	AUBURN HILLS	MI	48326-	(248) 371-9700	INJECTION MOLDING, INSERT MOLDING	CARRIE DAWSON		(248) 371-9637		193 &393	EM	1/23/1998
MUELLER PLASTICS CORPORATION, INC.	6700 SPRINKLE RD.	PORTAGE	MI	49002-			CHRISTOPHER MUELLER	616-323-8858			193	WM	12/14/2001
MULLINIX PACKAGES INC.	3511 ENGLE RD	FORT WAYNE	IN	46809-		THERMOFORMING, EXTRUSION, AND DECORATING COMPANY.	LUKE GROSS, VP ENGINEERING		(219) 747-1598		193/393	OS	12/14/2001
Nero Plastics		Owosso	MI										9/20/2006
Nestle Waters	19275 8 Mile Rd	Stanwood	MI	49346	231-823-8386		Scott Goward	Operations Mgr	231-823-8399	scott.goward@waters.nestle.com			
NIBCO	1516 MIDDLEBURY ST.	ELKHART	IN	46515-	(219) 295-3324	INJECTION MOLDING COMPANY MOLDS PLUMBING SUPPLIES.	BRIAN WILLIAMS	810-523-3583			193 & 393	OS	12/19/2001
NIBCO	701 EISENHOWER DRIVE NORTH	GOSHEN	IN	46526-	(219) 296-1268		TODD TAYLOR	219-296-1268				OS	
Nifco America			OH							www.nifcousa.com			9/20/2006
NIKE	ONE BOWERMAN DRIVE	BEAVERTON	OR	97005-	(800) 890-6453	BLOW MOLDING COMPANY	C/O HRSC				393	OS	1/23/1998
NK MANUFACTURING		GRAND RAPIDS	MI		(616)248-3200 x1366		Mike Kloian			mkloian@nkmfgtech.com			9/20/2006
N-K MANUFACTURING TECHNOLOGIES	1134 FREEMAN SW	GRAND RAPIDS	MI	49503	(616) 248-3200		TED DEWYS	616-248-3200			393	WM	12/14/2001
NORTHERN PLASTICS INC	6137 PRODUCT DRIVE	STERLING HEIGHTS	MI	48312			JEFFREY SOLIS		(810) 979-7740		193		12/19/2001
NYLONCRAFT, INC.	1640 EAST US 12 P.O. BOX 35	JONESVILLE	MI	49250					(517)849-9740	BURDICK.M@NYLONCRAFT.COM			9/18/2006
ODL, INC.	215 E. ROOSEVELT AVE	ZEELAND	MI	49464-	(616) 772-9111		Cindy Adams	X410	(616) 772-3841			WM	4/1/2005
OTTAWA PLASTICS, INC INJECTION MOLDING	1142 ELECTRIC AVE	WAYLAND	MI	49348	(616) 877-4915		Debra Vanderwall				393		4/1/2005
OWENS-BROCKWAY	1 SEAGATE 29 LDP	TOLEDO	OH	43666-			Debra				193 & 393	OS	4/1/2005
P.E.T.S.	4141 LUELLA LANE	AUBURN HILLS	MI	48326-	(248) 373-0800		Duncan		(248) 373-0150		193 & 393	EM	4/1/2005
PALM BEACH PRECISION MOLDING CO.	3765 INVESTMENT LANE	RIVIERA BEACH	FL	33404-	(561) 844-2100		Erica Bawan					OS	4/1/2005
PANDUIT	17301 RIDGELAND AVE.	TINLEY PARK	IL		(708) 532-1800		JEFF ROACH	708-532-1800			193 &393	OS	1/28/1998
PARKWAY PLASTICS INC	612 PARKWAY	WEST BRANCH	MI	48661	(989) 345-5550		FRAN IRVING				193	NM	4/1/2005
PILKINGTON	2401 E. BROADWAY	NORTHWOOD	OH	43619	419-246-6167	Tom Joughin, Engineering Manager, is Ferris grad	Kimberly Nowsoski	419-247-4267	419-247-4224		193 & 393	OS	4/1/2005
PINCKNEY MOLDED PLASTICS	3970 PARSONS RD	HOWELL	MI	48843	(517) 546-9900		SUEZAN BLANCHARD	X310			193	WM	4/1/2005
PINE RIVER PLASTICS, INC.	1111 FRED MOORE HIGHWAY	ST.CLAIR	MI	48079-	(810) 329-9005		Jennifer	810-329-8318				NM	
PIXLEY RICHARDS, INC.	9 COLLINS AVE, PLYMOUTH INDUSTRIAL PARK	PLYMOUTH	MA	02360-4885	508-746-6082	INJECTION MOLDER, BUILDING PLANT IN WYOMING, MI	LISA DUPET	508-746-6082	508-747-4026		193 & 393	OS	4/1/2005
PLASTECH ENGINEERED PRODUCTS, INC.	22000 GARRISON	DEARBORN	MI	48124	313-791-8140	Several locations: St. Clairs Shores, Dearborn, Kentwood CORPORATE OFFICE	Melissa	313-791-8140	313-791-6738		193 & 393	EM	4/1/2005
PLASTIC ENGINEERED COMPONENTS	1811 VANDERBILT RD.	PORTAGE	MI	49024	(616) 323-8538		MIKE JEZDIMIR				193	WM	12/14/2001
PLASTIC OMNIUM AUTO EXTERIORS, LLC	2610 Bond St	Rochester Hills	MI	48309	248 853-0088		Christina Ebmeier, HR Manager	248 853 0088 x210	248 853 3983	cebmeier@ poiusa.com	393	EM	4/10/2002
PLASTIC PLATE INC- DIV. OF LACKS ENTERPRISES	3500 RALEIGH ST. SE	KENTWOOD	MI	49546	(616) 957-8913		TOM HAWKINS ENGINEERING				393	WM	12/14/2001

PLASTICS INTERNSHIP EMPLOYERS

UPDATED 9/2006

Company Name	Company Address	Company City	Company State	Company Zip Code	Company Phone #	Company Comments	Human Resource Contact	Human Resource Phone #	Human Resource FAX#	Contact Email	Last Interested In	Region	Last Updated
21ST CENTURY PLASTICS	345 WRIGHT PARKWAY	POTTERVILLE	MI	48876-0188	(517) 645-2695	Fax Resumes INJECTION MOLDING COMPANY HAS 12 INJECTION MOLDING MACHINES(40-400TON). GOOD SHOP FLOOR EXPERIENCE.	Linda Murphy	517-645-2695 X102	(517) 645-7029		193	CM	4/1/2005
PLASTIGAGE CORPORATION	2917 WILDWOOD AVENUE	JACKSON	MI	49204-	(517) 788-8000		PHIL PRESTON					CM	1/22/1998
PLASTIKO'S	TEOFILO COLLAZO 2663	MONTEVIDEO	URUGUAY				LUIS PEREZ			KOSSQ@ADINET.COM.UY			9/18/2006
PLASTIPAK PACKING, INC.	1351 HIX RD.	WESTLAND	MI	48185-	(734) 326-6184	CONTAINER MANUFACTURER, PLTS Injection Blowmolding	Kristi Wynne-Jones HR Generalist	X232	(734) 326-2047		193 & 393	EM	3/29/2007

Ferris State University
Administrative Program Review 2007
SCH's

TE
Plastics Engineering Technology
BS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profl Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200308	0	0	0	16	0	16	193	0	193	854	0	854	0	0	0	0	0	0
200408	0	0	0	15	0	15	177	0	177	791	0	791	0	0	0	0	0	0
200508	0	0	0	0	0	0	61	0	61	532	0	532	0	0	0	0	0	0
200608	30	0	30	0	0	0	168	0	168	447	0	447	0	0	0	0	0	0
200708	0	0	0	16	0	16	212	0	212	511	0	511	0	0	0	0	0	0

Ferris State University
Administrative Program Review 2007
SCH's

TE
Plastics Technology
AAS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profl Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200308	362	0	362	476	0	476	274	0	274	28	0	28	0	0	0	0	0	0
200408	317	0	317	368	0	368	269	0	269	0	0	0	0	0	0	0	0	0
200508	391	0	391	328	0	328	359	0	359	123	0	123	0	0	0	0	0	0
200608	208	0	208	351	0	351	240	0	240	156	0	156	0	0	0	0	0	0
200708	306	0	306	178	0	178	206	0	206	146	0	146	0	0	0	0	0	0

Ferris State University
Administrative Program Review 2007
SCH's

TE
Pre-Plastics Technology
AAS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profl Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200308	60	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200408	28	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200508	53	0	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200608	30	0	30	24	0	24	0	0	0	0	0	0	0	0	0	0	0	0
200708	30	0	30	48	0	48	35	0	35	0	0	0	0	0	0	0	0	0

FERRIS STATE UNIVERSITY

Ranked Listing of Student Credit Hours (SCH) / Full Time Equated Faculty (FTEF)
Aggregated by Course Prefix
Fall + Winter Semesters 2006-2007

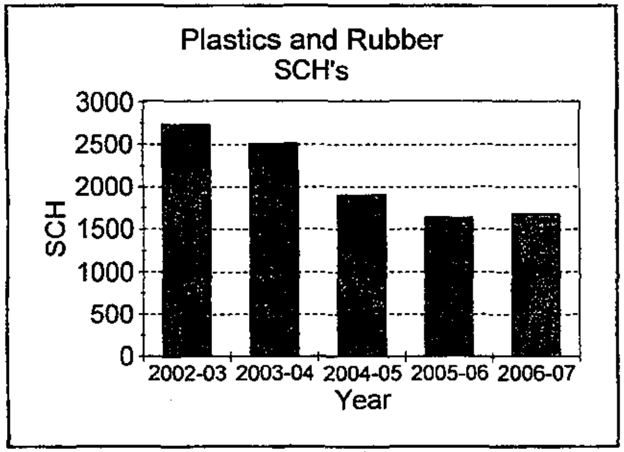
Course Description	Course Prefix	Student Credit Hours/ Full Time Equated Faculty (SCH/FTEF)
Plastics Engineering Technology	PLTS	272.95
Kendall College Design Studies	KCDS	270.00
Optometry	OPTM	265.42
Kendall College Interior Design	KCID	263.96
Automotive Body	ABOD	259.90
Music Industry Management	MIMG	256.00
Computer Science	CPSC	253.11
Printing Management	PMGT	249.45
Pharmacy Practice	PHPR	242.49
Manufacturing Tooling Technology	MFGT	241.15
New Media Printing and Publishing	NMPP	236.51
Kendall-Painting	KCPA	234.83
Product Design Engineering Technology	PDET	226.19
Kendall Photography	KCPH	225.68

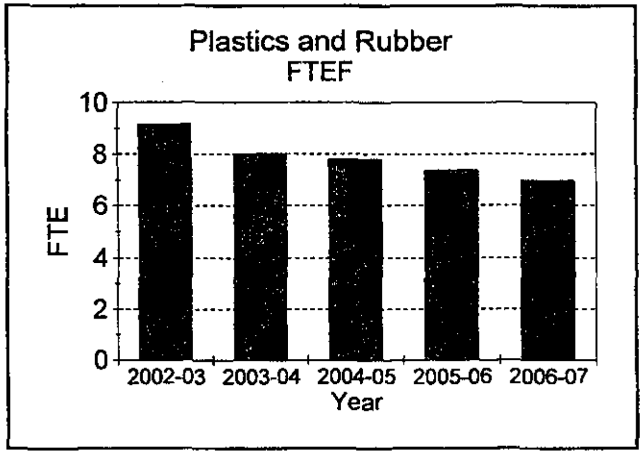
Ferris State University

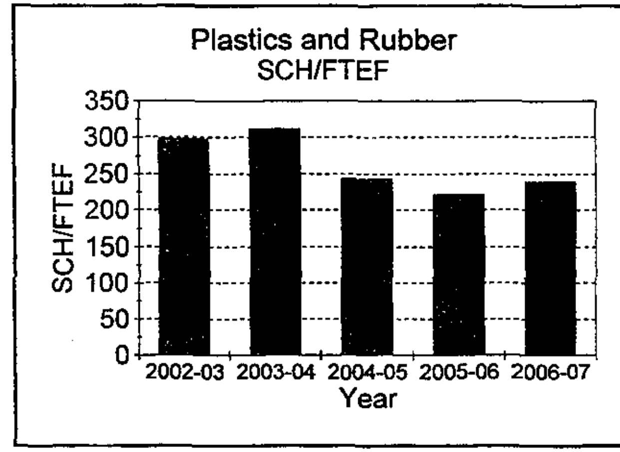
Student Credit Hours (SCH), Full Time Equated Faculty (FTEF) and SCH/FTEF
Aggregated by Department

Fall and Winter Terms Combined

Plastics and Rubber
(College of Technology)







Year	SCH	FTEF	SCH/FTEF
2002-03	2,727.00	9.15	298.11
2003-04	2,504.00	8.03	311.64
2004-05	1,902.00	7.81	243.59
2005-06	1,637.00	7.39	221.42
2006-07	1,676.00	6.99	239.68

Caution: When viewing graphs, please note the differences in scales
Source: Office of Institutional Research, g:\...\facload\0607\prdte9g.rsl

FERRIS STATE UNIVERSITY

Student Credit Hours (SCH), Full Time Equated Faculty (FTEF) and SCH/FTEF
Aggregated by Course Prefix within College and Department

Prefix	Year	Student Credit Hours				Full Time Equated Faculty				SCH/FTEF			
		Summer	Fall	Winter	F + W (a)	Summer	Fall	Winter	Avg F + W (b)	Summer	Fall	Winter	F + W (a / b)
College of Technology													
Mechanical Design													
ETEC	2006-07	0.00	264.00	108.00	372.00	0.00	1.44	0.79	1.12		183.33	135.87	332.91
MECH	2002-03	76.00	910.00	759.00	1,669.00	1.00	2.61	3.04	2.82	75.75	348.76	249.92	591.20
MECH	2003-04	40.00	864.00	795.00	1,659.00	0.27	3.67	3.24	3.45	148.15	235.64	245.18	480.23
MECH	2004-05	44.00	745.00	865.00	1,610.00	0.19	3.49	3.24	3.36	231.58	213.73	267.07	478.84
MECH	2005-06	68.00	716.00	686.00	1,402.00	0.39	2.87	3.15	3.01	174.36	249.77	217.78	466.04
MECH	2006-07	80.00	747.00	657.00	1,404.00	0.67	3.52	3.52	3.52	119.40	212.39	186.83	399.22
PDET	2002-03	120.00	225.00	516.00	741.00	0.67	0.97	2.59	1.78	180.00	232.76	198.99	416.33
PDET	2003-04	0.00	306.00	468.00	774.00	0.00	1.00	1.43	1.21		306.00	327.85	637.70
PDET	2004-05	87.00	365.00	425.00	790.00	0.25	1.38	2.51	1.95	348.00	264.31	169.25	405.95
PDET	2005-06	42.00	310.00	441.00	751.00	0.17	2.00	3.03	2.52	247.06	155.00	145.54	298.61
PDET	2006-07	0.00	315.00	281.00	596.00	0.00	2.52	2.75	2.63		125.00	102.18	226.19
Plastics and Rubber													
PLTS	2002-03	349.00	1,019.00	1,343.00	2,362.00	2.68	6.88	7.50	7.19	130.22	148.22	178.99	328.55
PLTS	2003-04	308.00	1,086.00	1,150.00	2,236.00	2.00	6.54	6.67	6.61	154.00	165.94	172.47	338.47
PLTS	2004-05	316.00	739.00	969.00	1,708.00	1.91	6.67	6.09	6.38	165.45	110.85	159.09	267.76
PLTS	2005-06	227.00	700.00	757.00	1,457.00	1.32	5.28	6.53	5.91	171.97	132.63	115.86	246.71
PLTS	2006-07	214.00	0.00	0.00	0.00	1.34	0.00	0.00	0.00	159.23			
RUBR	2002-03	72.00	160.00	205.00	365.00	1.34	2.00	1.92	1.96	53.73	80.00	106.96	186.38
RUBR	2003-04	76.00	150.00	118.00	268.00	0.49	1.36	1.50	1.43	155.10	110.66	78.56	187.56
RUBR	2004-05	56.00	94.00	100.00	194.00	0.37	1.22	1.64	1.43	151.35	76.91	61.11	135.73
RUBR	2005-06	32.00	95.00	85.00	180.00	0.22	1.61	1.36	1.49	145.45	58.97	62.33	121.02
RUBR	2006-07	24.00	0.00	0.00	0.00	1.34	0.00	0.00	0.00	17.91			

FERRIS STATE UNIVERSITY

Student Credit Hours (SCH), Full Time Equated Faculty (FTEF) and SCH/FTEF
Aggregated by University by Department within College

Department	Year	Student Credit Hours				Full Time Equated Faculty				SCH/FTEF			
		Summer	Fall	Winter	F + W (a)	Summer	Fall	Winter	Avg F + W (b)	Summer	Fall	Winter	F + W (a / b)
College of Technology													
Mechanical Design	2002-03	196.00	2,109.00	1,928.00	4,037.00	1.67	8.35	10.29	9.32	117.37	252.50	187.37	433.10
Mechanical Design	2003-04	40.00	2,168.00	1,986.00	4,154.00	0.27	9.54	9.06	9.30	148.15	227.19	219.21	446.60
Mechanical Design	2004-05	131.00	2,007.00	1,875.00	3,882.00	0.44	9.78	10.42	10.10	297.73	205.14	179.94	384.29
Mechanical Design	2005-06	110.00	1,859.00	1,764.00	3,623.00	0.56	9.71	10.91	10.31	196.43	191.40	161.69	351.36
Mechanical Design	2006-07	80.00	1,801.00	1,467.00	3,268.00	0.67	11.12	11.40	11.26	119.40	162.00	128.67	290.25
Plastics and Rubber	2002-03	421.00	1,179.00	1,548.00	2,727.00	4.02	8.88	9.42	9.15	104.73	132.85	164.33	298.11
Plastics and Rubber	2003-04	384.00	1,236.00	1,268.00	2,504.00	2.49	7.90	8.17	8.03	154.22	156.46	155.20	311.64
Plastics and Rubber	2004-05	372.00	833.00	1,069.00	1,902.00	2.28	7.89	7.73	7.81	163.16	105.59	138.34	243.59
Plastics and Rubber	2005-06	259.00	795.00	842.00	1,637.00	1.54	6.89	7.90	7.39	168.18	115.40	106.62	221.42
Plastics and Rubber	2006-07	238.00	0.00	0.00	0.00	2.68	0.00	0.00	0.00	88.67			
Plastics-Rubber	2006-07	0.00	732.00	944.00	1,676.00	0.00	7.24	6.75	6.99		101.12	139.92	239.68
Printing & Imaging Technology Mgmt	2002-03	163.00	958.00	1,015.00	1,973.00	1.17	8.25	9.08	8.67	139.32	116.12	111.78	227.70
Printing & Imaging Technology Mgmt	2003-04	191.00	953.00	953.00	1,906.00	1.17	7.89	8.00	7.94	163.25	120.80	119.13	239.92
Printing & Imaging Technology Mgmt	2004-05	214.00	1,018.00	983.00	2,001.00	1.17	7.88	6.34	7.11	182.91	129.27	155.05	281.53
Printing & Imaging Technology Mgmt	2005-06	187.00	1,005.00	956.00	1,961.00	1.17	6.28	6.14	6.21	159.83	160.03	155.70	315.78
Printing & Imaging Technology Mgmt	2006-07	177.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	151.28			
Printing-Imaging Tech Mgmt	2006-07	0.00	812.00	909.00	1,721.00	0.00	5.96	7.41	6.68		136.24	122.67	257.44
Surveying	2002-03	114.00	764.00	994.00	1,758.00	1.00	5.50	6.36	5.93	114.00	138.91	156.29	296.46
Surveying	2003-04	3.00	673.00	966.00	1,639.00	0.00	5.33	6.15	5.74		126.19	157.11	285.49

The plastics industry is one of the economy's largest and fastest growing. This report will show that the industry was hit hard by the economic downturn of 2000-2001 and by the loss of manufacturing jobs to other countries. Most plastics are used in manufacturing. The shrinking number of establishments probably also indicates a long-term consolidation trend in the plastics industry. Despite these negative factors, the industry regained some of its strength in 2006.

This report is the story of the plastics industry in numbers. It answers several important questions, including: How big is the plastics industry? How does it compare with other industries? How fast is it growing? Where is it located? How does it affect the rest of the economy?

- The plastics industry is large, accounting for 1.1 million jobs and $379 billion in shipments during 2006.

- California, the largest state, has the largest plastics industry. As a percentage of total employment, the plastics industry is most important to Indiana, where it accounts for 19.2 of every 1,000 non-agricultural jobs.

- When suppliers to the plastics industry are considered, jobs grow to 2.0 million, and total shipments grow to $509 billion.

- The plastics products portion of the plastics industry is the <u>fifth</u> largest 4-digit NAICS industry in the U.S. The plastics materials and synthetics portion of the plastics industry (including rubber and fiber) is the <u>thirteenth</u> largest 4-digit NAICS industry.

- Employment in the plastics manufacturing segment of the industry grew 1.1 percent per year from 1980 to 2006.

- Employment growth slowed during the 1995-2000 period and went into reverse from 2000 to 2006 -- falling at a 2.9 percent annual rate.

- Real shipments grew at a 3.4 percent annual rate from 1980 to 2006.

- The problems in the plastics industry largely reflect problems in the manufacturing sector as a whole – mostly caused by the outsourcing of manufacturing jobs.

Industry Size

The size of the plastics industry is summarized by Table S-1, which divides the plastics industry into: Plastics Manufacturing, Plastics Wholesale Trade, Captive Plastics Products Manufacturing, and Upstream Impacts. The first three comprise what the authors call the Plastics Industry. Captives are plastics processing activities located in establishments, such as automobile assembly and milk bottling plants, which are not classified by the government or most economists as being part of the plastics industry.

TABLE S-1

PLASTICS INDUSTRY IMPACTS, 2006

	Number of Estabs	Employees (Thous)	Value of Industry Shipments ($Mill)
Plastics Manufacturing:			
NAICS 325211 Plastics Materials and Resins	720	58.5	78,741.8
NAICS 325991 & 3261 Plastics Products	12,989	748.7	190,344.5
NAICS 3332201 Plastics Working Machinery	432	12.2	2,658.6
NAICS 33351103 Molds for Plastics	1,335	24.9	3,219.4
Plastics Manufacturing Totals	15,476	844.2	274,964.3
Plastics Wholesale Trade:			
NAICS 424610 Wholesale Trade for Plastics Materials, Forms and Shapes	3,109	32.6	39,342.3
Government-Documented Plastics Industry	18,585	876.8	314,306.6
Captive Plastic Products:	#N/A	253.5	64,520.2
Plastics Industry:	#N/A	1,130.3	378,826.8
Upstream Impacts:	#N/A	865.1	129,860.3
Full Impact *	#N/A	1,995.4	508,687.0

* Excluding downstream impacts

The following conclusions can be drawn from Table S-1:

- The U.S. plastics industry, as it is documented by U.S. Government data, operated 18,585 manufacturing establishments, employed 877 thousand persons and made shipments worth $314 billion in 2006. This excludes establishments producing captive plastics products or supplying goods and services to the plastics industry.

- The authors include captives in their definition of the Plastics Industry, which takes the number employed up to 1.1 million persons in 2006. Another 865 thousand persons were employed by the upstream industries that supplied the plastics industry, which brought the total year 2006 employment impact to 2.0 million – almost 2 percent of the U.S. workforce.

- The Plastics Industry generated $379 billion in shipments in 2006. Another $130 billion was generated by upstream, supplying industries, bringing the total year 2006 shipments impact of the plastics industry to $509 billion.

- Table S-1 does not include downstream impacts on the industries that use plastics and on the consumers who buy the products containing plastics.

Comparisons with Other Industries

In order to rank plastics along with other industries, the authors considered 86 manufacturing industries defined by the 4-digit North American Industry Classification (NAICS) system. Data were available through 2005.

- Plastics Products (NAICS 3261), which accounts for most of the plastics processing industry, was the fifth largest U.S. manufacturing industry in 2005 in terms of shipments – after Petroleum and Coal Products, Motor Vehicles, Motor Vehicle Parts, and Animal Slaughtering and Processing.

- Resin, Synthetic Rubber and Synthetic Fibers (NAICS 3252), which primarily includes the Plastics Materials and Resins Industry in Table S-1, was the thirteenth ranked manufacturing industry.

Rate of Growth

- Over the last 26 years, plastics industry employment, real shipments and real value added grew significantly faster than manufacturing as a whole. This is because plastics are relatively new and dynamic compared to other materials and other methods of manufacturing.

- Employment in the Plastics Manufacturing Industry grew 1.1 percent per year between 1980 and 2006. Employment in the larger category, Plastics Manufacturing plus Plastics Wholesale Trade, also grew 1.1 percent per year. (Growth rate data are not available for captive and upstream industries.)

- Real value added in the Plastics Manufacturing Industry grew 3.2 percent per year from 1980 to 2006. The real value of shipments by this Industry grew 3.4 percent per year.

- By one measure – the real shipments growth rate minus the employment growth rate (3.4–1.1) -- productivity in Plastics Manufacturing grew 2.3 percent per year from 1980 to 2006, which is a little faster than productivity growth for manufacturing as a whole.

- The growth of Plastic Industry employment and number of establishments went into reverse towards the end of the 1990s and into 2006. This slowdown mirrored what happened to the rest of the manufacturing sector as a result of rising energy costs, the high value of the dollar, the deterioration of the trade deficit, and the 2000-2001 recession.

- The effects of the recession have ended, but the Plastics Industry continues to suffer from the migration of manufacturing activities to low-wage countries. Manufacturers, after all, buy and process most plastics.

- From 2000 to 2006, Plastics Manufacturing employment fell at a 2.9 percent annual rate, and real shipments grew at a 2.0 percent annual rate.

- Employment actually grew a little in 2006, and real shipments grew 5.0 percent. It remains to be seen whether this is just a temporary, top-of-the-cycle phenomenon, or the beginnings of fundamental improvement.

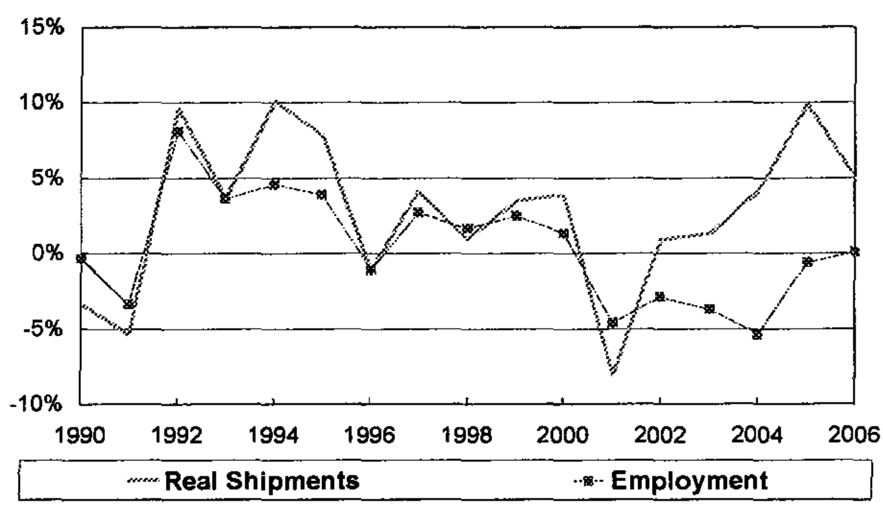
TABLE S-2

COMPARATIVE GROWTH RATES, 1980-2006

	Plastics Manufacturing	All Manufacturing
Employment	1.1%	-1.1%
Real Shipments	3.4%	1.0%
Real Value Added	3.2%	1.4%
Productivity Growth	2.3%	2.0%

FIGURE S-1

PLASTICS MANUFACTURING GROWTH RATES
(SHIPMENTS ARE CORRECTED FOR INFLATION)



Location

- The plastics industry is found throughout the 50 States, wherever people and manufacturing facilities are found. As can be seen from Table S-3, California has the most plastics industry employees, followed by Ohio, Texas, Michigan, Illinois, Pennsylvania, Indiana, Wisconsin, North Carolina and New York.

TABLE S-3

TOP STATES FOR PLASTICS EMPLOYMENT (PLASTICS INDUSTRY, 2006)

Rank	State	Plastics Employment Thousands
1	California	98.5
2	Ohio	90.2
3	Texas	82.1
4	Michigan	77.8
5	Illinois	71.0
6	Pennsylvania	58.0
7	Indiana	57.6
8	Wisconsin	39.8
9	North Carolina	39.4
10	New York	39.3
	U.S. Total	1,130.3

- Some States have done better than others. Since 1996, States in the Northeast and Midwest have lost some rank, while those in the South and West have gained.
- As an alternative measure, plastics industry employees per one thousand non-agricultural employees indicates how concentrated the plastics industry is in a given State – or how much that State specializes in plastics. California is first in terms of total plastics employment, but it is also the most populous State. Using the alternative measurement, Table S-4 shows that Indiana has the largest number of plastics industry employees per thousand non-agricultural employees, followed by Michigan, Ohio, Wisconsin, Kentucky, South Carolina, Illinois, Rhode Island, Mississippi and Tennessee.

TABLE S-4

TOP STATES FOR PLASTICS CONCENTRATION (PLASTICS INDUSTRY, 2006)

Rank	State	Plastics Employees per 1,000 Non-Agricul. Employees
1	Indiana	19.4
2	Michigan	17.9
3	Ohio	16.6
4	Wisconsin	13.9
5	Kentucky	13.5
6	South Carolina	12.6
7	Illinois	12.0
8	Rhode Island	11.8
9	Mississippi	11.7
10	Tennessee	11.3
	U.S. Average	8.3

- The States with the highest concentrations of plastics industry employees tend to have the highest concentrations of manufacturing activity. This is consistent with the fact that most plastics products wind up in manufactured goods.

Upstream (Supplier) Impacts

Jobs are created in the plastics industry, but they are also created in the industries that supply goods and services to the plastics industry – including those that supply fuel, spare parts, office supplies, transportation services, etc. As was discussed in connection with Table S-1, the employment and shipments of these upstream industries account for a significant share of the Full Impact of the plastics industry, as measured by this study.

- During 2006, upstream industries created 865 thousand jobs in order to supply goods and services to the plastics industry.

- During 2006, upstream industries generated $130 billion in shipments in order to supply goods and services to the plastics industry.

PLASTICS OUTCOMES ASSESSMENT TEST

Please read these instructions prior to giving the test. It is important that you read these directions exactly as printed:

-This is an "Outcomes Assessment" test which will be used to measure the effectiveness of the FSU Plastics Technology program. It will be used as a guideline for future program improvement.

-Students entering the program will take this test in PLTS 110. They will also take the test upon exiting the program at the end of their second year.

-Please answer all questions. Some will be familiar and some will not. Do the best you can to answer them all.

-This test will not affect your grade in this class or any other class.

-Please put your name and SS# on the scantron sheet

OUTCOMES ASSESSMENT EXAM

PLASTICS TECHNOLOGY

Revison 08/02

1. A thermoform requiring a deep draw may result in:

a. Excess post shrinkage
b. A wall section that is too thick
c. Discoloration of the wall
d. Wall thinning
e. Stress relaxation

2. In fiberglass reinforcing, a layer of resin is applied to both surfaces of the mold to prevent the glass from coming to the surface. This layer is called a:

a. Resin coat
b. Gel coat
c. Soak coat
d. Finish coat
e. Brush coat

3. The process in which two or more layers of a material are bonded together is called:

a. Molding
b. Forming
c. Fabrication
d. Laminating
e. Casting

4. The process method commonly used to mold thermosets is called:

a. Blow molding
b. Calendering
c. Compression molding
d. Extrusion
e. Machining

5. The most economical plastics process to make 50,000 one liter containers per month would be:

a. Extrusion blow molding
b. Compression molding
c. Dip casting
d. Transfer molding
e. Thermoforming

6. The excess material left on a product after being compression molded is called:

a. Overflow
b. Runner
c. Flash
d. Charge
e. Sprue

7. The process used to make the monofilament used in weaving of cloth is named:

a. Injection
b. Casting
c. Compression
d. Extrusion
e. Thermoforming

8. When the polymer is pulled away faster than it is extruded and gets smaller as it leaves the die, it is called:

a. Flow rate
b. Draw down
c. Orifice radius
d. Newtonian flow
e. Shear

9. Melt index, melt strength, and material stiffness are key and primary material concerns for materials used in the process of:

a. Casting
b. Rotation
c. Blow molding
d. Compression
e. Composites / lamination

10. The main reason that "profiling" or "programming" is used in blow molding is:

a. Reduce die head wear
b. Control product wall thickness
c. Provide uniform cooling
d. Allow different size blow tubes to be used
e. Decrease cycle time

11. What unnatural thing does stretch blow molding do to a PET bottle and why?

a. Makes the decoration of it impossible due to the final part thickness
b. Varies the volume of the bottle due to inconsistent wall thickness
c. Makes decoration impossible due to orientation
d. Makes it clear due to crystallization
e. Drastically changes the color of the product due to molecular orientation

12. "Downstream" auxiliary equipment for the extrusion process may include:

a. Deflashing and heating equipment
b. Raw material loading equipment
c. Color concentrating blending equipment
d. Oil spray and coating equipment
e. Pellet drying, part sizing, & cutting equipment

13. The main similarity of the process variations of thermoforming called: vacuum forming, pressure forming, and plug assist are:

a. To utilize a female mold half
b. To minimize pressure
c. To eliminate wrinkles
d. To produce consistent wall thickness
e. To vary part size with the process

14. "Blocks" placed around the perimeter of the "land" area of a deep draw male half only mold used in thermoforming:

a. Help eliminate webbing
b. Are used as die locks
c. Are used to clamp the mold into the press
d. Help figure the sheet size of the material
e. Are tooling aids

15. In thermoforming, "area ratio" is used to calculate the:

a. Relationship of frame to machine size
b. Depth of draw
c. Required blank size thickness, figured from finished part
d. Relationship of machine size to frame
e. Finished part size figured from blank

16. The "thrust bearing" part of an extruder is used to:

a. Move the material forward to the die head
b. Absorb and counteract the high head pressure that is transmitted towards the rear of the screw
c. Assure consistent mix of color in the raw material
d. Control the RPM's of the screw rotation and keep them in proper range for the material type
e. Move the screw forward to push the material out through the screen pack

17. In extrusion, the "breaker plate":

a. Is used to final cut and shape the product
b. Is the mounting device for the die head
c. Is used in the hopper to disperse the material
d. Is used between the die and screw to support a screen pack
e. Forms the mounting surface that attaches the screw to the thrust bearing

18. The phenomenon which forms the product during the heating cycle of rotational molding is:

a. Centrifugal force
b. Glass transition
c. Heat dissipation
d. Pellet dispersion
e. Fusion

19. A venturi effect in blown film extrusion:

a. Assists in the flattening of the product
b. Assists in the "take-off" of the roll
c. Causes the bubble to rise & expand
d. Helps to purge out the die head
e. Is only used in a "spider" feed die

20. The material "frost line" in blown film is:

a. Where the material starts to cool and returns to a crystalline state in crystalline materials
b. Where the material first comes outside of the die and hits the air
c. Only happens with amorphous materials
d. Where the material comes out of water-cooled rollers
e. The sealed edge of the film to make a bag

21. There are two basic types of "transfer molding" molds:

a. Pot or sprue and plunger
b. Cavities and cores
c. Hot runner and insulated runner
d. Manifold and straight
e. Chiller or tower cooled

22. The basic difference between transfer molding and compression molding is:

a. The molds in compression are cooled
b. Compression never uses knockout pins
c. Transfer is only for thermoplastic parts
d. The molten plastic mass is fluid when entering the cavity in transfer molds
e. A "cull" is not present in transfer molding

23. "Pultrusion" is a fiber reinforcing process in which:

a. The mold is always a cavity half mold
b. Resin soaked rovings are pulled through a heated die
c. Thermoplastic material is the primary material
d. The plastic material is pulled over the fiber
e. Hollow products are always made

24. Which of the following may be considered a limitation of the injection molding process?

a. High tool cost
b. Rapid production
c. Limited choice of molding materials
d. Ability to produce complex parts
e. All of the above

25. How many speeds are generally associated with the clamp opening?

a. One
b. Two
c. Three
d. Four
e. Five

26. The major control parameter during fill is:

a. Time
b. Pressure
c. Velocity
d. Temperature
e. Amperage

27. The major control parameter during follow-up phases (pack/hold) is:

a. Time
b. Pressure
c. Velocity
d. Temperature
e. Amperage

28. How should screw speed be adjusted?

a. Use a slow screw speed so that the mold opens within a second of attaining shot size
b. Use a very fast screw speed with a long delay before mold open
c. Use a plastication delay first then a very fast screw speed
d. Just make sure you use an appropriate injection velocity
e. Any of the above could be used

29. Filling a mold slowly:
a. Allows for a better transfer of the pressure across the part
b. Is the very safest way to start filling a mold
c. Shortens the overall cycle time
d. May cause the sprue to stick
e. all of the above

30. Transferring control (fill to pack/hold) too late:
a. May cause parting-line flash
b. Can cause part warpage
c. Can cause the part to stick
d. All of the above
e. None of the above

31. Transferring control (fill to pack/hold) at a high ram velocity:
a. Is highly desirable
b. Is necessary to "fill out" a mold out properly
c. Is necessary to "pack out" a mold out properly
d. Will result in an out-of-control packing pressure
e. Answers a, b, c only

32. Reinforced materials (ex. short glass fibers):
a. Require very high back pressures to be used
b. Require very fast screw speeds to be used
c. Require higher tonnage factors to be used
d. Require lower mold temperatures to be used
e. All of the above

33. The pressure circuit that is designed to protect the mold from damage during the final closing of the mold is most correctly termed:
a. Mold safety
b. Soft start
c. Boost pressure
d. Low system pressure
e. Tonnage build-up

34. The mode of operation used to disable clamp velocities and in some cases the high clamping pressure is called:
a. Semi-automatic
b. Fully automatic
c. Single
d. Continuous
e. Set-up

35. When the screw moves back as a plunger it is called:
a. Decompression
b. Screw speed
c. Back pressure
d. Boost pressure
e. Rear extension

36. The name for the ratio of the injection melt pressure to the hydraulic line pressure is:
a. Poisson's ratio
b. Intensification ratio
c. Absolute hydraulic ratio
d. Newton's ratio
e. Any of the above is acceptable

37. The distance of the screw from its maximum forward position at the end injection is called:
a. Melt decompression
b. Shot size
c. Cushion
d. Suck-back
e. Sprue decompression

38. The component at the foremost section of the screw that prevents the back flow of the plasticated material during the injection part of the molding cycle is the:
a. Flow stop ram
b. Non-return valve
c. Feed zone valve
d. Stuffer ring
e. Any of the above is acceptable

39. The time between the end of injection and the start of plastication is controlled by the:
a. Cooling timer
b. Injection time monitor
c. Plastication (or extruder) delay
d. Intrusion timer delay
e. Mold open timer

40. In which type of clamping system is total clamp tonnage constantly varying throughout the cycle?
a. Straight hydraulic
b. Hydro-mechanical
c. Toggle
d. All-electric
e. None of the above

41. In which type of clamping system must the whole clamping unit be moved with each mold change?
a. Straight hydraulic
b. Hydro-mechanical
c. Toggle
d. All-electric
e. None of the above

42. In which type of clamping system does the clamp tonnage vary with mold temperature?
a. Straight hydraulic
b. Hydro-mechanical
c. Toggle
d. All-electric
e. None of the above

43. The majority of melting through shearing of the material along with the degassing function occurs at which screw zone?

a. Feed throat
b. Feed zone
c. Transition zone
d. Metering zone
e. End zone

44. Which barrel temperature zone has the greatest effect on melt quality?

a. Rear zone
b. Middle zone
c. Front zone
d. Front zone extension
e. Nozzle

45. Which injection phase is used to control the final part's weight and dimensions?

a. Hold phase
b. Pack phase
c. Fill phase
d. Velocity phase
e. Weight phase

46. Which injection phase is used to safely raise the cavity pressure without flashing the mold?

a. Hold phase
b. Pack phase
c. Fill phase
d. Velocity phase
e. Weight phase

47. Which injection phase consists of fast speeds and at a high pressure?

a. Hold phase
b. Pack phase
c. Fill phase
d. Velocity phase
e. Weight phase

48. What name is given to describe the end of the fill phase?

a. Transfer
b. Switch-over
c. Boost cut-off
d. Start of follow-up
e. All of the above

49. What method is used to transfer control from velocity to pressure?

a. Hydraulic pressure
b. Ram position
c. Cavity pressure
d. Injection time
e. All of the above

50. Decompression can be used to:

a. Solve a stringing problem
b. Eliminate nozzle drooling
c. Shorten cooling times
d. Prevent sprues from sticking
e. All of the above

51. Using too much decompression after plastication will:

a. Cause splay
b. Cause flashing
c. Cause gate blush
d. Cause sinks
e. All of the above

52. To increase cushion while still continuing to mold the same part:

a. Increase decompression
b. Increase transfer
c. Decrease holding pressures
d. Increase shot size
e. Increase both shot size and transfer by the same amount

53. An increase in backpressure will:

a. Cause melt temperature to rise permanently
b. Decrease the melt mix (quality)
c. Cause melt temperature to drop
d. Decrease material shearing
e. Shorten fibers

54. Assuming adequate venting, conventional techniques to improve weld line strength is (are) to:

a. Increase melt temperature
b. Increase mold temperature
c. Increase injection velocity
d. All of the above
e. Answers a and b only

55. Surface ripples ("record grooves") can be eliminated by increasing:

a. Melt temperature
b. Mold temperature
c. Injection velocity
d. All of the above
e. Answers a and b only

56. Flashing can be caused by excessively:

a. High injection velocity
b. High melt temperature
c. Late transfer
d. High holding pressure
e. All of the above

57. Splay can be caused by:

a. Not enough back pressure
b. Too much decompression
c. Excessive injection velocity
d. Feed-throat temperature being too cold
e. All of the above

58. Injection velocity should be adjusted to:

a. Go as fast as possible without creating defects
b. Slow at first then sped up
c. Always slow at the gate
d. Transfer at 80% of fill
e. All of the above

59. Name the channels through which plastic is led to the mold cavity.

a. Undercuts
b. Bosses
c. Runners
d. Cams
e. Canals

60. The primary difference between transfer and compression molds is –

a. The way material is delivered to the cavities
b. The size of the mold
c. The material the mold is constructed from
d. The types of plastics run in these molds
e. The way the mold is mounted in the machine

61. Vents should be place where in injection molds?

a. Cavities
b. Runners
c. Pillars
d. All of the above
e. A & B only

62. Landed, positive, semi-positive, and flash are types of –

a. Injection molds
b. Compression molds
c. Transfer molds
d. Blow molds
e. Thermoforming molds

63. The "projected area" of the parts in a mold can help determine-

a. The required molding machine tonnage
b. The mold material
c. The weight of the mold
d. The molding cycle time
e. The production life of the mold

64. A baffle and a bubbler are items used for-
   a. Machining tool steel
   b. Directing material flow in molds
   c. Mold cooling
   d. Polishing tool steel
   e. Cleaning molds

65. What type of transfer mold can be run in a compression molding machine?
   a. Flash
   b. Plunger
   c. Hot-runner
   d. Pot
   e. Cull

66. Compared to the machine nozzle orifice, the size of the sprue bushing "O-dimension" should be-
   a. Smaller
   b. Larger
   c. The same size as
   d. Size is not important
   e. Depends on the material

67. Having adequate draft in a mold helps ensure that-
   a. Airflow to cool plastic is maximized
   b. Mold construction cost is minimized
   c. The mold can be easily loaded into the molding machine
   d. Cavities and cores are easy to machine
   e. Parts can be easily removed from the mold

68. Tool steel dimensions must be made _________ the corresponding plastic part dimension in an injection mold.
   a. Larger than
   b. Smaller than
   c. The same size as
   d. Larger or smaller than (depending on the plastic)
   e. Without regard to

69. A typical application in which a "3-plate" mold would be preferred is-
   a. Multiple cavities with gates in between parts
   b. Multiple cavities with gates at the edge of parts
   c. Multiple cavities with gates in the center of part
   d. Single cavity molds
   e. Hot runner molds

70. The ___________ of a gate in an injection mold controls the material freeze-off.
   a. Depth
   b. Width
   c. Area
   d. Land length
   e. Volume

71. Steels with a minimum of ___________ % carbon can be effectively hardened by heating to a specified temperature and rapidly cooling.

a. 10
b. 40
c. .10
d. .40
e. 0

72. The male portion of a compression mold that forms the inside of the part is called the-

a. Cavity
b. Plunger
c. Ram
d. Charge
e. Plug

73. A "side-action" is sometimes used in injection molds to –

a. Aid in manufacture of the mold
b. Increase material flow
c. Actuate the ejector plates
d. Decrease required clamp tonnage
e. Form undercuts in the piece part

74. Material typically enters injection molds through the-

a. B-plate
b. Sprue bushing
c. Ejector box
d. Side action
e. Bubbler

75. The primary advantage of using a sub (tunnel) gate in injection molds is-

a. Cosmetic
b. Reduced molding pressure
c. Automatic degating
d. Easier to machine in molds
e. Reduced cost of mold

76. Annealing is a heat treatment process used to ________ steel.

a. Soften
b. Through harden
c. Quench
d. Plate
e. Case harden

77. Material is loaded into compression molds

a. By volume
b. By weight
c. As preforms
d. All of the above
e. A & B only

78. S-7, O-2, A-3, and D-2 refer to-

a. Injection mold classifications
b. Compression mold classifications
c. Types of tool steels
d. Steel hardness ranges
e. DME mold base classifications

79. Support pillars of insufficient length in injection molds can result in-

a. Flash on piece parts
b. Damage to mold components
c. Premature mold wear
d. Increased cycle times
e. Reduced machining costs

80. The sides of a thermoforming mold are tapered to aid in removal of the part. This taper is called:

a. Grade
b. Draft
c. Slope
d. Pitch
e. Draw

81. The mark on a part where the halves of the mold meet in closing is called the:

a. Dividing line
b. Parting line
c. Separating line
d. Molding line
e. Flow line

82. Orifice design and construction for profile extrusion:

a. Must take into account the color of the product
b. Is made to produce a 3-dimensional product
c. Must compensate for quicker cooling and shrinkage in corners, etc
d. Is dependent on the use of a water tank for cooling
e. Always includes a mandrel in the middle

83. In general, Modulus refers to a material's__________________ .

a. Impact Strength
b. Stiffness
c. Tensile Strength
d. Toughness
e. None of the above

84. Plastics that absorb moisture are referred to as _______ .

a. Hydrophobic
b. Hydroscopic
c. Hydrolyzed
d. Hygroscopic
e. Hydroseal

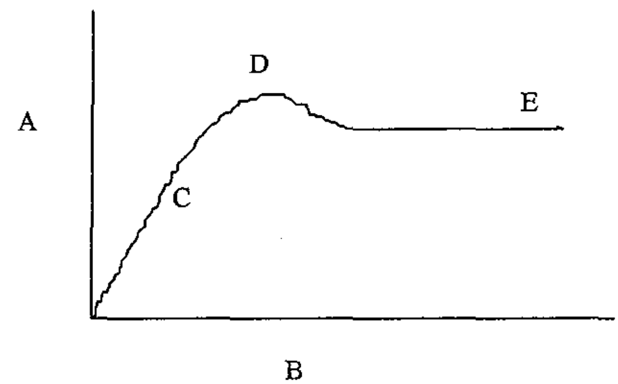
85. Impact Strength is a measure of a material's

a. Toughness
b. Hardness
c. Modulus
d. Stiffness
e. None of the above

86. VICAT tests can be used to practically assess ________ .

a. Results of part ejection from a mold
b. Material stiffness
c. Modulus
d. Flammability
e. Melt flow

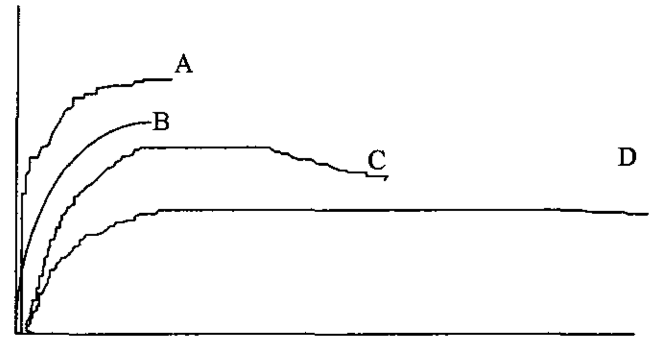
<u>Given the following stress-strain curve:</u>



87. The Yield Point is...

a. A
b. B
c. C
d. D
e. E

Given the following stress-strain curves: Figure 2



88. In Figure 2, which curve depicts the *strongest* plastic?
a. A
b. B
c. C
d. D
e. Not enough information given

89. In Figure 2, which curve depicts the *toughest* plastic?
a. A
b. B
c. C
d. D
e. Not enough information given

90. Which of the following is most likely to exhibit isotropic behavior?
a. Injection molded 30 % Glass-Filled Nylon
b. Injection molded unfilled polystyrene
c. Stretch-blow molded PET bottle
d. Extruded polypropylene rod
e. LDPE blown film

91. Which units do not describe coefficient of thermal expansion?
a. $^{\circ}F^{-1}$
b. mm/mm/°C
c. $^{\circ}C^{-1}$
d. J/M
e. N/M

92. Which units do not describe impact properties?
a. Ft-lbs.
b. Ft-lbs/in
c. Pounds
d. Newtons
e. J/M

93. The tristimulus refers to:
a. Morphology
b. Electrical Properties
c. Tensile Properties
d. Color Properties
e. Impact Properties

94. DAM refers to:
a. Sample conditioning
b. Modulus calculations
c. Molecular weight
d. Specific gravity
e. Density and molecular weight

95. Increasing the crosshead speed on a tensile test will tend to result in:
a. More ductile behavior
b. More Newtonian behavior
c. More elastics behavior
d. More brittle behavior
e. More isotropic behavior

96. Given the following specific gravity values, which material would most likely float?
a. 1.0
b. 1.3
c. 2.1
d. 0.9
e. 1.01

97. Creep requires the ***load*** to:
a. Be constant
b. Be reduced
c. Not be changed
d. Be cycled uniformly
e. Be cycled intermittently

98. UV light is best described by the following wavelength:
a. 200 Hz
b. 60 Hz
c. 200 nm
d. 700 nm
e. 990 nm

99. ASTM represents:
a. American Standards and Testing Mechanics
b. American System for Testing Machines
c. American Standards and Testing Measures
d. American Society for Testing and Materials
e. American Society for Testing Mechanics

FERRIS STATE UNIVERSITY

Plastics Engineering Technology APR - Facilities

As part of the Academic Program Review (APR) process, the Plastics Department is asking utilizers of the Ferris State University Plastics facilities to please take a few minutes to complete this survey. Your responses will help us evaluate the program's facilities and equipment, see where the strengths are and show us where changes need to be made. Thank you for your feedback in this important process.

Q1 **Is the building name National Elastomer Center appropriate?**

- Yes
- No
- I don't know

Q2 **Please indicate your level of satisfaction with the *lecture rooms*.**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	Don't Know or Not Applicable
PC/Digital systems					
Projection systems					
White board					
Room lighting					
HVAC					

Q3 **Please indicate your level of satisfaction with the *labs*.**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	Don't Know or Not Applicable
Equipment available	○	○	○	○	○
Equipment maintenance	○	○	○	○	○
Layout	○	○	○	○	○
Safety systems (MSDS/Lockouts/First Aid, etc.)	○	○	○	○	○
HVAC	○	○	○	○	○
Traffic (movement of people & equipment)	○	○	○	○	○
PC Digital support systems	○	○	○	○	○
Hand tool availability	○	○	○	○	○
Mold Inventory & Control Systems	○	○	○	○	○
Operable Condition of Equipment	○	○	○	○	○
Equipment is up-to-date	○	○	○	○	○
Availability of injection molds	○	○	○	○	○
Availability of non-injection molds	○	○	○	○	○
Material (resin) availability	○	○	○	○	○
Molded sample availability (test bars, etc.)	○	○	○	○	○

Q4 **Please indicate your level of satisfaction with the *maintenance*.**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	Don't Know or Not Applicable
Critical breakdowns are promptly handled	○	○	○	○	○
Preventive maintenance	○	○	○	○	○
Maintained process (identifying problems)	○	○	○	○	○
Technician availability	○	○	○	○	○
Technician skills	○	○	○	○	○
Current system in place for reporting equipment breakdowns	○	○	○	○	○

Q5 **Please indicate your level of satisfaction with the *building*.**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	***Don't Know or*** Not Applicable
HVAC	○	○	○	○	○
Building systems (air/pressure/power)	○	○	○	○	○
Cleanliness	○	○	○	○	○
Janitorial support	○	○	○	○	○
Restroom maintenance	○	○	○	○	○
Lighting	○	○	○	○	○

Q6 **I believe the top 3 issues/concerns associated with lab equipment are:**

Q7 **I believe the top 3 issues/concerns associated with the NEC building are:**

Q8 **Please use this space for additional comments/suggestions.**

Future Equipment & Facilities Needs

Q9 **Please indicate your level of satisfaction with the following:**

	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	Don't Know or Not Applicable
Procuring Plastics-related lab equipment by consignment	◯	◯	◯	◯	◯
Procuring Plastics-related lab equipment by donation	◯	◯	◯	◯	◯
Procuring Plastics-related lab equipment by purchasing	◯	◯	◯	◯	◯
Disposition of unneeded equipment	◯	◯	◯	◯	◯

Q10 **Which Lab PLTS-XXX Equipment is in the most need of replacement?**

Q11 **Which Lab PLTS-XXX Equipment is the second most in need of replacement?**

Student Reference Room NEC 207

Q12 **Please indicate your level of agreement with each of the following statements.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Don't Know or Not Applicable
The student reference room is a good reference location	◯	◯	◯	◯	◯
The student reference room needs to be converted to a lecture room	◯	◯	◯	◯	◯
Corridor displays are a valuable resource	◯	◯	◯	◯	◯

Office-related areas

Q13 **Please indicate your level of agreement with each of the following statements.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Don't Know or Not Applicable
Office copier/fax resources meet the department needs	○	○	○	○	○
Students should have access to a different copier within the building	○	○	○	○	○
Mail distribution meets the department needs	○	○	○	○	○
Student mail should be distributed in a different area from faculty mail	○	○	○	○	○
Building & Office security meet the department needs	○	○	○	○	○

Q14 **Comments/Suggestions**

Thank you for your time and feedback.