Printing Technology;
Printing Management

APRC 1996-1997

Section 1 of 2

ACADEMIC PROGRAM REVIEW
Associates in Applied Science in Printing Technology
Bachelor of Sciences in Printing Management
Design, Graphic Arts, and Manufacturing Department
College of Technology

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EXECUTIVE SUMMARY

The Printing Technology (PTEC) and Printing Management (PMGT) programs have served and continues to serve this country's third largest manufacturing industry. Since the inception of the Printing Technology program in 1954 and the Printing Management program in 1973, students studying in these areas have been sought by employers from all over the US Like many programs here at Ferris, the printing programs offer a unique set of skills to the students who study at Ferris. As for the program itself, curriculum, technology, faculty, staff, and administration have all come and gone as the years have passed and times have changed. The major consistent and noteworthy element to the PTEC and PMGT programs is the reputation they have earned in the printing industry as a leader in building solid career foundations for students.

The programs have operated quite uneventfully until the early 1990's. Through the late 1980's and into the early 1990's several key things began to happen within the printing industry, Ferris State University, the College of Technology, and the Graphic Arts Department. In the mid 1980's, 8 of the 12 Graphic Arts faculty entered into retirement eligibility or were within 5 years of retirement. The motivation level of these individuals was less than exemplary. Enrollment which was full in 1985 began to decline. The drop in enrollment can be attributed to many things including, declining high school graduating class size, increased competition from community colleges, increased tuition costs, and a lack of motivation and direction to promote the printing programs at Ferris. Unfortunately, the entire university as well as the College of Technology was going through many different changes at the same time making assistance and direction difficult for the Graphic Arts Department.

By 1995, just about all of the faculty in the Graphic Arts Department were new within ten years. By means of fiscal restructuring the number of faculty was reduced from 12 to 9 which better fit the current number of students enrolled. Unfortunately, from 1993 to 1996 the Graphic Arts Department and the College of Technology were without permanent leadership. Upon the retirement of the College of Technology's Dean, the Graphic Arts Department Head was named Acting Associate Dean. This appointment lasted for all of 1993, 1994, and part of 1995. When the department head returned in 1995, he announced his retirement effective June 30, 1996. While the Printing Technology and Printing Management programs had motivated and fresh faculty in place in the early 1990's, there was little coordination, leadership or support provided for a period of nearly 4 years.

Also starting in the late 1980's and still underway, the printing industry is going through the largest technical revolutions in its history. The ability to digitize information at a reasonable cost changed the industry from a custom manufacture and distribute business to a custom distribute and then custom manufacture business. While printing and publishing companies raced to totally change their manufacturing plants with new technology, educational facilities like Ferris struggled to keep pace. Student work stations sky rocketed, and the need for faculty development also increased. Given the instability of the institution, the college and the department, the task of keeping current with technology and making sound curricular decisions, not to mention funding equipment needs, were nearly impossible.

Today the Graphic Arts Department and the College of Technology have all of the reorganization, lack of focus and direction behind them. The Graphic Arts Department has been merged with the Design and Manufacturing Department to become the Design, Graphic Arts and Manufacturing Department. A dean has been named which has the support of both the faculty and administration. The department head of the Design, Graphic Arts, and Manufacturing Department has a proven track record of positive initiatives and direction. The day-to-day activities as well as the future planning of the PTEC and PMGT programs is done by a faculty coordinator. The faculty coordinator is appointed by both the peer faculty and the dean and serves a two year renewable term.

Because of the motivation of the faculty several very important developments were underway during the early 1990's despite the lack of administrative direction. This self discipline has allowed the printing programs to be very well positioned to continually improve the services offered to students and the printing industry. In just the last three years the PTEC and PMGT programs have been able to do some remarkable and very necessary things.

> *Through the efforts of faculty over a million dollars worth of equipment has been installed in the Swan labs by the printing industry. All of which was donated, consigned or leased by major printing industry suppliers.

*One new course has been developed by a faculty member with at least one additional course in the works. By keeping pace with the technology changes affecting our industry, our students will learn from these new courses how to utilize multi media technology in the printing industry.

*The Grand Rapids market is being surveyed for continuing education opportunities. Several key people and organizations such as the Michigan Jobs Commission and the Printing Industries of Michigan, and employers in the Grand Rapids area have asked us to offer courses in Grand Rapids.

*The PMGT program will be seeking Graphic Arts Technical Foundation Accreditation in the fall of 1997. Professor Bill Papo is serving on the national board of this new accreditation program. Ferris will be amongst the first programs in the US to be accredited.

*Ferris State University was selected as the site of the 1999 International Graphic Arts Education Association annual meeting. Associate Professor Bob Beaverson is coordinating this event which will draw over 200 educator from around the world.

The future holds many new challenges despite the positive momentum currently underway. The program has two main concerns. First, the rate at which technology is changing within the printing industry puts several pressures on both the Printing Technology and Printing Management programs as well as the institution. Not only is it difficult if not impossible to acquire computer technology on a donation basis, but keeping the faculty current in skills and trends from our industry is challenging without institutional support. Currently there is very little or no financial support for the maintenance of Macintosh computers or the addition of new Macintosh computers both in Big Rapids and Grand Rapids. The current College of Technology reorganization has provided greatly improved Mac technical support but has done little to increase funding for new equipment or new initiatives. Finances are needed to provide faculty development and new curriculum development. As the industry changes so should the courses being taught to the students. The faculty must remain experts in their changing fields. This requires a commitment to development. Secondly, enrollment needs to be increased. Everyone agrees that student tuition is the life blood of our University. More importantly, there have been over 200 companies which have requested Printing Management or Printing Technology graduates each year for the past 3 years. There were approximately only 50 students who graduated in each of the last three years. The printing industry which has given equipment and training might begin to question the value of their investment if there is not more students for them to hire. The initiative currently underway to convince students of the career opportunities available in the

printing industry and the rewards of attending Ferris must continue. Several strategies have been initiated to enhance the enrollment in PTEC and PMGT programs.

Lastly, the facilities of the Swan building are no longer adequate for technological instruction in the 21st century. As companies are approached to consign equipment for the use in our instructional labs, it must be readily accessible. The recent installation of a press cost nearly $25,000 compared to the average cost of only $5,000. The additional expense was due to the extra precautions and labor required to get the press into the room it needed to be in. The printing industry or any industry will not support these types of cost over runs for very long.

The resources required to address the major concerns are not out of reach for the institution. The successful history of Ferris State University has centered around our ability to serve the industrial employers' needs well. The employers are supporting our program financially and the institution must at a minimum match those gifts with support of the technical programs.

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Survey Results and Analysis

Survey Results

Results of the survey of graduates perceptions of the Printing Technology and Printing Management Programs (See Appendix A).

Tom Schumann at the College of Technology Technology Transfer Center administered the annual longitudinal study of Printing Technology and Printing Management alumni classes of 1988, 1991, and 1994. With the assistance of Dr. Fred Swartz, the results of this study were analyzed. The faculty of the printing programs designed a battery of questions to be asked of the printing graduates. The questions were designed to help the faculty identify areas which might be improved to further develop our curriculum. Over 200 alumni were sent the survey. Response was small with only 27 Printing Technology graduates and 19 Printing Management graduates responding.

Despite a low response, the findings showed an overwhelming level of support and positive feedback for both the printing programs. Out of 40 Printing Technology instructional areas only one was identified as inadequately covered and that was ink mixing and matching. Six areas, paper handling, press trouble shooting, estimating, densitometry, imposition, and perfect binding, were identified as moderately covered. The remaining areas were all reported as well covered. In the Printing Management program 4 out of 20 areas were reported as inadequately covered.

Those areas are computers in management, employee evaluations, ratio analysis, and seeking potential customers. All others were either reported as well covered or moderately covered.

The most significant data reported was the rate in which our graduates advance their careers. The mean starting salary for a 1988 graduate increased from the $18,000-$20,000 range to a current mean of the $30,000-$39,000 range. This represents a 95% increase in just 7 years. When the highest starting salary is compared to the highest current salary for the same period of time over a 300% increase is shown. The highest starting salary in 1988 was $21,000-$23,000 and the highest current salary reported was over $70,000.

The data presented from the College of Technology study shows that our programs provide a solid foundation of skill for our students to build their careers upon.

Results of the survey of Printing Industry's use of new and evolving technologies and the future direction of that technology (See Appendix B).

Over 2000 surveys were mailed to printing companies in the midwest. In December of 1995, 158 valid surveys were returned and the results were tabulated. The instrument was prepared by Professor Richard Harmsen and pilot tested by a panel of 30 industry professionals. Final results of the survey were analyzed by Dr. Fred Swartz of the FSU Assessment Office. Survey respondents were asked to respond to 15 Likert type statements about the current and new technology being used or considered for using the printing industry. While the response might be viewed upon as being low, it was determined that the names contained on the mailing list in most cases were not those individuals who were knowledgeable in the area of the survey.

Fifty percent of the respondents were utilizing the desktop publishing (Mac) platform for their digital imaging equipment as the primary tool while 22% had dedicated specialty high end CEPPS platform equipment. Even though a portion of the survey respondents used CEPPS platform equipment 84% of all respondents used utilized Mac equipment in their processes and only 10% use the DOS/Pentium platform.

Over 60% of the respondents considered knowledge and skills associated with color scanning and color separation as maximally important. Perhaps more importantly, 86% felt that skills associated with color correction were the most important skills students must have. Other skills identified as exceptionally important were trapping, file coverting, creating tints, and the knowledge of color theory and tone

reproduction principles. Considered generally important are the knowledge of typography and design skills, creating charts and graphs, monitor and scanner calibration.

The data compiled by this survey confirms the Graphic Arts Department is moving in the right direction. Equipment being used is right in line with that being used by the all segments of the printing industry. The software being used as instructional tool is the same as that being used in our industry. The curriculum is being changed to reflect the higher priority being placed on the technology of the digitization of information. Less emphasis is being placed on the craft skills of the printing industry.

Results of the Printing Programs alumni salary survey (See Appendix C).

The population for this study included 1,226 Ferris State University Printing program alumni who have kept in contact with the University through various alumni mailings. Associate Professor John Conati administered the survey in 1994. Dr. Fred Swartz assisted in the analysis of the data, 479 usable surveys were used for the analysis of this study.

Of the respondents 38% completed BS degrees in Printing Management and 35% AS degrees in Printing Technology, 11 % BS Career and Technical Education. Other relevant background data includes 81% of the respondents are employed in the printing industry, nearly 60% identified themselves as being in sales or management positions, 23% in manufacturing positions and 7% in teaching jobs. 80% of our alumni work in companies employing more than 20 employees.

The average salaries of our alumni are good. In comparison with other College of Technology programs, we are on the low scale for starting and alumni salaries. However, when compared to the University average our salaries are slightly above average.

Salary data is as shown in the charts on the following page.

Table 1
Salary Range

Salary Range	Frequency	Percentage
$10,000 to $14,999	7	1.6%
$15,000 to $19,999	29	6.5%
$20,000 to $24,999	36	8%
$25,000 to $29,999	57	12.7%
$30,000 to $34,999	56	12.5%
$35,000 to $39,999	54	12%
$40,000 to $44,999	52	11.6%
$45,000 to $49,999	30	6.7%
$50,000 to $54,999	50	11%
$55,000 to $59,999	21	4.7%
$60,000 to $64,999	13	2.9%
$65,000 to $69,999	10	2.3%
$70,000 to $74,999	7	1.6%
$75,000 to $79,999	7	1.6%
$80,000 to $84,999	2	.5%
$85,000 to $89,999	2	.5%
$90,000 to $94,999	1	.1%
$95,000 to $99,999	2	.5%
$100,000 to $104,999	5	1.1%
$110,000 to $114,999	5	1.1%
$120,000 to $124,999	1	.1%
$130,000 to $134,999	1	.1%
$150,000 to $154,999	1	.1%
$175,000 to $179,999	1	.1%
$200,000 to $204,999	1	.1%

Table 2
MEDIAN SALARY RANGE PER JOB TITLE

Job Title	Frequency	Median Salary Range
Teaching	33	$45,000 to $49,999
Sales/marketing	92	$45,000 to $49,999
Management	189	$35,000 to $39,999
Prepress	73	$30,000 to $34,999
Press/post press	40	$30,000 to $34,999
Other	52	$30,000 to $34,999

Table 3
MEDIAN SALARY RANGE PER YEARS OF EXPERIENCE IN THE PRINTING FIELD

Years of Experience	Frequency	Median Salary Range
1-3	109	$25,000 to $29,999
4-6	74	$30,000 to $34,999
7-9	76	$45,000 to $49,999
10-12	53	$45,000 to $49,999
13-15	43	$50,000 to $54,999
16-18	36	$50,000 to $54,999
19-21	22	$50,000 to $54,999
22-24	14	$50,000 to $54,999
25-27	17	$50,000 to $54,999
28-30	6	$55,000 to $59,999
31-33	9	$50,000 to $54,999
34-36	4	$30,000 to $34,999

Results of the Printing program advisory committee perceptions survey (See Appendix D).

Advisory board members were asked to complete a survey of their perceptions of the Printing Management and Printing Technology programs at our October 25, 1996 meeting. At the time of this writing not all responses have been returned. Associate Professor Bob Beaverson built a survey document to identify areas of strength and weaknesses within the Printing Technology and Printing Management programs.

"A dedicated group of instructors which are up to date in the technology, and provide a good program in the basic printing education, using the current equipment available in their labs" was identified as the strength of our program by an advisory board member. Other comments centered on suggestions of expansion into various different areas such as heat set web offset printing or gravure. These areas are not within the focus of our program and represent a small portion of the printing industry. At this time it should be noted that the advisory board is made up of individuals representing a very broad section of the industry. There is simply no way

we could teach all the specifics represented by all the areas of our boards interests. One important note made was that all respondents felt our facilities were in good shape and well maintained.

Several respondents felt that we should be offering courses in Detroit and Grand Rapids at least one night a week. This continues to support our feeling that expansion should take place. Course topics include Macintosh computer skills, management topics such as employee relations, planning, scheduling, and estimating and quality control.

Data gathered in this survey demonstrates our direction for the future is on course. Future plans to offer courses in Grand Rapids should be examined further. The labs need to be continually improved like they have been the last three years.

Analysis of the Printing Industry Labor Market (See Appendix E).

Associate Professor Dennis Smith compiled an analysis of printing industry labor market. His report summarizes wage and salary data from three existing survey

sources; the September 1996 Salary Survey of Occupations from the National Association of Colleges and Employers(NACE), the Ferris State University Wage and Salary Survey prepared by the Career Planning, and Placement Services Office, and a national survey of 1995-96 prepress wages conducted by Human Incentive and Resource Education Institute (HIRE) and published in the April 1996 issue of Pre magazine.

Bachelor degree wages for Graphic Arts show a national average of $23,969. These are starting salary figures as reported by NACE. The Ferris State University graduates with B.S. Degree in Printing Management are starting at an average of $23,746 as reported by the FSU placement office. This data shows that Ferris graduates are virtually starting at the national average salary range.

Most A.A.S graduates in Printing Technology enter into the printing industry as semi-skilled production workers. National surveys for those types of positions do not break the positions down into recent graduates but does show an equivalent of experienced journeymen level operators. Average production positions are the norm reported. National average hourly wages for prepress production workers as reported by HIRE were $11-17 per hour. Only four graduates reported their starting wages for unknown type of production work. The FSU Average was $8 per hour. While there is a substantial discrepancy between these two wage amounts they are not an accurate comparison.

Other data collected in this labor market analysis shows National Association of Printers and Lithographers (NAPL) studies of the size and future of the labor force of the printing industry. The Printing Industry now employees more than 536 million people making it the third largest manufacturing industry in the USA. An additional 35,000 to 50,000 new workers will be needed over the next few years to accommodate its future growth. Printing represents Michigan's eight largest employer.

The labor market analysis shows that the printing programs play an important role in support of the both the national and state economy.

Evaluation of facilities (See Appendix F).

Results of were compiled by Assistant Professor Ramon Robinson. At our most recent Advisory Board meeting held last October, board members were asked to complete a Lykert type questionnaire about the Printing Technology and Printing management labs facilities. Overall the facilities were judged to be very good.

The Advisory Board quickly recognized the need for more computers in the color lab. There currently are only seven work stations for a class of 15 students. Additional comments made were in regards to the software being used in the composition lab. It was identified that while Quark is being used it is not emphasized enough.

The majority of the 10 board members who filled out the survey strongly agreed with these statements: 1. The equipment in the labs is current and representative of the industry. 2. The equipment is well maintained. 3. The projects performed by the students in the lab are reflective of industry standards. 4. The labs provide adequate lighting, ventilation, heating, and other utilities. 5. The labs meet essential health and safety standards. All other statements were agreed to on average.

Printing Technology and Printing Management current student evaluations (See Appendix G) .

Each of the 131 students currently enrolled in a Printing Technology or Printing Management courses was surveyed to see what their current opinions are about the printing programs. The survey was developed and administered by Associate Professor Marshall Williams during Fall semester 1996.

Students were asked to rate Excellent, Very Good, Good, Average, Below Average, and Poor to fifteen statements concerning their education in the printing programs.

Questions 1-3 were designed to gain an understanding of the nature of the students preparedness for their career choice. Somewhat alarming, it was indicated that students rated their knowledge of career options and career guidance as only "Good". The remaining questions concerned the quality level of instruction given by printing faculty. These responses were all "Very Good" or "Excellent".

Printing programs faculty perceptions of the program and facilities (See appendix H).

Six of the nine faculty returned the survey to Associate Professor Don Santer, by the time of this writing. Somewhat surprising, despite the current mood on campus in relation to faculty perceptions and attitudes, the printing faculty all responded very positively towards the program. Only one faculty rated "Poor" the ability of students to have choices in specialization in either Printing Technology or Printing Management. An area where one would expect a "poor" rating, operating capital available for faculty to teach at the best of their abilities, the faculty unanimously rated "acceptable".

While times are tough, funding is tight, enrollment is down, faculty employment contract are unsettled, the mood of the faculty and staff within the printing area is positive. The faculty and staff realize they are here for the students and they do what ever it takes to do a quality job in educating and serving the student.

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PROGRAM PROFILE

Statement of Mission - Printing Technology

The mission of the Printing Technology program is to educate students in the spectrum of technical disciplines of the printing, publishing, and related industries through a broad foundation of technical and general education courses that will prepare today's graduates with highly competitive skills and knowledge to cope with the advancing technology with printing and publishing. The Printing Technology program is committed to providing quality curricula emphasizing practical, usable skills that prepare the graduate to be able to analyze, synthesize, problem-solve, and communicate in the printing and related industries, and also prepares them for advancement in their careers.

I.   Purpose of Program

   A.   Program goals

        1.   Provide students with the highest quality education so that they will be employable, advance within their field of study, and improve their educational options after graduation.

        2.   Maintain a complete printing technology laboratory related to commercial sheet and web-fed offset printing, digital imaging, and other state-of-the-art technology in the industry.

        3.   Develop a sense of professionalism within the student by encouraging professional student association activities within the student's chosen field of study.

4.	Promote applied research/development for business, industry and faculty development. Faculty and staff activities would include training, workshops, certification, writing, presentations at professional conferences and professional industry involvement.

5.	Continue to recruit highly qualified, experienced faculty and support faculty's technical growth and professional development.

Purposes

1.	Measure educational achievement prior to graduation through grade point average, appropriate general education assessment, advisory committee participation, and course evaluation.

2.	Measure educational, employment, advancement, and further education achievement after graduation through graduate follow-up surveys, employer surveys, and advisory committee input.

3.	Outreach activities will reflect the educational and training needs of the graphic arts industry in the metropolitan Grand Rapids/West Michigan area.

4.	Expand student, faculty, and industry involvement in student professional association activities.

5.	Encourage and support faculty professional growth and development and applied research/development activities such that each faculty member participates in some aspect of this area each academic year.

6.	Support faculty membership/participation in professional organizations related to their fields.

Statement of Mission - Printing Management Program

The mission of the Printing Management program is to educate students in the spectrum of management disciplines of the printing, publishing, and related industries through a broad-based foundation of technical, managerial and general education courses that will prepare today's graduates to cope with the advancing technology with printing and publishing. The Printing Management program is committed to providing quality curricula emphasizing practical, usable skills that prepare the graduate to be able to analyze, synthesize, problem-solve, and communicate in the printing and related industries, and also prepares them for advancement in their careers.

II.   Purpose of Program

B.   Program goals

1.   Provide students with the highest quality education so that they will be employable, advance within their field of study, and improve their educational options after graduation.

2.   Accommodate transfer, part-time, and nontraditional students in their pursuit of a degree in Printing Management.

3.   Provide experience and applications to support lecture/laboratory based instruction through interning and capstone courses in the Printing Management program.

4.   Develop a sense of professionalism within the student by encouraging professional student association activities within the student's chosen field of study.

5.   Promote applied research/development for business, industry, and faculty development. Such activities would include training, workshops, writing, presentations at professional conferences, and faculty and staff professional involvement.

6.   Continue to recruit highly qualified, experienced faculty and support faculty's technical growth and professional development.

Purposes

1. Measure educational achievement prior to graduation through grade point average, a senior level capstone course, appropriate general education assessment, advisory committee participation, and course evaluation.

2. Measure educational, employment, advancement, and further education achievement after graduation through graduate follow-up surveys, employer surveys, and advisory committee input.

3. Outreach activities will reflect the educational and training needs of the graphic arts industry in the metropolitan Grand Rapids/West Michigan area.

4. Work with the graphic arts industry to provide internship and co-operative employment experiences and place program students in these positions.

5. Expand student, faculty, and industry involvement in student professional association activities.

6. Encourage and support faculty professional growth and development and applied research/development activities such that each faculty member participates in some aspect of this area each academic year.

7. Support faculty membership/participation in professional organizations related to their fields.

C. **Program compatibility with role and mission of Ferris State University.**

The mission of Ferris State University is to graduate students in selected fields where there is sustained and significant career potential. In addition, students should be employable and capable of professional

growth and of making a contribution to their profession in a constantly changing society.

The Printing Technology and Printing Management programs at Ferris State University fulfill the mission of the institution perfectly. Not only are PTEC and PMGT students prepared academically with the skills required by the printing industry but they also bring an extensive background in the technical skills currently being used in the industry. Printing students whether a technology student or a management student are highly sought by printing, publishing, and supply companies because of the applied technical instruction given at Ferris. No other school in the mid west and very few nationally offer the type of instruction Ferris offers. Not only is practical hands-on instruction the most productive type of instruction applicable to the type of student Ferris State attracts, it is also the most beneficial to the employers of our graduates. Each of the last three years there have been over 200 companies advertise for our PTEC and PMGT graduates in the Placement Bulletin. Based on data collected in one of our alumni surveys (See Appendix C), over 80% of our nearly 3,000 alumni are currently employed in the printing industry.

Considering the printing industry is the US's third largest manufacturing industry and Michigan's seventh largest, and there is a high demand for graduates, the printing programs most definitely fulfill the mission of the institution.

D. **Program integration/coordination with other programs at FSU**

All of the 131 Printing students are enrolled in courses outside the PTEC and PMGT cores. Thirty percent of the courses required for graduation with an AAS degree in Printing Technology are provided by the college of Arts and Sciences. Nearly 65% of the courses required for graduation with a Bachelors Science degree in Printing Management are provided outside the printing programs. Twenty-five percent are taught in the College of Business and 40% are taught by the College of Arts and Sciences.

Some courses included in the PTEC and PMGT programs curriculum have been specifically designed and developed by faculty outside the

printing area. ARTH 311 History of Graphic Design is one course specifically for PTEC students. Faculty in the English department and the Communications department have spent time meeting with printing companies to develop their courses in ENGL 311 Advanced Technical Writing, and COMM 211 so that our students are equipped with the skills needed in those areas to add to their success.

Several students from outside the PTEC and PMGT program frequently take courses in printing to increase their skills. For example, students from the College of Business frequently take PTEC 153 and 253 Digital Page Layout to make themselves more marketable by having better visual presentations. Until the elimination of the Journalism and Technical Illustration programs, our faculty taught specific courses in photo-journalism and printing production techniques. Since the elimination of those programs, the printing faculty have begun to look at other opportunities to integrate our skills with the remaining campus.

In response from both the printing industry and research data provided by the Provost and Vice President of Academic Affairs Teshome Abebe, courses are being developed in the area of multi-media production. Winter of 97 will see the first offering of and experimental course in Digital Publishing. This course, while focusing on teaching students how to take digital files originally intended for print and using them for other communication modes, is also intended for non-printing students. We anticipate a large influx of non-printing majors taking our new PTEC 290 Digital Publishing course.

E.   **Program integration/coordination with programs at other institutions**

The Ferris State University Printing Technology and Printing Management programs are integrated and coordinated with other institutions in several ways. First, there are approved articulation agreements with 15 community colleges in the midwest. Each of these programs can ladder their two year Associates in Applied Science degree directly into our Bachelors of Science degree in Printing Management program. Secondly, over 80% of the high school printing teachers currently teaching in the 95 high schools or career technical

centers in Michigan are alumni of Ferris State University. The skills being taught by them are good prerequisites for the instruction provided by Ferris.

In addition to the involvement with other institutions discussed so far, each of the nine faculty in the printing programs annually proctor the S.O.C.T given at the MOISD Career Technical center, and at the Newaygo Skill center. Five of the faculty are on various advisory boards for high schools around the state. Associate Professor Robert Beaverson is active with the International Graphic Arts Education Association (IGAEA). The IGAEA is the professional association for printing teachers from the secondary and post secondary education level. The Ferris State University administration has approved the printing program's request to host the IGAEA annual conference in 1999. This conference will bring over 200 high school, college and university graphic arts instructors from all around the world to Big Rapids, Michigan.

F.   **Program service to needs and interests of the community, state, nation, and the world.**

The US Department of Labor recently ranked the $64 billion commercial printing industry the third largest manufacturing employer in the country See Appendix E). The rise of the industry during the past two years from fifth to third place, continues to reflect the industry's long-term viability and value as a growth employer. Printing industry employment has increased by 9.4% over the last eight years, to 536,100 outperforming other manufacturing industries according to the National Association of Printers and Lithographers (NAPL). Andrew D. Paparozzi, chief economist at the NAPL Economic Research Center, projects "by 2000 the printing industry will require 35,000 to 50,000 additional employees to accommodate its growth." One of the factors Paparozzi attributes the industry's growth is the industry's advanced awareness of business condition changes. Unlike most other manufacturing industries, commercial printing is a print to order, or custom manufacturing industry, which produces products that are not easily inventoried. The industry's move toward digitization has greatly affected customer's ability more closely target specific advertising markets causing an increase in print advertising.

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In Michigan printing ranks eighth with over 1,000 employers, 17,880 employee and an annual payroll of $423,287,000. Printing is our neighboring state Illinois' largest industry employing 46,882 people at 1,881 companies. The payroll is a staggering $1,334,754,000. In fact, the mid-west represents an area of high demand for printing with it ranking as the seventh largest industry in both Indiana and Ohio.

When this type of data is presented it becomes obvious there is a need for educational programs which provide students a foundation of knowledge and skills for careers in the printing industry. One of the fundamental purposes of the printing programs at Ferris is to provide a very dynamic industry, employees who can not only apply the skills they have learned but respond to change and manage that change.

Over 90% of the printing firms in the US employ less than 50 employees. While the industry is huge there are no huge players in the industry to influence rapid wide spread technological and managerial change. Ferris graduates are placed mostly in these small companies to manifest changes and bring about fresh ideas. The data which show over 200 companies actively recruit at Ferris suggests the printing programs at Ferris are making a significant contribution to the entire state, national, and international economy.

Resources of the Programs

A.   Personnel

    1.   Faculty

        Tenured:
        Robert Beaverson, Associate Professor
        A.A.S., Williamsport Community College
        B.S., M.S., Rochester Institute of Technology

        John B. Conati, Associate Professor
        A.A.S., North Dakota State College of Science
        B.S., Moorhead State University
        M.S., Ferris State University

H. Richard Harmsen, Associate Professor
B.S., State University of New York at Buffalo
M.S., Rochester Institute of Technology

William Papo, Professor
B.S., Ferris State University
M.S., Eastern Michigan University

Ramon C. Robinson, Assistant Professor
B.S., Ferris State University

Donald P. Santer, Associate Professor
B.S., M.S., Ferris State University

Dennis C. Smith, Associate Professor
B.S., University of Michigan
M.S., Eastern Michigan University

Marshall Williams, Associate Professor
B.S., East Texas State University
M.S., Ferris State University

Tenure-track:
Patrick Klarecki, Assistant Professor/Program Coordinator
B.S., Ferris State University
M.S., Ferris State University

2.   FTE overload

     NONE

3.   Off campus programs

     NONE

4.   Administration

     NONE

5. Support staff

Diana McConnell, Secretary II, Program faculty secretary

NOTE: remaining support staff is non-general funded. Funding provided through revenue generated by University Printing.

Sue Martin, Typesetter
Linda Wininger, Account Clerk II

6. Advisory board

Marlene Capatosa, Print Buyer
Herman Miller
Zeeland, MI

Joseph Corcoran, Dir. Mfg. Group
The F.P. Horak Company
Bay City, MI

John Doering, CFO
McKay Communication
Midland, MI

Phil Knight, VP Sales and Marketing
BookCrafters
Chelsea, MI

Jim Priebe, Executive Vice-President
Lithotone, Inc.
Elkhart, IN

John Raithel, Account Executive
Heidelberg U.S.A.
Taylor, MI

Bob Schuleit, Plant Manager
Printco
Greenville, MI

Tim Trinka - Production Manager
University Litho Printers
Ann Arbor, MI

Dale Van Houzen, Instructor
Traverse Bay Area Career Tech. Center
Traverse City, MI

Nick Wagner, General Manager
Printing Industries of Michigan
Southfield, MI

B.   Instructional resources

1.   Facilities and equipment available

a.   Johnson hall 101 and 102 lecture rooms equipped with overhead projectors

NOTE: These lecture rooms are no longer adequate. Thirty percent of the lectures being delivered by the faculty require multi-media equipment.

b.   Swan second floor annex laboratory

1.   Swan 218
* (3)   Power PC with additional memory and storage devices
* (2)   Mac Quadra with additional memory and storage devices
* (2)   Mac IIci with additional memory and storage devices
* (3)   Lino Hell Saphir flat bed scanners
* (1)   Sharp flat bed scanner
* (1)   Howtec rotary drum scanner (donated by Howtec)
* (1)   DS rotary drum scanner (donated by DS)
* (1)   Lino Hell images setter
* (1)   Xitron software rip system (donated by Xitron)

We currently heavily use media distributions Mobil MAC presentation system. The equipment listed above represents seven student work stations. We need to have 15 work stations in this are to reach full productivity.

2.   Swan 219
   * (15) Light tables
   * (3) Film and Plate exposure systems
   * (1) Plate processor
   * (2) Color proof processor (donated by 3m and Hoechst
          Celanese)

3.   Swan 220
   * (7) Stock PowerMac 6100
   * (8) Stock Mac IIci
   * (3) Laser printers
   * (1) Color laser printer
   * (1) X-rite Colorimeter (donated by X-Rite)
   * (1) X-Rite Spectrophotometer (donated by X-Rite)
   * (1) Exposure frame

4.   Swan 221
   * (1) Polar computerized hydraulic paper cutter
   * (1) Challenge hydraulic paper cutter
   * (1) Collator, stutter, three knife trimmer
   * (1) Saddle stitcher
   * (1) Perfect binder
   * (1) Stahl continuous feed combination buckle knife
          folder
   * (1) Buckle folder
   * (2) Heidelberg windmill die cutter/embossers
   *   Miscellaneous binding equipment

5.   Swan 222
   * (1) Pony sheetfed screen printing press
   * (1) Cameo semi-automatic screen printing press
   * (1) Manual four color screen printing press
   *   various pieces of screen printing equipment

6. Swan 223
    * (3) large horizontal photo mechanical cameras
    * (2) small vertical photo mechanical cameras
    * (1) Agfa film processor
    *   several pieces of dark room equipment

7. Swan 224
    * (1) Heidelberg MOVP-H 4 color sheeted press (semi donated by Heidelberg)
    * (3) Mid-sized single color sheetfed presses
    * (2) Duplicators
    * (2) Hand held X-Rite densitometers (donated by X-Rite)
    * (1) Scanning X-Rite densitometer (donated by X-Rite)

8. Swan 225
    * (1) Goss 4 station newspaper web press

9. Swan 226
    * (12) office cubicles
    * (12) Networked 486 computers

NOTE: Equipment listed as donated was identified as critical to instruction by faculty. The donations were solicited and arranged totally through the efforts of faculty. All equipment donated was done in the last three years.

2. Supplies and expense budget

	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
Budget (S&E)	$34,000	$40,000	$28,000	$27,024	$36,000	$36,000
Special Budget	$13,000			$ 9,588		
Computer Upgrade	$ 3,770				$53,000	
Carryover	$ 1,205	$ 8		$ 1		
Year End Adjustments	$ 455					
Total	$52,430	$40,008	$28,000	$36,613	$89,000	

3. Equipment acquisition budget

	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
Equipment	$60,000	$20,000	$24,017	$20,520.75	$26,121.45	$23,855

NOTE: These funds represents Karl Perkins money only. No other money is used or available for equipment or technology.

4. Gifts and grants

	FY 92	FY 93	FY 94	FY 95	FY 96
Gifts and Grants	$83,558	$76,480	$81,276	$41,836	$62,360

NOTE: These gifts and grants are mostly the cash value of in kind contributions of equipment and supplies very little cash is received.

5. Travel Budget

	FY 92	FY 93	FY 94	FY 95	FY 96
General Fund	$1,813	$ 79	$ 580	$ 930	$3,725
Non-General	$2,456	$885	$2,060	$ 783	$3,442
Total	$4,269	$964	$2,640	$1,713	$7,167

NOTE: The General Fund figures are included in the S&E budget information above. Most travel is paid for out of the development account and is for student recruiting and internship visitation.

6. Professional development

No real money is allocated for faculty training and development. For Fiscal Year 1995 the faculty of the Graphic Arts Department was able to secure three one thousand dollar scholarships from the Printing Industries of Michigan. On average $3,000 a year is spent from the S&E budget for development. Most faculty are providing their own development funding.

7. Library resources

Library resources have improved in the past. The library continues to add volumes as they are requested by faculty and while funding remains. In 1993, the Graphic Arts faculty each contributed $50 for a

total of $600 to purchase a complete set of Graphic Arts Technical Foundation books to be placed on the racks at the Timme Library. While students continually view the library as weak, there have been improvements made.

III.   Enrollment, Recruitment and Retention

A.   Enrollment trends for the last five years

1.   Student Credit hours/FTE

	FY 92	FY 93	FY 94	FY 95	FY 96
SCH/FTE (Fall, Wtr., Spr.)	N/A	N/A	215.36	278.4	229.97
SCH/FTE (Summer)	N/A	N/A	N/A	83.45	67.07

NOTE: Because of semester conversion, FY 92 and FY 93 data is not consistent with today's model therefore not reported. Also the drop in productivity for FY 96 is a result of the unplanned return of Dean Keys' returning of Bob Stechschulte to the department. Original FY 96 budget plans called for only 8 FTE because Pat Klarecki was to be the Acting Department Head and was not to be teaching.

2.   Majors

	1992	1993	1994	1995	1996
Freshmen	55	46	50	51	46
Sophomores	45	32	35	33	28
Juniors	28	35	28	20	28
Seniors	32	32	38	27	29
Total	160	145	151	131	131

	1992	1993	1994	1995	1996
PTEC Total	124	103	102	85	97
PMGT Total	36	42	49	46	34
	160	145	151	131	131

NOTE: In 1993-94 one faculty was given release time to actively recruit students. There was some growth in freshman for 94 and 95. In

95 no real recruiting took place due to budgetary constraints and teaching loads and previous administration directives.

3. Graduates

	1992	1993	1994	1995	1996
PTEC	50	54	36	30	n/a
PMGT	29	21	18	26	n/a
	79	75	54	56	n/a

4. Graduates employability (field, starting salary)

PTEC	1992	1993	1994	1995	1996
Placement	26%	21.9%	33.9%	n/a	n/a
Continuing Ed.	65%	69.5%	58.1%	n/a	n/a
Average Salary	n/a	n/a	n/a	n/a	n/a

NOTE: Due to the low number of responses to the placement office survey no salary data is available for the AAS Printing Technology Degree

PMGT	1992	1993	1994	1995	1996
Placement	83%	86.9%	92%	100% *	100% *
Average Salary	$21,622	$18,345	#20,153	$23,746	$25,125 **

NOTE: The above figures were provided by the Career Planning and Placement Office.

* All graduating seniors are required to have an exit interview with the program coordinator. If the student is not already employed constant, continual contact is made until all student's employment in the printing industry is verified.

Traditionally the response to the Career Planning and Placement Office survey has been very light. The program coordinator started the exit interview process for BS Degrees with the May 1995 grads. During the two years of exit interviewing the longest time spent looking for a job was 18 weeks.

** 1996 salary information was received during the exit interview conducted by the program coordinator.

5. Graduates promotability and advancement

Two instruments were used to gather data about promotability. The first instrument was the 1995 College of Technology Alumni Survey administered by Tom Shuman at the Applied Technology Center (See Appendix A). This report had little response with 19 Printing Management graduates and 27 Printing Technology graduates out of roughly 200 surveyed graduates. The second was a survey done by Associate Professor John Conati in 1994 (See appendix   ). In this study 450 responses were used to tabulate the results.

Both surveys suggest a very strong and rapid rate of advancement for Ferris Printing graduates. The College of Technology (COT) study looked at graduates from the class of 94, 91, and 88. (See Appendix A). The mean starting salary for a 1988 graduate increased from the $18,000-$20,000 range to a current mean of $30,000-$39,000. This shows an approximate 95% increase in salary in 7 years. Also an important note about this study is that the highest starting salary reported by the survey respondents class of 1988 was $21,000 to $23,000. Of the same respondents the highest current salary was reported to be over $70,000 this represents over a 300% increase in 7 years. While the sample was small, both the mean and high end salary growth data for this survey suggests very good career growth for Printing Management and Printing Technology graduates.

The second survey conducted by Associate Professor John Conati found Ferris State Printing Technology graduates earn more than the national average. Current earnings from our Associate Degree Printing Technology graduates ranged from $10,000 to $204,999 with the median salary range being $30,000 to $34,999. According to a 1994 study by the Hire Institute, the average salary for printing production workers was $24,378 making our graduates well above the national average. The results of this study also demonstrated the median salary range dramatically increased with additional years of experience. Survey respondents indicated a median salary range of $25,000 - $39,999 per year with 1-3 years experience while graduates with 31-33 years experience reported a median range of $55,000 to $59,999.

Without searching our entire alumni database of nearly 3,000 alumni, several active alumni with impressive career advancements come to mind. The following alumni are a small group that I am aware of who have succeeded quite well after graduating from Ferris State University:

Jim Priebe - Executive Vice President Lithotone, Elkhart, Indiana
John Doering - Chief Financial Officer, McKay Communications, Midland
Tom Rogers - President, Rogers Printing, Ravenna
Phil Knight - Vice President, BookCrafters, Chelsea
Jim Dornbos - President, Dornbos Printing, Saginaw
Tim Leto - Operations Manager, North American Color, Portage
Clark Reick - President, Paw Paw Press, Paw Paw

In addition to this small top of mind list there are hundreds of senior-level managers, supervisors, and administrative staff who are all happy and successful in the their chosen career in the printing industry. Also there are dozens of teachers who have graduated with our Printing Technology degree and a Bachelors degree in Career and Technical Education. Our alumni database is available for any type of sort requested.

6.   Program capacity

With current staffing, a quality level of instruction could be given to 130 students in the Printing Technology program and 80 students in the Printing Management program. The combined total for the two programs is 210 students. These numbers include the program coordinator teaching half a load and 4 faculty teaching 2 credits of overload as defined in the 1996 implemented contract. This slight overload would be necessary to offer our complete block schedule to all students.

Currently we can accommodate an additional 80 students. This, in and of itself demonstrates our need to recruit new quality students to our program. Any addition over 80 new students would require the addition of faculty.

B.   Recruitment

1.   Recruitment activities

Since both the Printing Technology and Printing Management programs inception there has not been a problem with enrollment until recently. Like most of the manufacturing businesses in America, managers at universities became complacent with full enrollment throughout the early 1980's and failed to recognize and respond to a down turn in enrollment numbers. The Graphic Arts Department was no different. No real recruiting strategy existed until

1993. With the exception of our High School Tour day, no recruiting activities were being done until the winter of 1993.

In winter of 1993 a faculty was given total release time to become Acting Departments Head. The priority was given to recruit new students. As a result of the plan outlined below, freshman enrollment increased nearly 10% in 1994 and again slightly in 1995. The increases were not sustained because in 1994 the faculty who developed and administered the plan was given a full teaching load and no administrative person saw the program through.

*High School Tour day - Each year in September over 250 high school students attend a technical symposium and tour of our lab facilities. Approximately 150 schools from the midwest are invited to attend. Both Admissions and Financial Aid officers gave presentations throughout the day.

*In-school recruiting - An objective of visiting 60 schools each year has been set. If the objective can be met, each school with a feeder printing program in it will be visited every other year. Because of the size of some high schools and community colleges, some schools are visited each year.

*The expense of this is split between the department and the program coordinator's willingness to contribute out of his pocket.

*A program-based database was established to track all prospects and accepts. This database is maintained by the program secretary and updated after each high school visit with the names and addresses of every student talked to. The information is shared with the Admissions office.

From the database a letter from the program coordinator is sent as new people are added. Each faculty is given a section of the alphabet monthly to make either phone contact or written contact. Contact is to be made to both program prospects and program admits.

Each year four different alumni are asked to write a letter to both the prospect and admitted student. These letters are sent on the alumni's business stationary from our office. The letters are timed so that about

every two months the prospective or accepted student receives encouragement to attend Ferris.

The program coordinator calls periodically every accepted student on the list to make sure they are still planning on attending.

C.   Retention

  1.   Student retention rates

       Student retention rates, first time in any college, full time students do not exist within the college of technology. It is very difficult to gather data on retention because we admit students at any point of the year and at any level.

  2.   Initiatives in place to retain PTEC and PMGT students

       The Printing faculty and staff have worked hard to retain students not only in our program but in our university. Several activities are listed to illustrate our involvement in retention.

       Every PTEC and PMGT course has a qualified tutor aligned with the tutoring center each semester for use by our students.

       The Graphic Arts Department worked with Terry Doyle to develop the UNIV 290 courses. Our department participated in the two-year test of effectiveness of those programs.

       All Printing faculty actively advise students. Most all students are encouraged to enroll in the structure learning sections when they are available.

       The Graphic Arts Association exists to allow students to become familiar with others in the program. At orientation it is suggested that membership is almost mandatory.

       The summer orientation program is designed to get all the printing students to come at the same time so that friendships can be developed prior to arriving on campus.

D. Cost

1. Ranked list of program teaching cost per student credit hours
    1994-95 data (teaching costs include fringes)

From the office of institutional studies report, out of 140 programs,
listed from most costly to least costly. The range was $876.64 - $58.80
teaching cost per hour.

Rank	Program	Cost
13	Printing Technology A.A.S	$ 195.04
46	Printing Management B.S.	$ 133.00

NOTE: The instructional courses taught in the PTEC program are very
lab intensive. On average the faculty teach 36 to 38 contact hours,
which according to the implemented contract is a full load or two
contacts of overload. The corresponding credit load averages 20 credits
per faculty with the contract showing 24 credits a full load. As long as
there are inconsistencies in the contractual loading obligations and the
way productivity is measured, there will always appear to be low
productivity.

2. Teaching cost per student credit hour by pooled course prefix and
    level ranked high to low 1994-95 data (teaching costs include
    fringes)

From the office of institutional studies report out of 106 pooled course
prefixes, listed from most to least costly. The range was $1,359.10 -
$11.31.

Rank	Program	Cost
30	PMGT	$139.93
36	PTEC	$133.24

IV. Effectiveness of the Program

A. Curriculum

1.   Graduate requirements

    a.   Printing Technology (AAS) Graduates are required to complete 65 credits with a 2.5 GPA in their major.

    b.   Printing Management (BS) Graduates are required to complete 130 credits with a 2.5 GPA in their major.

2.   Suggested semester-by-semester sequence of courses to be completed

The Printing Technology program is a two-year Associates Degree program that ladders to two different options, the Printing Management (BS) or the Career and Technical Education (BS) programs. Graduates of the Printing Technology program are required to complete the basic general education requirement package along with the program specific course requirements (See Appendix I).

The Printing Technology program provides a foundation of technical instruction in the complete printing and digital communications manufacturing process during the freshman year. During the sophomore year the student is allowed to build upon the base foundation by choosing four of nine advanced electives. These electives allow the student to either maintain a general technical track or choose a specific track for one area of the printing or digital process.

The Printing Management program combines a foundation of Printing Management specific courses with the Bachelors Degree required general education required courses and selected business courses. Like all courses selected in both Printing programs the course contents is heavily directed by our advisory board and continual surveys of our industry's employers. The Printing Management program is designed to give our graduates a strong base of operational skills. The courses selected from both the general education area and College of Business are giving our graduates the skills they need to be successful as evidenced by all our research data.

3.   Currency of the curriculum

Since the Graphic Arts Department made major revisions to the curriculum during semester conversion, the faculty concur the curriculum is generally current as organized adequately to meet current needs. However the faculty, and advisory board have been discussing the need to provide more exposure to the rapidly

changing technology in our area. Several options have been discussed and are currently being researched to achieve more instruction in various areas. One option is to launch a BS in Printing Technology. Another option being explored is to launch a program in digital and multi-media publishing. Currently we are preparing our survey instrument to assess the marketability of graduates.

All our surveys (See Appendix A,C,G) indicate employer, student, and graduates have extreme satisfaction with our programs. The faculty within our program recognize the dynamics of the world in which we live and do not want to stay static. It is the faculty's desire to stay on the cutting edge of technology and instruction so that our graduates can continue to realize the success they currently have grown to appreciate and expect. Current limitations on resources, (equipment, faculty, faculty development, and student enrollment) will make the implementation of new or revised programming difficult.

Despite a lack of funding and retraining of current faculty to cover three vacancies created by retirement, the faculty from the printing programs have done an excellent job of posturing our program for the future. We have been able to use our shortfall in enrollment to retool our program for the future. However, the concern of our faculty, and advisory board is that when our enrollment increases funding, and staffing will not. Current funding, while tight, and staffing are sufficient to provide a very high quality level of instruction to the number of students currently enrolled.

B.   Quality of the program

1.   Demonstrated quality of the programs

The quality of the printing programs at Ferris can be demonstrated in a number of ways. First, the fact that over 200 companies actively recruit our graduates each year and virtually all are placed with jobs, shows we have a quality program. Secondly, our industry has chosen in several instances to support our program with gifts of equipment over other institutions. While they support us they state that there are only three schools in which they support, Rochester Institute of Technology, Cal Poly Tech, and Ferris. Lastly, Ferris has been chosen to be the first accredited Printing Management program in the US by the Graphic Arts Technical Foundation (GATF). The GATF has been working on developing the criteria for accreditation for several years, 1997-98 they will begin the process and Ferris will be the first to attempt accreditation.

2.   Approaches to enhance quality instruction

All the traditional means of enhancing the quality of instruction are used by the
program. The majority of the program faculty regularly employ student satisfaction
surveys at the end of their courses. Faculty attendance at professional conferences
and seminars is regularly practiced above and beyond the reimbursement of the
institution. Last year every faculty member attended at least one seminar or
conference, while only a portion of the expense was reimbursed. Each faculty
regularly spends time with industry professional in their place of employment
learning the latest technology. Every course includes at least one field trip to a
company that displays the most current technology relevant to the course being
taught.

3.   How quality instruction is measured

The most obvious measure of quality instruction is the reputation of the program and
that of its graduates as previously outlined. Additionally all non-tenured faculty are
evaluated each semester. All faculty use student/faculty evaluations in their classes.
Each year the College of Technology administers a longitudinal survey of all
graduates. This survey data shows levels of satisfaction with the program.

4.   How the course contents are kept current

As previously stated the faculty do an excellent job of investing their own time in the
area of keeping current in new technology. While limited resources often make
employing that new technology in our labs difficult, they do everything possible to
bring their knowledge into their instruction, (i.e. field trips, guest lecturers from
equipment manufacturers, etc.). As for the official update of course contents, the
current system within the university is very cumbersome and not conducive to
change. Therefore, all course outlines and syllabi are very generic so that each
instructor has the ability to make rapid detail change without having the changes
becoming obsolete by the time they are approved. Recently several course names
and descriptions were changed to reflect the more modern terminology being used by
our industry. These minor changes took one year to approve.

5.   How the success of the graduates is gauged

The most comprehensive information in the area of graduate success has been
obtained by a number of surveys (see appendix   ) For several years the College of

Technology has administered a longitudinal study of our alumni and their salaries and perceptions of our programs. While this data is very useful, the Graphic Arts department administered our own study in 1994 to hopefully gain a better sampling. In addition to these official routine surveys of our alumni, there is an informal network of alumni and faculty who keep constant contact. Whether homecoming or our annual technical symposium, contact with alumni is regular and frequent.

C.   The strengths and weaknesses of the program

1.   Strengths

The strength of the Printing Technology and Printing Management programs are in the faculty, and staff skills, attitudes, and motivation. All the faculty in our program come to Ferris as seasoned experts from the printing industry, all of which maintain continual contact with their peers remaining in the industry. Our faculty have all earned advanced degrees, (Masters in Education) either while at Ferris or previous to employment. The faculty and staff are dedicated to the program and its students and alumni. This is supported by their unselfish willingness to spend their own resources on development, recruiting, and the students. The faculty have been instrumental in acquiring badly needed technology, and re-establishing our reputation as being the best program in the mid west for printing and printing management. Our graduates are sought by employers from around the country because they are prepared to hit the ground running.

2.   Weaknesses

The major area of concern is the lack of enrollment. It is realized that students are the life blood of any program. The Printing Technology and Printing Management programs are constantly being reminded by both the employers or our graduates and the administration of this institution that we need more students. Employers do not like to be told that there are four other employers actively recruiting the one graduate they want to hire. The administration of Ferris continually reminds us, through the use of productivity data, that our classes need more students. Our number one priority is to increase the enrollment of quality students in our programs.

The availability of technology also is a weakness of our program. If productivity is to increase we need to have additional work stations so that a higher number of students can be taught at one time. One computer lab has only seven workstations.

The five courses being taught with this lab have load caps of 15. Internally we are capping them at 10 because of the lack of equipment. Each year for the past three years we have spent our entire Karl Perkins budget on computer equipment for that lab. It is our understanding that 1996-97 is the last year for Perkins money. No plans have been announced for the replacement of those funds. We must have $20,000 to $30,000 equipment money each year.

V.   Actions taken and future prospects

A.   Assessment of action taken

1.   Measures taken to correct weaknesses and to emphasize the strengths of the program.

To correct our weakness in enrollment, total release time has been given to the program coordinator for winter semester 1997 so that he may recruit on a full time basis. Fall semester the coordinator had only a partial release making it difficult to travel far from campus without canceling classes. Additionally, the recruiting program as outlined in previous sections is being utilized 100%. We believe that one on one visits with perspective students is the only way to attract quality students to our program.

We have developed a five year strategic technology improvement plan for the printing programs. This plan is tied to our unit action plans. It is hoped that the funding required to maintain the integrity and quality of our programs will be provided (See Appendix J).

2.   Results in response to the measures executed

As previously indicated, the last time our recruiting strategy was 100% implemented we saw significant growth in enrollment. It is anticipated there will be a minimum of a 10% increase in freshman enrollment from last year.

We have been instructed by the Dean of the College of Technology and the Academic Vice President to put our budgetary requirement into unit action plans. Our unit action plans are good and our requests are realistic and accurate. The faculty of the printing programs are cautiously optimistic that funding for equipment will continue to come from somewhere in place of Karl Perkins.

B.   Future measures needed to enhance the program

The faculty in the Printing Technology and Printing Management programs fully believe they are in control of their own destiny. This notion is proven more true than false by the accomplishments made in the last three years despite all the external adversity going on in the Graphic Arts Department, the College of Technology and the University. Only some external factors which are not in the control of the faculty can affect the success of the programs. We must work to minimize these external factors and if possible eliminate them.

The purpose of program review is to examine each program to see if the program is providing a viable service to the tax payers of the State of Michigan. While it is true that the Printing Technology and Printing Management programs rank on the high side of average cost per credit hour produced, it is also true that without the printing program there would be 130 to 220 less students enrolled on our campus. It is pain stakingly obvious by the data collected over the years that the printing programs at Ferris produce highly successful productive citizens.

The faculty of the printing programs are not asking for huge sums of money, or more faculty. Our request is to be allowed to continue the development we have started and be provided the funding required to maintain the level of excellence our industry and community have grown to expect for our programs.

Appendix A

Beginning Annual Salary in first job after leaving FSU

Year of Graduation	< -12	12-14	15-17	18-20	21-23	24-26	27-29	30-39
			Salary Levels(thousands)					
88			1	1				1
91	1				1	1		
94		1						1

Count = 9

Current Annual Salary

Year of Graduation	< -12	12-14	15-17	18-20	21-23	24-26
			Salary Levels(thousands)			
88					1	
91		1				
94			1			

Year of Graduation	27-29	30-39	40-49	50-59	60-69	Over-70
			Salary Levels(thousands)			
88			1			
91		2	1			
94				1		

Count = 9

FERRIS STATE UNIVERSITY

questionnaire supplement - PRINTING TECHNOLOGY

The following questions relate directly to your specific area of study at Ferris. Please complete this section and return it with the main questionnaire. Thank you for participating in our survey.

What is your primary job function (check only one).

9 Printing Management (Those responsible for business management, production management, sales or financial management).

4 Prepress Composition (Includes text editing, pagination, desktop publishing, keyline, forms design, and paste-up).

0 Stripping and Platemaking (Those doing light table work, B & W and process color, making plates, auto masking/ imposing, gravure cylinders, contacting, proofing and plate developing).

1 Color Separation and Camera (Scanners, color and B & W proofing, color system operator and process color page makeup, process camera, horizontal and vertical and dot etching).

0 Sheetfed Offset Presswork (Press operators, including single and multicolor, duplicator and copy systems).

1 Web Presswork (Press operators and helpers, with and without dryers, newspaper, commercial, forms, gravure and flexographic).

0 Screen Printing (Press operators and screen makers, all substrates including textile).

0 Binding and Finishing (All types of mechanical, perfect, side and saddle including case bound cutters/lamination, embossing, stamping, and other auxiliary operations).

5 Other (Please specify)_____

In your opinion, how well were the following applications covered in your classroom? Select a number from the scale on the line to the left of the activity. Indicate **Does Not Apply** (4) if you did not take a class in a listed activity.

1 = Well Covered   **2 = Moderately Covered**   **3 = Inadequately Covered**   **4 = Does Not Apply**

Safety	Press Trouble Shooting	Platemaking	Multi Color Offset
Typesetting	Tone Reproduction	Step and Repeat	Imposition
Page Make-up	Color Separation	Ink Mixing/Matching	Cutter Operation
Desktop Publishing	Scanning	Estimating	Web Presswork
Paste Up	Dot Etching	Screen Printing	Quality Control
Paper Handling	Black & White Proofing	Screen Making	Press Maintenance
Layout and Design	Mechanical Binding	Duplicator Operation	Contacting
Line Camera	Black & White Stripping	Halftones	Perfect Binding
Folding	Process Stripping	Densitometry	Chokes and Spreads
Single Color Offset	Color Proofing	Embossing & Die Cutting	Saddle-Stitching

If you have any further comments, please turn this page over ➔

questionnaire supplement - PRINTING TECHNOLOGY

In your opinion, how well were the following applications covered in your classroom?

	Well Covered	Moderately Covered	Inadequately Covered	Does Not Apply
Safety	9	9	0	2
Typesetting	9	6	5	0
Page Makeup	14	4	2	0
Desktop Publishing	9	3	7	1
Paste Up	13	5	5	0
Paper Handling	5	10	3	2
Layout & Design	12	7	1	0
Line Camera	18	1	1	0
Folding	11	6	3	0
Single Color Offset	15	2	0	0
Press Trouble Shooting	5	12	3	0
Tone Reproduction	15	3	1	0
Color Separation	12	4	2	1
Scanning	9	4	2	2
Dot Etching	2	7	4	5
Black & White Proofing	10	8	2	7
Mechanical Binding	8	7	5	0
Black & White Stripping	16	4	0	0
Process Stripping	11	4	3	0
Color Proofing	12	7	2	0
Platemaking	13	6	1	0
Step and Repeat	10	7	2	0
Ink Mixing/Matching	8	2	10	0
Estimating	9	10	1	0
Screen Printing	16	4	0	0
Screen Making	13	7	0	0
Duplicator Operation	10	8	0	2
Halftones	17	2	1	0
Densitometry	10	10	0	0
Embossing & Die Cutting	2	9	4	4
Multi-Color Offset	5	9	3	4
Imposition	9	10	1	1
Cutter Operation	13	6	2	0
Web Presswork	9	1	1	10
Quality Control	8	9	4	1
Press Maintenance	11	6	4	0
Contacting	12	6	2	1
Perfect Binding	7	10	2	1
Chokes and Spreads	10	8	3	0
Saddle-Stitching	11	5	4	1

questionnaire supplement - PRINTING TECHNOLOGY

In your opinion, how well were the following applications covered in your classroom?

	Well Covered	Moderately Covered	Inadequately Covered	Does Not Apply
Safety	9	9	0	2
Typesetting	9	6	5	0
Page Makeup	14	4	2	0
Desktop Publishing	9	3	7	1
Paste Up	13	5	5	0
Paper Handling	5	10	3	2
Layout & Design	12	7	1	0
Line Camera	18	1	1	0
Folding	11	6	3	0
Single Color Offset	15	2	0	0
Press Trouble Shooting	5	12	3	0
Tone Reproduction	15	3	1	0
Color Separation	12	4	2	1
Scanning	9	4	2	2
Dot Etching	2	7	4	5
Black & White Proofing	10	8	2	7
Mechanical Binding	8	7	5	0
Black & White Stripping	16	4	0	0
Process Stripping	11	4	3	0
Color Proofing	12	7	2	0
Platemaking	13	6	1	0
Step and Repeat	10	7	2	0
Ink Mixing/Matching	8	2	10	0
Estimating	9	10	1	0
Screen Printing	16	4	0	0
Screen Making	13	7	0	0
Duplicator Operation	10	8	0	2
Halftones	17	2	1	0
Densitometry	10	10	0	0
Embossing & Die Cutting	2	9	4	4
Multi-Color Offset	5	9	3	4
Imposition	9	10	1	1
Cutter Operation	13	6	2	0
Web Presswork	9	1	1	10
Quality Control	8	9	4	1
Press Maintenance	11	6	4	0
Contacting	12	6	2	1
Perfect Binding	7	10	2	1
Chokes and Spreads	10	8	3	0
Saddle-Stitching	11	5	4	1

questionnaire supplement - **PRINTING TECHNOLOGY**

Comments:

(1) Ferris needs to realize there is more to screen printing than T-shirt and bumper stickers. FSU should be a member of SGIA., a Michigan Screen Printing Assoc.. Students should be provided opportunities to tour large printing facilities and attend trade shows and expose. Screenprint industry leaders like GM nameplate serigraph, vanity fair, logo. Shouldn't be ignored to donations of equipment materials. No major schools in the Midwest offer technology sound instruction in screenprinting. FSU should expand and become the first such school. Also incorporate more die cutting, embossing and laminating instruction. Maybe a die cut course? Or seminar.

(2) Ferris printing programs were great, but not sure if they were up-to-date with the technology of the time. I think that time should be spent on binding processes, mail processing and application, ink jet and chesire addressing, press and off-line coating shipping and distribution terminology. This is said not knowing what the current curriculum covers. I think it would be advantageous to both students and faculty if alumni could come into classrooms for Q and A to show the industry up and coming what the day to day is all about! I for one would be willing to volunteer my time and knowledge, because there's more to printing than ink-on-paper!

(3) More emphasis should be given to pre-press. After a student has some knowledge as to his course of study-internship should be mandatory.

(4) I think that FSU could offer more to its printing students by offering internships with well known printing companies. I mean somewhere like 15 to 20 different companies.

(5) My first job was in Quality Control. I was not prepared to do reports about the plants production.

(6) FSU provided me with good schooling, life-style and rounded me off as a person. I was very satisfied with my schooling. Great Program!!

College of Technology Alumni Survey   Printing Technology

Beginning Annual Salary in first job after leaving FSU

Year of Graduation	< -12	12-14	15-17	18-20	21-23	24-26	27-29	30-39
				Salary Levels(thousands)				
88		1	1	2	1			
91		1	1	6	3	1		
94	1					1		

Count = 19

Current Annual Salary

Year of Graduation	< -12	12-14	15-17	18-20	21-23	24-26
			Salary Levels(thousands)			
88			1			
91					2	4
94					1	1

Year of Graduation	27-29	30-39	40-49	50-59	60-69	Over-70
			Salary Levels(thousands)			
88	1	1		1		1
91		5	1			
94						

Count = 19

74

questionnaire supplement - PRINTING MANAGEMENT

The following questions relate directly to your specific area of study at Ferris. Please complete this section and return it with the main questionnaire. Thank you for participating in our survey.

What is your primary job function (check only one).

__2__ Business Management (Corporate official and/or principal business executives with primary responsibility for overall operations management or administrative management).

__2__ Production Management (Those responsible for supervision of others in preparation and production of printed products).

__2__ Production Operations (Those primarily involved in equipment operation used in preparation or production of printed products).

__7__ Sales (Those primarily engaged in selling of printed products or in the management of printing sales).

In your opinion, how well were the following applications covered in your classes? Please place an "X" in box which best describes your feelings.

	Well Covered	Moderately Covered	Inadequately Covered
Job estimating	❏ 9	❏ 3	❏ 1
Budgeted hourly cost	❏ 3	❏ 9	❏ 1
Customer relations	❏ 3	❏ 7	❏ 3
Job planning	❏ 8	❏ 5	❏ 0
Production scheduling	❏ 5	❏ 7	❏ 1
Computers in management	❏ 2	❏ 7	❏ 4
Marketing techniques	❏ 1	❏ 9	❏ 3
Inventory control	❏ 1	❏ 9	❏ 3
Employee needs/morale	❏ 3	❏ 7	❏ 3
Decision making	❏ 2	❏ 10	❏ 1
Employee evaluation	❏ 2	❏ 6	❏ 5
Job forecasting	❏ 2	❏ 9	❏ 2
Administrative record keeping	❏ 3	❏ 6	❏ 4
Systems of production flow	❏ 6	❏ 5	❏ 2
Ratio analysis	❏ 2	❏ 5	❏ 6
Seeking potential customers	❏ 1	❏ 3	❏ 9
Purchasing procedures	❏ 2	❏ 6	❏ 5
Safety requirements	❏ 5	❏ 8	❏ 0
Break even analysis	❏ 3	❏ 8	❏ 2
Job pricing	❏ 3	❏ 9	❏ 1

If you have any further comments, please turn this page over ➜

questionnaire supplement - **PRINTING MANAGEMENT**

Comments:

(1) In the near future I would like to see more sales classes required for a print management degree. The field I choose was sales and love it. Sales classes, the better your prepared the better you will do in the fast-paced sales world.

(2) I feel the feel the education I received at FSU was wonderful I'd recommend and have recommended Ferris to many. I would again choose Ferris and the printing management program without hesitation. I still associate and socialize with many of my peers I met at Ferris.

(3) The printing program at Ferris is very good and educational. It is to bad that they can not keep up with some of the major advancements in technology because of financial reasons, however I learned a great deal and it has helped me tremendously in my career.

(4) Ferris produced a good foundation of knowledge to build on. The graphic arts industry is rapidly changing and Ferris needs to keep up to date order to keep their graduates competitive in this changing market.

(5) More emphasis should be placed on press knowledge. A internship should be mandatory so a student may see why two plus two = four.

Appendix B

SUMMARY OF 1994-95 DTP INDUSTRY SURVEY/STUDY

In the early months of 1995 the Ferris State University Graphic Arts Department conducted an industry survey focussing on the utilization of Desktop hardware and software within the Printing Industry. The purpose of the survey was twofold. Its first priority was to validate the current Mac based prepress curriculum, as well as to provide current information to assist the Department in further refining its curriculum. Secondly, the survey provided information pertinent to future planning, equipment and software selection, and faculty development.

Approximately two thousand surveys were distributed using Printing alumni and Printing Industry lists from Michigan, Illinois, Indiana, Ohio and Western New York. The one hundred and fifty six (156) valid responses represented a seven and eight tenths percent (7.8%) return rate. The survey itself was valid only for individuals and companies directly involved in desktop production, while those not involved were asked to disregard the survey. This accounts for what could otherwise be considered a relatively low response rate.

DEMOGRAPHICS:

Forty percent (40%) of respondents represented the States of Illinois and Indiana, while thirty seven percent (37%) came from Michigan, seven percent (7%) from Ohio, and sixteen percent (16%) from many other locations as far away as Alaska and Australia.

Fifty nine percent (59%) of respondents worked within Commercial printing establishments, while eighteen percent (18%) were from Color Separation Tradeshops, five percent (5%) from In-Plants, and four percent (4%) from Service Bureaus. Approximately fifteen percent (15%) came from a wide variety of specialty and market niche printers. It can be generalized that the results are most applicable to the commercial printing industry.

Regarding size of responding companies, there was a relatively even distribution of responses of from 15% to 20% in all of six categories from as little as 5-10 employees, up to over 200 employees. It can be confidently stated that the survey is representative of the industry in this respect.

In terms of gross sales volume, there was also a relatively balanced response from companies with sales from $200,000 to over $25 million annually, and at five

levels of income between these.

In terms of job function and position within companies, nearly half (49%) categorized themselves as executives, while 19% considered themselves middle managers or supervisors, and 12% were operators and technicians. The remainder represented customer service, sales, marketing and other job functions.

DESKTOP PLATFORM USAGE:

Fifty percent (50%) of respondents were utilizing the desktop platform, while 22% had high end CEPPS and some form of hybrid or combination of high and low end. Of those using desktop technologies, eighty four percent (84%) utilized some type of Mac/RISC as their primary platform, while ten percent (10%) used the DOS/Pentium platform.

It is interesting to note that in the several months since this survey was conducted, there is a slight movement toward DOS/Pentium based platforms, presumably a result of many factors, though not necessarily in this order, including such things as: 1) the decentralization of Mac/RISC machines, 2) the unveiling of Windows '95, 3) the availability of Photoshop and QuarkXpress for Pentium/Intel platform, 4) and the general dominance of non-Mac operating systems outside of the graphic arts industry. The new RISC based 8500 and 9500 series using the PCI card have already significantly altered the picture since the first quarter of 1995, and must also be factored in, as they appear to be the new machines of choice.[1]

QUALITY NICHE:

There was an even split of approximately forty five percent (45%) of respondents classifying their color quality level as "top of the line," forty five percent (45%) as good to high quality, and ten percent (10%) considered their color production capability as "pleasing" or "good enough."

It is felt that these numbers may be suspect. That is to say, if this category (ie. Color quality) was judged by a relatively objective panel of experts (rather than by self rating of printers/trade shops/etc.), there would probably be a shift in these numbers toward the lower end of the quality scale. This thinking is partly justified, we feel, for a number of reasons. For instance, the fact that some printers are not directly experienced in the production of the highest end of the color market could

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[1] For example, as per "Crossing the Digital Divide" RIT/NAPL conference, Chicago, IL, Nov. 9-10, 1995.

contribute to less than accurate responses. The natural human tendency to overlook the shortcomings of ones own work is also not an unlikely possibility, and one that could skew the results. But the biggest reason for caution is probably the unavoidable ambiguity and lack of definition of the categories themselves, which is an inherent unavoidable problem associated with surveys such as this, and which understandably leads respondents to over-rate rather than to under-rate their products. The inherent uncertainty (the inclusion of samples being unrealistic) combined with the natural inclination to avoid putting oneself down, or to potentially damage the reputation of their business, could logically lead to erring in the other direction. It is not, therefore, unreasonable to assume that some respondents may have placed themselves in a higher category than would a neutral party.

PROGRAMS OF CHOICE:

It could be considered significant that eighty one percent (81%) of respondents used QuarkXpress as their primary page layout and typesetting program, as opposed to fifteen percent (15%) citing Pagemaker as their program of choice. However, because of Adobe's recent buyout of Aldus, and because Quark has not–generally–been considered particularly responsive or flexible to customers changing needs, these numbers may not be a reliable predictor of future preference. Only time will tell.

Photoshop is the software of choice for scanning, color correction, and color editing, with over ninety percent (90%) according to the survey. Illustrator was the drawing/illustration program of preference by seventy three percent (73%) of those surveyed, as opposed to nineteen percent (19%) who preferred Freehand.

Other software gaining importance are application programs dedicated to trapping and imposition. FSU has chosen "Trapwise" and "Impostrip," though these are not directly dealt with in the survey.

The survey did not consider the growing use of vender software such as LinoColor, and other such programs which are competing in significant ways with Adobe Photoshop for instance. And as in the above case, much has happened in the several months since the survey was conducted.

IMPORTANCE OF SPECIFIC KNOWLEDGE AND SKILL AREAS:

The survey asked respondents to give their opinions on the importance of a

number of functions, skills and knowledge associated with electronic color reproduction. Many of the responses are no doubt a function of the level of involvement in the technology, and the type of business which each company is most concerned with. In most cases we can only guess at the underlying causes. However, the following findings seem to be self evident.

As might be expected, over sixty percent (60%) of respondents considered knowledge and skills associated with color scanning and color separation as maximally important. The mean (arithmetic average) score was 4.2 where 1 is "not important" and 5 is "very important." It is interesting that thirteen percent (13%) considered color separation as unimportant, giving it the lowest rating. Our guess is that these individuals either do not print scanned color, or go outside their companies for separations using OPI strategies, or some gateway such as Scitex VIP. Black and white scanning and line art is also rated very high, but lower than color separation.

Knowledge and skills associated with the various color correction tools were given mean scores of between 3.5 and 4.0. Notably high is the rating given to the cloning (ie. Rubber stamp in Photoshop) tool in its application of cleaning up and making editorial changes to scanned images. Eighty six percent (86%) rated it very important, with a mean score of 4.4, (again on a scale of 1 to 5).

Other categories of knowledge/skill considered exceptionally important (ie. very high mean scores), were trapping, importing and converting files, creating tints and blends, knowledge of color theory and tone reproduction principles, knowledge of industry standards (for example SWOP,SNAP, and electronic file transfer standards), and knowledge of imagesetter calibration principles and practices. Several respondents emphasized the importance of trapping in their comments, noting for example that "most designers screw up" here, and that most "desktop publishing software is not adequate [for their needs]."

Considered generally important (with mean scores between 3.2 and 4.0) are knowledge of typographic principles, drawing and pen skills, paint skills, type design skills, expertise in creating charts and graphs (this is of course critical for some companies), monitor calibration know how, understanding of scanner calibration, imposition software knowledge, knowledge of PostScript, and familiarity with various other tools. Knowledge of special effects filters was rated relatively low with a mean score of 3.0.

The weakness and variability of soft proofing (ie. proofing via video monitor)

might seem inconsistent with the relatively low priority given to it by respondents, but this can perhaps be explained by the fact that within the industry this weakness is nearly universally compensated for by operator knowhow respecting CMYK dot percentage requirements for various hue, saturation and value requirements, or tone and color circumstances, as well as imagesetter liniarization and other color management practices. In other words, there is no replacement for knowledge of color reproduction, and simple visual adaptation without that knowledge is not adequate for quality printed results according to the survey. In fact, it has been noted that unskilled operators who rely too heavily on screen appearance get consistently poor results. Also some of the electronic tools, such as various "brightness" tools, must be used with great care so as not to sacrifice the integrity of the images tone reproduction. The saying that has it that "less is more" is correctly applied to electronic color correction.

This being said, it should perhaps be noted that developments within the past year, such as the sophisticated robotics type software available with the relatively low priced midrange Linotype Topaz scanner, may be an exception, and an industry trend. Reports independent of the survey suggest that, contrary to conventional wisdom and to the horror of most of us, very little knowledge of conventional color separation and printing may be required to produce a very consistent and high level of productivity and color quality on such systems.

PROFESSIONAL RECOMMENDATIONS FOR EDUCATORS:

Other noteworthy comments from respondents not entirely covered or duplicated in the survey items mentioned above follow. Please note that these sound bites are in response to our request to know their opinion about what respondents feel is important for entry level graduates to know, and are in no particular order:[2]

Knowledge of Stochastic, hi-fi color, and waterless litho; knowledge of various measuring systems and conversions, algebra, and strong written and verbal communication skills; knowledge of when and where in electronic process it is best to enlarge and rotate images and or picture boxes; patience, humility, ability to work unsupervised, open mindedness, and loyalty to group are important qualities;

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[2] The following comments appear to be supportable generally, or for the most part by sources outside the survey. For instance, by numerous recent journal articles, as well as the above cited NAPL conference, not to mention personal experience of Ferris faculty through professional associations and plant visitations.

importance of keeping up with journals and changes in technology and software; ability to read keylines; Knowledge of efficient page construction, when to and when not to group items, and how to most efficiently layout a page; the more a person understands the whole process, the more valuable and flexible they will be; operators must be able to color correct using densities and dot percentages--not screen appearances; knowing as many ins and outs, backs and forwards to as many programs as possible; It can only benefit them for future use and reference; knowing how to use utilities, general hard disk maintenance, and organization of computer desktop; need ability to improvise, to find more than one solution to a problem; knowledge of CD-ROM, Internet, and digital printing; ability to identify common type faces; the ability to correct, touch up, or otherwise enhance or improve poor photos; trouble shooting ability and knowledgeable about efficient use of memory and software; File keeping and archival skills; "most artists can't find their pencils, much less keep good coherent files and records. backup, archival, and database management skills are essential;" understanding register, trapping requirements, and strategies to avoid ghosting, and be able to design to avoid pitfalls; and, understanding SCSI devices and their connection and proper set-up, cabling, and identification.

CONCLUSION:

The 1995 prepress utilization survey has essentially confirmed the direction of change already in motion within the FSU Printing curriculum, providing some specific indicators as to where priorities should lie. For instance, additional investment apparently needs to be made (based on the opinion of industry professionals) into providing students with opportunities to become more familiar with, and more proficient in managing the process of technology change itself, as well as productivity issues. There is also a growing need to include emerging areas such as direct to plate and non-impact printing technologies, and information management and internet related issues.

Surveys such as this help education more accurately adjust to industry changes, but it takes a consistent and prolonged effort to stay viable in a time of such rapid change. Based on our recent surveys [there have been several in recent years], the FSU graphic arts department (generally) feels that it is holding its own, provided of course such efforts don't let down or relax. This maxim seems to be equally applicable to everyone, whether they work within service or manufacturing

oriented organizations.

The Graphic Arts Department at Ferris recently moved to the 8100 Power Mac platform and a Pentium based RIP provided by Xitron for its color curriculum, along with the addition of several low end Linotronic-Hell flatbed and Howtech rotary drum scanners. Other prepress classes still utilize non-RISC Macs. A new four unit Heidelburg MO sheetfed press installed in the Graphic Arts Department in 1994 makes it possible for students to quickly take their electronic pages to press. This, along with an X-Rite scanning densitometer and other tools provides direct and quick feedback to the color electronic prepress lab where MatchPrint and digital color proofing, film imagesetting, and other system devices can be synchronized, and introduced to students in a more effective and integrated way.

Like other service industries, education has increasingly been called to account and to respond to rapidly changing needs. But just as in industry, there appears to be a need to change in a balanced and systematic way. Reactionary responses to current pressures to change rapidly represent no less a danger than does reacting too slowly, and much of the conventional curriculum still can be justified in any new curriculum. It should probably not be forgotten in the midst of all the hype that most universities are consistently providing viable services to students and industry. Finding and keeping the balance in the rate of change seems to be one of the biggest challenges. In other words, both industrialists and educators evidently need to avoid prematurely caving in to hype that could inadvertently prompt them to throw out the baby with the wash. On the other hand, if we (meaning all of us in education and industry) don't keep moving–and rapidly–we may not see the twenty first century from within the organizations with which we are currently associated. In other words, either they won't exist because they didn't keep up, or we simply won't be a part of them because we didn't keep up.

ELECTRONIC DESKTOP COLOR PUBLISHING SOFTWARE
PRINTING INDUSTRY UTILIZATION SURVEY

PART ONE

1. Company

    a. please circle the description(s) which most accurately describes your company:

        1) commercial printer   2) color separation trade shop   3) service bureau

        4) book printer   5) forms printer   6) label printer

        7) non-heatset advertising printer   8) in-plant

        8) specialty printer (describe) _____

    b. circle the number of employees which most closely represents the size of your company:

        1) 5-10   2) 11-25   3) 26-50

        4) 51-100   5) 101-200   6) over 200

    c. circle the company's gross annual sales income which most closely matches your company's performance:

        1) less than $100,000   2) $1-200,000   3) $2-500,000

        4) $500,000-$1mil   5) $1-2mil   6) $2-5mil

        7) $6-10mil   8) $11-25mil   9) over $25mil

2. Position/Job function (circle the category which is **closest** to the type of job you do)

    1) executive (ie. general manager, vice president, president, director, etc.)

    2) middle management - manufacturing   3) customer service

    4) technician/ operator - manufacturing   5) sales/marketing

    6) dept. supervision - manufacturing   7) technical representative

    8) other _____

3. Electronic prepress is often described in terms of "platforms." How would you describe your company's electronic prepress operation? (circle the closest description[s])

    1) high end rotary drum (PMT) scanners and CEPPS (ie. high end Scitex, Hell, Crosfield, Screen, etc.)

    2) midrange platform (ie. Unix or comparable operating systems, and hardware specs between high and low ends)

    3) desktop color publishing (ie. Mac or DOS based with desktop scanning - including Power Mac and Pentium)

    4) Hybrid (ie. integration of two or more of the above platforms)

    5) other? please describe _____

*4. **If you utilize the desktop platform** (c or d above in #3), circle the appropriate designations/specifications, listing only your most powerful desktop workstation **(most preferred)**.*

    1) Apple Macintosh operating systems   2) Apple Power Mac operating systems

    3) DOS or IBM type operating systems   4) Pentium operating systems

    5) other _____

*5. Please write your desktop equipment specifications below (or those you are aware of), listing only your most powerful or advanced **desktop** workstation **(most preferred)**.*

    1) CPU model _____   2) CPU clock speed _____

    3) monitor size _____   4) MB of RAM _____

    5) MB of hard drive _____   6) accelerators? _____

    7) peripheral storage device(s) _____

    _____

8) scanner(s)/ model name and description_____

9) imagesetter(s) model and RIP _____

_____

10) composite color printer(s), model and description_____

_____

11) other vital desktop equipment (please list _____

_____

6. *If you are a commercial printer, or serve that industry, which category of color would best describe the work you do and the markets you serve most of the time?* (circle only one)

1) top of the line commercial (critical match of color)

2) mid-range commercial (good to excellent/relative match)

3) lower end commercial and short run markets (including quick printing, pleasing, good enough, to good color)

4) other _____

7. *Which application software do you use the most on the desktop platform for color work?* **(check only one)**

a. page make-up	Most used	Second most used
1) Quark XPress	____	____
2) Aldus Pagemaker	____	____
3) other _____	____	____
b. color separation/correction/editing		
1) Adobe Photoshop	____	____
2) Color Studio	____	____
3) other _____	____	____
c. illustration/design/art creation:		
1) Adobe Illustrator	____	____
2) Free Hand	____	____
3) Correl Draw	____	____
4) others _____	____	____

(Please make any additional comments related to part one on separate sheet)

PART TWO

(This section is extremely important as it can help us better correlate the curriculum to industry needs)

8 *Please rate the importance of the applications (tools and skills) or functions which are used on an on-going basis in your company's prepress operations:* (circle #'s that apply)

8a. *scanning/color separation/color correction software* **(ie.Photoshop or equivalent)**

(1=not important while 5=very important)	not important				very important
SCANNING					
1) scanning color photographs	1	2	3	4	5
2) scanning B&W photographs	1	2	3	4	5

8a. scanning/color sep/color correction software cont . . .

	not important				very important
3) scanning colored or black and white line art	1	2	3	4	5
4) scanning colored original artwork or illustrations	1	2	3	4	5
5) scanner calibration software know how	1	2	3	4	5

COLOR CORRECTION

5) global color corrections using TR curves	1	2	3	4	5
6) local color corrections using tool TR curves	1	2	3	4	5
7) global color correction using histogram/slider tool	1	2	3	4	5
8) local color correction using histogram/slider tool	1	2	3	4	5
9) color enhancement using saturation tool	1	2	3	4	5
10) cleaning up images using cloning tool (or related tools) (ie. scratches, unwanted details, tears, dirt, etc.)	1	2	3	4	5
12) cleaning up images using smudge and blur (and related) tools (ie. scratches, dirt, etc.)	1	2	3	4	5

MISC.

13) using special effects and filters (please list most commonly used effects:	1	2	3	4	5

_____

14) using sharpening or USM tools (please list most commonly used tools:	1	2	3	4	5

_____

15) other _____

16) **(IMPORTANT)** PLEASE list additional functions/applications related to this type of software program that you consider as the MOST ESSENTIAL SKILLS for an entry level college graduate(use separate sheet if needed):

8. Rating importance continued . . .

8b. page make-up application programs
(ie. Quark, Pagemaker, etc.)

	not important				very important
1) trapping applications	1	2	3	4	5
2) importing and converting various text/image files	1	2	3	4	5
4) creating new spot or process (fake or synthetic) colors for type, backgrounds or borders	1	2	3	4	5
5) how important is it to know how to create tints and blends	1	2	3	4	5
5) typesetting	1	2	3	4	5
6) processing color separations	1	2	3	4	5
7) other _____	1	2	3	4	5

8) **(IMPORTANT)** PLEASE list any additional functions/applications related to this type of software pro gram that you consider as the MOST ESSENTIAL SKILLS for an entry level college graduate:

8. Rating importance continued . . .

8c. illustration/design/art creation application programs **(ie. Illustrator, Freehand, etc.)**

	not important				very important
1) trapping applications	1	2	3	4	5

8. Rating importance continued . . .

8c. illustration/design programs continued . . .

	not important				very important
2) drawing/pen functions	1	2	3	4	5
3) painting functions	1	2	3	4	5
4) type design	1	2	3	4	5
5) creation of graphs and charts	1	2	3	4	5
6) other _____	1	2	3	4	5

7) **(IMPORTANT)** PLEASE list additional functions/applications related to this type of software program that you consider as the MOST ESSENTIAL SKILLS for an entry level college graduate:

PART THREE

CIRCLE THE NUMBER WHICH BEST DESCRIBES YOUR VIEW:
(in terms of importance/desireability for an entry level printing grad)

	not important				Very important
9. How important is color calibration of the workstation monitor?	1	2	3	4	5
10. How important is calibration software for the flatbed scanner	1	2	3	4	5
11. How important is calibration of the imagesetter density and dot area functions?	1	2	3	4	5
12. How important is it to monitor rapid access film processing?	1	2	3	4	5
13. How important is knowledge of imposition software? (for comments use separate sheet)	1	2	3	4	5
14. How important is knowledge of color theory?	1	2	3	4	5
15. How important is a working knowledge of industry standards for electronic image transfer?	1	2	3	4	5
16. How important is a knowledge of postscript and computer programming?	1	2	3	4	5
17. How important is knowledge of tone reproduction principles and printing characteristics for workstation operators?	1	2	3	4	5

18. Please list any additional electronic color publishing hardware skills or knowledge you feel would be impor-tant for a entry level college graduate majoring in Graphic Arts to possess (use separate sheet if needed)

19. Please print your name, company address and work phone below if you would be willing to be contacted for any follow-up clarification. The survey information is entirely confidential except as it is expressed in the general findings. Your willingness to be involved further will be helpful and appreciated.

NAME _____ WORK PHONE _____

COMPANY NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

Thank you very much for your participation!
Ferris state University and the faculty and students of the Graphic Arts Dept.
are very grateful for your help and wish you a wonderful holiday!

Printing Technology; Printing Management

APRC 1996-1997

Section 2 of 2

Appendix C

Conclusions Based on Findings

These findings indicate that graduates of the Printing Programs at Ferris State University earn salaries that range from $10,000 to $204,999. The median salary range for Ferris State University graduates with an Associate of Applied Science degree in Printing Technology was $30,000 to $34,999. These salaries tend to be much higher than the national average for production employees in the printing industry. According to a 1994 salary survey by the Hire Institute, the average salary for production employees in the printing industry was $24,378. The subjects responding to this study with an Associate of Applied Science degree in Printing Technology fell within a median salary range of $30,000 to $34,999 which was much higher salary than reported by the national study performed by the Hire Institute. Although the purpose of the Associate of press, only possessed an Associate of Applied Science degree.

The results of this study also showed that the graduate's salaries increased as they gained more experience in the field of printing. The median salary range for graduates with 1-3 years of experience was $25,000 to $39,999 per year. This range gradually increased to its peak at $55,000 to $59,999 for graduates with 31-33 years of experience.

There was a significant difference between the salaries of the male and female respondents of this survey. The average median salary range for males was $40,000 to $45,000. Whereas, the average median salary for females was $35,000 to $40,000. This reflects a $5,000 difference in salaries between male and female respondents. However, it is not unusual for males to earn more money than females in the printing industry. According to a study published by

American Printer called "Tracking Women's Progress", women within the printing industry are making 21% less than their male colleagues. This American Printer article supports the facts found in this study that men within the printing industry tend to make more than women that possess the same job titles (American Printer, 1991).

In regards to benefits, the findings for this study also indicate that the larger the size of the company, the more likely it is that the company will provide health benefits. This study indicated that 100 percent of the subjects in large companies had some form of medical benefits, whereas, 97.5 percent in medium size companies and 75.4 percent in small companies had medical benefits. Other research conducted by Peterson (1990) also supports this trend. In American Printer, Peterson reported that 73% of companies with over 200 employees had health coverage for all workers (Peterson, 1990). Therefore, Ferris State University graduates who gained employment in large companies fared better than the subjects in Peterson's study.

Ferris State University Printing Program
Graduate Survey

Directions: Please respond to the following items by placing a check mark in the space provided in front of the response that best describes your employment situation. Please check only one response for each item.

1. What is the highest degree that you earned at Ferris State University?
   ____ Certificate   ____ AAS Printing Technology ____ BS Printing Management
   (1)   (2)   (3)
   ____ Other (list) _____
   (4)

2. Have you earned a degree from another educational institution, if so what level?
   ____ None   ____ BS Education   ____ MS Education
   (1)   (3)   (5)
   ____ BS Graphic Arts ____ MS Graphic Arts   ____ Other (list)_____
   (2)   (4)   (6)

3. Are you employed in a Graphic Arts related field?
   ____ Yes   ____ No
   (1)   (2)

4. Please check one of the following:
   ____ Male   ____ Female
   (1)   (2)

5. What is your employment status?
   ____ Full Time (over 40 hours per week)   ____ Part Time (under 40 hours per week)
   (1)   (2)

6. What is your salary range?
   ____ $10,000 - $14,999   ____ $25,000 - 29,999   ____ $40,000 - $44,999
   (1)   (4)   (7)
   ____ $15,000 - $19,999   ____ $30,000 - 34,999   ____ $45,000 - $49,999
   (2)   (5)   (8)
   ____ $20,000 - $24,999   ____ $35,000 - 39,999   ____ $50,000 - $54,999
   (3)   (6)   (9)
   Please indicate your salary if under $10,000 or over $54,999 _____

7. Please classify your job title under one of the following categories:
   ____ Prepress   ____ Press/post press ____ Management
   (1)   (2)   (3)
   ____ Teaching   ____ Other (list) _____
   (4)   (5)

8. How many years have you been employed in the category you chose in question #7?
   ____ 1 - 3   ____ 7 - 9   ____ 13 - 15
   (1)   (3)   (5)
   ____ 4 - 6   ____ 10 - 12   ____ 16 - 18
   (2)   (4)   (6)
   If over 18 years of experience, please indicate the number of years _____

OVER

Appendix D

REPORT OF THE
F.S.U. GRAPHIC ARTS ADVISORY COMMITTEE
PERCEPTION OF THE GRAPHIC ARTS PROGRAMS
DECEMBER, 1996

Prepared by

Bob Beaverson

A survey was sent to all of the members of the advisory committee in October, 1996, a copy of the survey is included at the end of the report. Only four members responded, which represented less than half of the committee.

Instructional program content and quality of the programs received acceptable to excellent responses based on the fact that the programs are performance based and represent skills and knowledge required for successful entry level employment in the printing industry. The programs are designed to provide the students with practical job application learning experiences. A comment was made that the programs are not really practical because the education experience does not, nor can it in some circumstances, incorporate problems which manifest themselves in actual settings, such as production schedules manpower problems and less than perfect conditions. However, the programs we perceived as dynamic in keeping current with the technology and practices in the industry.

Instructional equipment was perceived as well maintained and representative of that used in the industry. The facilities which house the equipment were felt to be good to excellent. This included the lighting, ventilation, heating, space, health and safety standards.

Placement services for graduates were felt to be acceptable and job opportunities existed for the graduates.

A series of questions were presented for their response.

1. What are the major strengths of the two programs?

A dedicated group of instructors which are up to date in the technology, and provide a well program in the basic printing education, using the current state of equipment.

2. What are the major needs for improvements in the programs?

Expanding the program to include heatset web offset printing

and gravure printing, improve financial strength of the university, keeping instructors up to date in the technology, implement an internship program in the two year program, similar to the BS program, working with problems and finding solutions, creating a more production like environment where deadlines have to be met (very crucial in the industry), better marketing of the programs and a closer relationship to the industry.

3. If a Bachelor of Science degree in Printing Technology was proposed, what do you feel should be the areas of study?

Technical aspects, Total Quality Management, rebuilding and assembly of equipment, web offset and gravure printing, facilities management, electronic prepress and digital problems, financial aspects of printing, human relations, and salesmanship.

4. What would be the employment areas and opportunities for graduates with this type of degree?

Supervisory roles, quality control, maintenance supervisor, equipment representatives.

5. What type of evening classes do you feel would be of interest and benefit to the industry?

Prepress applications utilizing computers, quality control, supervisory skill enhancements, dealing with people, team building, understand cost/financial impact of decisions, press and post-press.

6. What do you feel would be the appropriate time format for evening classes and the geographical locations?

one night per week was the favored response, and the geographic areas were Lansing (four responses), Detroit, Grand Rapids, Ann Arbor, Traverse City (two responses each), Flint, Midland, Livonia, Toledo, OH (one response each).

7. With the emergence and continued use of the computer to perform various printing functions, with your experience what are the normal work expectations and duties for the graphic designer?

Design and illustrating art work that works well with the printing process, giving color OK's on press, assemble images and traps, buy printing, understanding of basic design.

8. If you have a direct or indirect work contact with graphic designers, how would you assess their knowledge of printing?

Many do not have a clue to the overall printing process, some knowledge of printing.

9. What type of personal qualities do employers require for entry level positions in the industry?

Dependable for day to day work, highly motivated, committed and dependable, team oriented, honesty and willing to learn, willing to work long hours.

10. Do you have additional comments or suggestions for the programs or the utilization of the advisory committee. If so, please state briefly.

Broaden the programs to cover a wider aspect of the industry, more in depth situation management courses, adding recent graduates to the committee.

Responses to question 1 and 2 are very favorable for the programs and present a positive direction for the future.

Questions 3 and four were presented with the idea of establishing a base for a future program which would offer another option to the student. The response was favorable, however the members, I feel, the member did not totally understand the course of study for a four year technology degree, nor the employment opportunities which could be fill by a graduate.

Questions 5,6,7 were presented to gain an idea of off campus course offerings for the industry. We know that the industry needs our types of programs, however, we have not taken the steps necessary to implement this idea. Geographically we are not in a desirable location to readily service the industry. This move would have a very positive effect on our programs.

Questions 8 and 9 deal with the deficiencies which graphic designers have of the printing industry. Ferris's Visual Communications program and Kendal School of Design are producing graduates in these areas, and the Graphic Arts program could fulfill the void of these students.

Question 10 verifies are mission as a program and university to train people for the workforce and be productive in society.

Question 11 was informational.

ADVISORY COMMITTEE PERCEPTION
OF GRAPHIC ARTS PROGRAMS
FERRIS STATE UNIVERSITY

INSTRUCTIONS: Rate each item using the following guide:
6 - Excellent: nearly ideal; 5 - Good: strong rating; 4 - Acceptable: average; 3 - Below Expectation: fair; 2 - Poor: seriously inadequate; 1 - Don't know; A comment column has been provided if you wish to explain your rating.

Please rate each item below:	1	2	3	4	5	6	Comments
1. Instructional program content and quality are: Based on performance objectives that represent job skills and knowledge required for successful entry level employment.							
Designed to provide students with practical job application experience.							
Responsive to upgrading and retraining needs of employed persons.							
Periodically reviewed and revised to keep current with changing job practices and technology.							
2. Instructional equipment is: Well maintained.							
Current and representative of that used on the job.							
3. Instructional facilities: Provide adequate lighting, ventilation, heating, power and other utilities.							
Allocate sufficient space to support quality instruction.							
Meet essential health and safety standards.							
4. Placement: Services are available to students completing the program.							
Job opportunities exist for students completing the program or leaving with marketable skills.							

Please answer the following:

1. What are the major strengths of the Printing Technology and Printing Management programs?

2. What are the major needs for improvements in the Printing Technology and Printing Management programs.

3. If a Bachelor of Science in Printing Technology was proposed, what do you feel should be the areas of study?

4. What would be the employment areas and opportunities for graduates with this type of degree?

5. What type of evening classes do you feel would be of interest and benefit to industry people?

6. What do you feel would be the appropriate time format for evening classes?

_ _ one night per week

_ _ Saturday morning

_ _ one day per work week

7. List four geographical locations which you feel could be well served by evening classes.

1. _____

2. _____

3. _____

4. _____

8.   With the emergence and continued use of the computer to perform various printing functions (typesetting, color separation, image assembly, etc.), what are the normal work expectations and duties for the graphic designer?

9.   If you have direct or indirect work contact with graphic designers, how would you assess their knowledge of printing?

10.   What type of personal qualities do employers require for entry level positions in the printing industry?

11.   Do you have additional comments or suggestions for the programs or the utilization of the advisory committee. If so, please state briefly.

Appendix E

PRINT WAGES

A compendium report of wages and salaries in the graphic arts and printing industries. Prepared for the Ferris State University Academic Senate Review process of the Printing Technology and Printing Management Degree Programs.

OVERVIEW

This report summaries wage and salary data from three existing survey sources; the Sept. 1996 Salary Survey of Occupations from the National Association of Colleges and Employers (N.A.C.E.), the Ferris State University Wage and Salary Survey prepared by the Career Planning and Placement Services Office, and a national survey of 1995-96 prepress wages conducted by Human Incentive and Resource Education Institute (HIRE) and published in the April 1996 Issue of Pre magazine.

BACHELOR DEGREE WAGES

The national average wage for B.S. degree graduates in Graphic Arts in Sept. 1996 was $23.969 as reported in the NACE survey(see attatched).

The Ferris State University average wage for B. S. degree graduates in Printing Management for 1994-95 was $23, 746 as reported by the F.S.U. Career Planning and Placement(see attatched).

As evidenced by these two salary study figures F.S.U. Printing Management B.S. degree graduates are right in line with national salary averages for this major.

ASSOCIATE DEGREE WAGES

Most A.S. graduates in Printing Technology enter into the printing industry in semi-skilled production types of positions. National salary surveys for these types of positions do not break them down into recent graduates and experienced journeymen level operators. So average production position salaries are the norm reported.

National average hourly wages for prepress production positions as reported by the HIRE 1995-96 wage survey was in the $11-$17 per hour range.

The Ferris State University average wage for A.S. degree in Printing Technology graduates for 1994-95 averaged at $8 per hour. Although the survey response rate was a sampling of only 4 graduates and should not be considered statistically significant.

AVERAGE YEARLY SALARY OFFERS
Bachelor's Degree Candidates

By Functional Area For All Types of Employers	- Men -			- Women -		
	Number of Offers	Average $ Offer		Number of Offers	Average $ Offer	
	September 1996	September 1996	September 1995	September 1996	September 1996	September 1995
FINANCE						
Accounting (Public)	645	$30,141	$28,548	669	$29,375	$28,698
Accounting (Private)	302	28,559	27,738	309	28,077	26,259
Auditing (Public)	122	30,382	29,938	165	29,880	29,609
Auditing (Private)	38	29,676	28,982	47	29,615	27,897
Commercial Banking (Consumer)	78	26,664	24,504	85	24,634	23,769
Commercial Banking (Lending)	80	26,992	25,639	55	25,126	25,276
Investment Banking (Corporate Finance)	80	31,646	30,002	35	29,563	29,804
Investment Banking (Mergers & Acquisitions)	8	37,875	26,544	+	*	30,167
Investment Banking (Real Estate)	6	34,667	28,000	6	25,167	N/A
Investment Banking (Sales & Trading)	40	26,573	26,654	15	25,307	27,045
Financial / Treasury Analysis	447	31,435	29,324	300	30,611	28,897
Portfolio Management/Brokerage	87	27,436	28,017	44	26,043	27,116
Insurance - Underwriting	48	26,658	27,759	38	27,206	24,267
Insurance - Claims	38	25,877	25,173	49	24,576	24,922
COMMUNICATIONS						
Design / Graphic Arts	31	25,087	24,581	40	23,102	21,313
Media Planning	6	23,917	23,267	20	24,500	21,419
Reporting	19	20,214	18,283	21	19,105	17,797
Communications - Production	35	26,663	25,454	37	21,128	20,047
Public Relations	21	23,886	24,489	69	21,554	20,717
Writing / Editing	18	22,381	19,704	48	21,094	20,645
MARKETING						
Advertising	17	25,935	26,953	35	23,213	20,563
Brand / Product Management	59	27,690	27,112	57	28,133	25,299
Buyer / Merchandising	129	28,567	26,445	174	27,508	25,701
Customer Service	112	23,596	22,842	191	21,763	20,261
Distribution	75	29,431	28,677	28	27,076	26,016
Market Research	70	29,164	28,565	88	27,310	24,986
Purchasing	29	31,418	27,950	20	27,298	26,000
Sales	731	27,989	26,587	509	26,563	24,824
PUBLIC ADMINISTRATION						
Executive, Legislative, General	13	23,243	19,278	15	24,156	24,530
Finance, Taxation, Monetary Policy	17	26,107	26,724	17	27,344	26,401
Economic Programs	3	20,333	27,792	4	21,430	24,536
Law Enforcement	22	25,266	26,580	16	21,299	22,100
Military	66	27,170	25,620	22	26,391	27,077
National Security	3	33,967	21,357	5	28,812	N/A
Urban / Regional Planning	11	19,089	23,800	3	18,016	20,093
ENGINEERING						
Bioengineering	9	35,078	32,920	8	27,475	N/A
Design / Construct	646	34,265	32,754	122	34,269	24,551
Environmental / Sanitation	67	32,628	31,708	36	33,995	31,288
Manufacturing / Industrial	690	37,277	35,681	172	38,187	36,763
Systems / Programming	317	36,242	35,536	112	34,925	34,682
Power Systems	78	36,208	36,359	14	38,116	36,745
Software Design & Development	545	37,646	36,237	102	36,786	35,607
Hardware Design & Development	205	39,775	37,365	34	39,962	38,131
Research & Development	156	37,948	36,004	44	38,191	36,917
Testing	146	36,911	33,687	28	35,876	33,194
Process Engineering	459	40,970	39,618	309	41,564	40,106
Project Engineering	724	35,546	35,723	164	37,626	36,195
Quality Control	38	34,715	33,595	19	33,205	30,211
Other Engineering	1072	36,776	34,654	308	36,175	35,339
Industrial Hygiene/Occupational Safety	13	30,585	28,600	2	40,000	N/A

N/A - No historic data available
+ - No offers reported

FERRIS STATE UNIVERSITY

SUMMARY REPORT ON PLACEMENT AND SALARIES
1994-95 GRADUATES

SURVEY HIGHLIGHTS   93% of graduates are working or continuing education full time

- 92% of graduates who *sought* employment found jobs
- 89% of graduates are in occupations related to their major field of study at Ferris
- 61% of the associate degree graduates continued their education
- Starting salaries for B.S. graduates averaged $28,696
- Starting salaries for Associate graduates averaged $20,233
- 78% of all listed curriculums have placement rates of 90% or better
- 77% of all degree recipients were accounted for

BACHELOR DEGREES

College	I No. of Degrees Granted	II % In Jobs or Pursuing Education	III Beginning Salary	College	I No. of Degrees Granted	II % In Jobs Or Pursuing Education	III Beginning Salary
ALLIED HEALTH				**EDUCATION**			
Health Info Mgt.	16	100	$25,802	Allied Health	6	83	$ -
Health Sys Mgt.	15	100	-	Biology	3	67	-
Ind/Env. Hlth Mgt.	42	89	24,842	Business Education	17	54	-
Medical Tech.	21	100	26,133	Chemistry Education	2	50	-
Nuclear Medicine	3	-	-	Math Education	8	50	-
Nursing, Professional	77	98	-	Trade Tech. Education	22	87	-
				Wage Erng Home Econ	6	100	-
ARTS & SCIENCE				Criminal Justice	143	82	22,912
				Rec. Leadership/Mgt.	25	80	-
Actuarial Sci.(Math)	2	-	-	TV Production	21	95	-
Applied Biology	32	79	-				
Applied Math	3	67	-				
Biotechnology	3	50	-	**PHARMACY**	130	97	
Social Work	57	91	19,599	Registered			49,600
Tech. Communications	7	100	-	Intern			32,246
BUSINESS				**TECHNOLOGY**			
Accounting	60	76	26,377	Auto/Hvy Equip. Mgt.	37	100	31,958
Advertising	33	94	20,173	Construction Mgt.	26	95	28,633
Business Admin.	175	82	24,984	Elec. Eng. Tech.	26	100	29,319
Computer Info Sys.	53	95	29,995	Facilities Mgt	14	92	-
Finance	16	100	27,180	HES Engineering Tech.	6	100	-
Hospitality Mgt.	36	97	23,085	HVACR Engr. Tech.	16	100	32,345
Human Resource Mgt.	17	64	22,720	Mfg. Engr. Tech.	31	96	34,031
Insurance	5	100	-	Plastics Engr. Tech	52	100	34,988
Insurance/Real Estate	3	100	-	Printing Management	26	100	23,746
International Business	21	77	-	Prod. Design Eng. Tech	29	95	31,270
Management	39	88	23,057	Surveying Engineering	27	100	26,971
Marketing	22	88	18,056	Welding Engr. Tech.	19	100	37,068
Marketing/PGM	81	100	18,129				
Marketing/PTM	11	91	-				
Marketing/Retail	15	90	23,100				
Marketing/Sales	31	100	25,676				
Office Auto Systems	6	83	-				
Operations Mgt.	5	80	-				
Public Relations	13	100	-				
Quantitative Business	2	100	-				
Small Business Mgt.	12	100	25,100				
Visual Communications	21	100	18,769				

A.A.S. DEGREE INFORMATION ON REVERSE SIDE.

> **COLUMN CODE:**
>
> I No. of Degrees Granted Sum. 94 to Spr. 95
> II Percentage of reporting graduates either
>   placed in jobs or furthering education on
>   a full-time basis.
> III Average Annual Beginning Salary

INFORMATION ABOUT THE SURVEY:

The data presented here is a composite of information gathered from graduates during a six month period following each graduating class. Conclusions and statistical interpretations should only be made within the framework of the study and the findings may not be readily comparable to other placement reports. Readers should be reminded that specific employment opportunities vary with time and depend on factors related to geography, type of employer, candidate's qualifications, and economic conditions.

Annual salaries are not listed in those programs where less than 5 respondents reported wage information in the respective occupational field. (These are base salaries only.) Programs lacking salary information generally have small graduating classes or high numbers of graduates continuing their education rather than entering the job market.

Complete Survey findings, including information on graduate level programs, can be found in "Graduates and Their Beginning Salaries", a publication published by the Placement Services Office.

TABLE IX
Beginning Annual Salaries for
BACCALAUREATE Graduates
For the Year 1994 - 95

College/Curriculum	Number Reporting	Average Salary	Range High	Low
ALLIED HEALTH				
Health Information Management	5	$ 25,802	$ 37,000 -	14,560
Indus. & Envir Health Mgt.	15	24,842	30,000 -	16,640
Medical Technology	13	26,133	31,260 -	19,760
ARTS & SCIENCES				
Social Work	13	19,599	25,000 -	11,440
BUSINESS				
Accounting	17	26,377	35,000 -	17,680
Advertising	6	20,173	25,000 -	14,040
Business Administration	34	24,984	50,000 -	11,960
Computer Info Systems	20	29,995	36,000 -	20,800
Finance	5	27,180	34,500 -	14,400
Hospitality Management	11	23,085	33,000 -	14,040
Human Resource Management	5	22,720	29,000 -	15,600
Management	7	23,057	25,500 -	20,000
Marketing	5	18,056	24,000 -	14,400
Marketing/Pro Golf Mgt	25	18,129	36,000 -	12,000
Marketing/Retail	4	23,100	25,000 -	21,000
Marketing/Sales	10	25,676	40,000 -	18,000
Small Business Management	5	25,100	41,600 -	15,600
Visual Communications	7	18,769	30,000 -	15,000
EDUCATION				
Criminal Justice	38	22,912	32,500 -	10,560
OPTOMETRY	N/A	N/A	N/A	
PHARMACY				
Pharmacy				
Registered	53	49,600	56,680 -	25,000
Intern	10	32,246	42,000 -	20,800
TECHNOLOGY				
Auto & Heavy Equip Mgt.	16	31,958	40,000 -	20,800
Construction Management	16	28,633	38,000 -	23,400
Elec/Eltr Engr Tech	9	29,319	42,250 -	15,000
HVACR Engineering Tech	11	32,345	35,000 -	27,000
Manufacturing Engr Tech	13	34,031	42,000 -	26,000
Plastics Engr Tech	26	34,988	45,000 -	21,320
Printing Management	17	23,746	30,000 -	19,448
Product Design Engr Tech	19	31,270	53,000 -	17,680
Surveying	15	26,971	32,000 -	20,800
Welding Engineering Tech	15	37,068	47,840 -	25,560

NOTE: The above table includes only those curriculums where salary information was received from five or more students employed in positions related to their major.

NAPL

Dear Member:

In this packet is a news release highlighting our industry's move from fifth to third largest manufacturing employer in the country over the past two years. We are definitely an industry to be reckoned with!

Several years ago, NAPL published the *Printer's Almanac* and subsequently the *Printer's Almanac Update*, for which we still receive many inquiries. Not only did the Almanac material provide data on the industry's ranking among all U.S. manufacturing employers, as the enclosed news release does, but it also provided the industry's ranking within each state.

If interested, NAPL can mail you out at no charge, the latest reported complete state listings. While the national data is for 1994, the latest reported state statistics available from the U.S. Commerce Department are for 1990. These data are not outdated. These solid statistics are not subject to significant change over three or four years. The information presented here is preferable to any 1994 estimates because it is simply the most reliable data that exists on the subject. NAPL will over the next several months be putting the 1991 figures into CD-ROM and interested members will also be able to access them.

The purpose of this information is to make printers aware of their own best kept secret--how significant they are to their states' economies. However, as you well know, while a large industry, in overall size, we are still a small business industry with more than 90% of commercial printers employing less than 50 people. So while we're certainly large enough to warrant legislative attention, we are not large enough to conform to complex and costly legislation. This data is being made available to help you tell your story to your elected officials. Increasingly, regulatory action on the state level affects printers more than federal laws. It is important for printers not only to oppose legislation that might hurt them, but to support bills that work in their favor. Armed with the news release and state rankings, you are well equipped for a visit to your state legislators.

NAPL is always available to assist in this regard. Please call our customer service center toll-free at 1-800-642-NAPL (6275) for your copy of the state rankings and for any other information or support we can provide about our industry. NAPL's economics department has been well recognized for its record of consistent accuracy. NAPL's publications department is proud to publish the *Environmental Advisor* and timely special reports, white papers and *Printing Manager* magazine articles designed to help you on the political front. NAPL is also an active participant on the Environmental Conservation Board, the Graphic Arts Legislative Council and several other governmental affairs groups.

We look forward to hearing from you.

Sincerely,

Jackie Pantaliano

Jackie Pantaliano, CME
Public Relations Manager
Extension 1313

NEWS RELEASE

**COMMERCIAL PRINTING MOVES UP RANKS
TO THIRD LARGEST MANUFACTURING INDUSTRY**

TEANECK, NJ -- May 3, 1994 -- The U.S. Department of Labor recently ranked the $64 billion commercial printing industry the third largest manufacturing employer in the country. The rise of the industry during the past two years, from fifth to third place, continues to reflect the industry's long-term viability and value as a growing employer (see Rank by Employment-Manufacturing Industries chart attached).

Printing industry employment has **increased** by 9.4 percent over the last eight years, to 536,100 in 1993, outperforming other manufacturing industries, according to the National Association of Printers and Lithographers (NAPL). Over the same period, total manufacturing employment in the United States **decreased** by 6.4 percent. It has been estimated that **by 1998, the printing industry will require 35,000 to 50,000 additional employees to accommodate its growth.**

"Commercial printers serve an exceptionally broad range of markets. It's virtually impossible to cite an industry that doesn't buy printing in one form or another," said Andrew D. Paparozzi, chief economist of the National Association of Printers and Lithographers' (NAPL) Printing Economic Research Center. "The ranking is evidence of the industry's continued ability of providing the economy with a substantial number of well-paying jobs."

Wages in the printing industry are far above the national average, explained Paparozzi. Non-supervisory personnel in commercial printing earned an average of $12.06 per hour at mid-year 1993. In comparison, non-supervisory earnings for the whole manufacturing sector were $11.75 per hour; for the private economy, it was $10.79 an hour.

Industry sales have grown in the last decade from $30 billion to $64 billion among 34,000 establishments. The industry's sales are expected to grow to $68 billion in 1995.

Another factor in the industry's growth is printers' advance awareness of business condition changes. Unlike most other manufacturing industries, commercial printing is a print-to-order, or custom manufacturing industry, which produces products that are not easily inventoried. The industry's diverse markets enable commercial printers to be among the first to know and to react to business condition changes, allowing the industry to also serve as an accurate economic indicator for the overall U.S. economy, according to Paparozzi.

Commercial printers participating in on-going NAPL economic surveys, experienced the economic downturn that led to the recession a full year before the downturn was recognized by GDP figures. This enabled NAPL economists to accurately predict the recession. With the continued rise in its rank among employment-manufacturing industries, commercial printing is continuing its growth as one of the country's strongest and most vibrant industries.

NAPL's Printing Economic Research Center is the source for the most up-to-date comprehensive data on printing industry economic trends. Over the past 10 years, NAPL has placed increasing emphasis on producing quality economic reports and studies, including the Printing Business Report, Prepress Market Watch, and a soon to be launched study on the print market potential of various industries. To this end, it has been dedicated to analyzing, reporting, estimating and forecasting economic trends in the printing industry with consistent accuracy and reliability, published in various reports, and voiced at select speaking engagements around the country.

Chartered in 1933, the National Association of Printers and Lithographers (NAPL) is a not-for-profit trade association representing the $64 billion commercial printing industry. NAPL is dedicated to providing a full range of management and educational services to its more than 3,000 member companies, representing over 200,000 employees worldwide.

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NAPL PRINTING ECONOMIC RESEARCH CENTER

DATA REPORT

1994 Rank by Employment -- Manufacturing Industries

Rank	SIC Code	Industry	Employees (in thousands)
1	371	Motor vehicles & equipment	834.2
2	308	Miscellaneous plastics products	626.9
3	275	**Commercial Printing**	**536.1**
4	367	Electronic components & accessories	516.4
5	372	Aircraft & parts	515.6
6	217	Newspapers	454.0
7	201	Meat products	449.9
8	344	Fabricated structural metal products	389.6
9	357	Computer & office equipment	349.2
10	233	Metalworking machinery	306.1

Source: Employment and Earnings, U.S. Department of Labor, Bureau of Labor Statistics

Maryland

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	381	Search and navigation equipment	22,395	931,576	21
2	275	Commercial printing	12,937	360,823	581
3	331	Blast furnace and basic steel products	9,401	365,293	15
4	308	Misc. plastics products, n.e.c.	6,804	176,949	107
5	271	Newspapers	6,127	151,242	90
6	265	Paperboard containers and boxes	5,795	137,758	40
7	366	Communications equipment	5,128	186,988	39
8	371	Motor vehicles and equipment	4,930	178,436	38
9	201	Meat products	4,846	81,499	43
10	344	Fabricated structural metal products	4,732	115,653	157

Massachusetts

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	367	Electronic components and accessories	31,185	904,300	394
2	382	Measuring and controlling devices	23,436	817,267	276
3	308	Misc. plastics products, n.e.c.	20,751	550,510	418
4	366	Communications equipment	20,669	832,952	72
5	381	Search and navigation equipment	19,371	715,961	53
6	357	Computer and office equipment	18,320	671,578	149
7	271	Newspapers	16,431	448,535	213
8	275	Commercial printing	15,923	422,881	903
9	384	Medical instruments and supplies	13,982	468,997	156
10	267	Misc. converted paper products	10,751	279,325	131

Michigan

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	371	Motor vehicles and equipment	194,529	9,176,442	452
2	346	Metal forgings and stampings	52,536	1,899,526	512
3	354	Metalworking machinery	52,464	1,973,850	1,396
4	308	Misc. plastics products, n.e.c.	44,393	1,014,291	736
5	359	Industrial machinery, n.e.c.	22,502	704,301	1,139
6	252	Office furniture	19,645	690,291	56
7	349	Misc. fabricated metal products	17,380	447,252	579
— 8	275	Commercial printing	16,913	423,287	1,047
9	331	Blast furnace and basic steel products	15,668	605,200	79
10	239	Misc. fabricated textile products	14,771	479,407	159

Minnesota

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	357	Computer and office equipment	24,341	872,732	82
2	275	Commercial printing	22,785	569,359	636
3	308	Misc. plastics products, n.e.c.	12,960	307,161	297
4	201	Meat products	12,645	255,985	75
5	367	Electronic components and accessories	12,023	292,013	154
6	243	Millwork, plywood and structural members	10,394	346,405	159
7	382	Measuring and controlling devices	10,547	338,649	38
8	384	Medical instruments and supplies	10,501	331,912	125
9	271	Newspapers	9,170	210,338	281
10	359	Industrial machinery, n.e.c.	8,539	236,914	475

Idaho

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	203	Preserved fruits and vegetables	9.433	150.086	22
2	367	Electronic components and accessories	5000-9999	0	19
3	242	Sawmills and planing mills	5.142	129.226	94
4	357	Computer and office equipment	3.750	0	4
5	241	Logging	3.326	72.425	399
6	291	Industrial inorganic chemicals	2.930	123.228	7
7	243	Millwork, plywood and structural members	2.781	59.752	68
8	271	Newspapers	2.012	28.187	56
9	209	Misc. food and kindred products	1000-2499	0	14
10	275	Commercial printing	1,643	25.131	110

Illinois

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	275	Commercial printing	46,882	1,334,754	1,881
2	308	Misc. plastics products, n.e.c.	42,162	990.205	712
3	371	Motor vehicles and equipment	27,604	806.893	197
4	354	Metalworking machinery	26.979	864.314	1,074
5	353	Construction and related machinery	26.868	1.012.580	174
6	366	Communications equipment	24.911	824.590	84
7	356	General industrial machinery	22.925	684.757	303
8	346	Metal forgings and stampings	22.585	687.473	412
9	367	Electronic components and accessories	22.554	488.826	323
10	349	Misc. fabricated metal products	20.986	544.390	609

Indiana

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	371	Motor vehicles and equipment	55.977	1,832.014	326
2	331	Blast furnace and basic steel products	38.854	1.559.652	59
3	308	Misc. plastics products. n.e.c.	32.973	695.922	456
4	369	Misc. electrical equipment and supplies	24.012	871.349	72
5	283	Drugs	17.580	846.704	30
6	346	Metal forgings and stampings	16.843	557.262	154
7	275	Commercial printing	13.790	343.135	632
8	349	Misc. fabricated metal products	13.096	312.516	300
9	344	Fabricated structural metal products	12.545	321.381	349
10	335	Nonferrous rolling and drawing	12.335	385.372	56

Iowa

	SIC	Industry	Employment	Annual Payroll (in $1,000)	Establish-ments
1	201	Meat products	21.498	439.231	114
2	352	Farm and garden machinery	12.555	463.014	131
3	353	Construction and related machinery	10.953	372.331	57
4	204	Grain mill products	8.572	297.546	152
5	308	Misc. plastics products. n.e.c.	7.313	165.533	123
6	371	Motor vehicles and equipment	7.624	194.962	73
7	381	Search and navigation equipment	7.500	0	5
8	275	Commercial printing	7.238	160.392	335
9	363	Household appliances	7.135	175.034	7
10	271	Newspapers	6.496	99.572	238

Appendix F

ADVISORY COMMITTEE PERCEPTION
of the
Graphic Arts Program Facilities

Use the scale below to rate each statement as it relates to each lab according to your knowledge and perceptions of the Graphic Arts program.
5 strongly agree, 4 agree, 3 disagree, 2 strongly disagree, 1 no comment

	Camera	Comp	Color	Stripping	Sheetfed	Web	Screen	Bindery	Mgmt.
1. The equipment in the lab is current and representative of industry.	(8) 5 (2) 4	(8) 5 (2) 4	(8) 5 (2) 4	(8) 5 (2) 4	(4) 5 (6) 4	(1) 5 (9) 4	(4) 5 (6) 4	(6) 5 (4) 4	(5) 5 (5) 4
2. The equipment is well maintained.	(10) 5	(10) 5	(10) 5	(10) 5	(8) 5 (2) 4	(5) 5 (5) 4	(5) 5 (5) 4	(6) 5 (4) 4	(6) 5 (4) 4
3. The size of the lab is adequate.	(5) 4 (5) 3	(5) 2 (5) 3	(5) 3 (5) 2	(5) 5 (5) 4	(5) 5 (5) 4	(5) 5 (5) 4	(6) 4 (4) 3	(4) 4 (6) 3	(6) 5 (4) 4
4. The lab layout is appropriate.	(10) 5	(10) 5	(10) 5	(10) 5	(6) 5 (4) 4	(10) 5	(10) 5	(4) 5 (6) 4	(8) 5 (2) 4
5. The software is applicable to industry.	(10) 5	(5) 5 (5) 4	(10) 5	(10) 5	n/a	n/a	n/a	n/a	(5) 5 (5) 4
6. The material used in lab are representative of industry.	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(6) 5 (4) 4	(10) 5	(8) 5 (2) 4
7. The projects performed by the students in the lab are reflective of industry standards.	(10) 5	(10) 5	(6) 5 (4) 4	(8) 5 (2) 4	(4) 5 (6) 4	(4) 5 (6) 4	(4) 5 (6) 4	(4) 5 (6) 4	(5) 5 (5) 4
8. The furniture/hardware in the lab is sufficient.	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5
9. There is adequate complimentary/equipment in the labs (i.e. printers, scanners, densitometers, processors, etc.)	(6) 5 (4) 4	(5) 5 (4) 4	(4) 4 (5) 3	(4) 5 (6) 4	(5) 4 (5) 3	(5) 4 (5) 3	(4) 5 (6) 4	(6) 4 (4) 3	(4) 5 (6) 4
10. There is a need for additional equipment.	(10) 2	(10) 3	(10) 5	(10) 2	(5) 4 (5) 3	(1) 4 (9) 3	(1) 4 (9) 3	(5) 4 (5) 3	(5) 4 (5) 3
11. There is equipment in the lab that need less emphasis.	(5) 5 (5) 4	(10) 3	(9) 2 (1) 3	(10) 3	(10) 3	(10) 3	(10) 3	(10) 3	(10) 3
12. The student to equipment ratio is adequate.	(10) 5	(10) 5	(10) 2	(10) 5	(5) 3 (5) 2	(9) 4 (1) 2	(6) 4 (4) 3	(5) 3 (5) 2	(8) 4 (2) 3
13. The lab provides adequate lighting, ventilation, heating and other utilities.	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5
14. The lab meets essential health and safety standards.	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5	(10) 5

For each statement that received an unsatisfactory rating, please indicate what improvements need to be made to enhance that laboratory.

ADVISORY COMMITTEE PERCEPTION
of the
Graphic Arts Program Facilities

Use the scale below to rate each statement as it relates to each lab according to your knowledge and perceptions of the Graphic Arts program.
**5 strongly agree, 4 agree, 3 disagree, 2 strongly disagree, 1 no comment**

	Camera	Comp	Color	Stripping	Sheetfed	Web	Screen	Bindery	Mgmt.
1. The equipment in the lab is current and representative of industry.									
2. The equipment is well maintained.									
3. The size of the lab is adequate.									
4. The lab layout is appropriate.									
5. The software is applicable to industry.									
6. The material used in lab are representative of industry.									
7. The projects performed by the students in the lab are reflective of industry standards.									
8. The furniture/hardware in the lab is sufficient.									
9. There is adequate complimentary/equipment in the labs (i.e. printers, scanners, densitometers, processors, etc.)									
10. There is a need for additional equipment.									
11. There is equipment in the lab that need less emphasis.									
12. The student to equipment ratio is adequate.									
13. The lab provides adequate lighting, ventilation, heating and other utilities.									
14. The lab meets essential health and safety standards.									

For each statement that received an unsatisfactory rating, please indicate what improvements need to be made to enhance that laboratory.
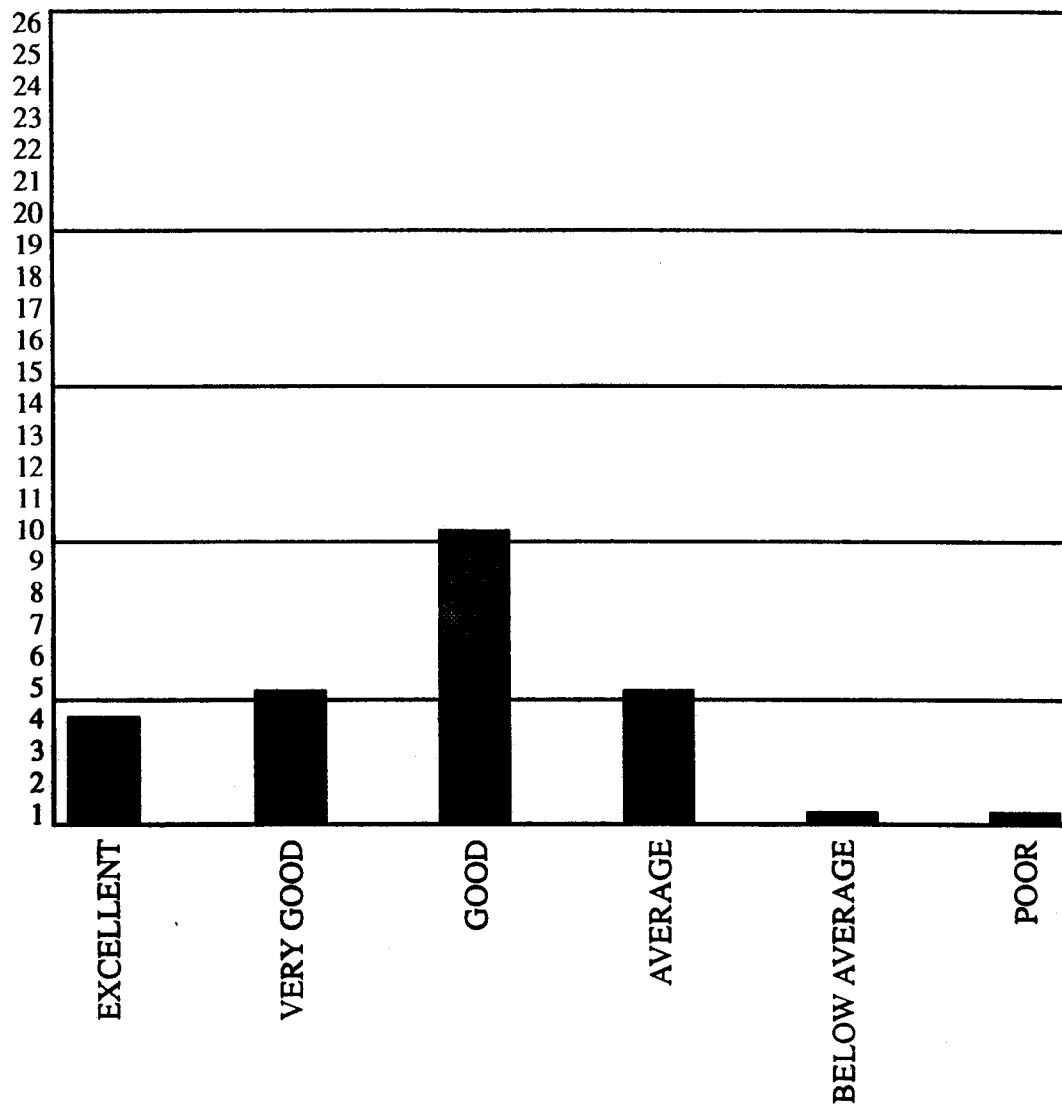
Appendix G

STUDENT EVALUATIONS

1. Did you have any prior Graphic Arts experience before coming to FSU?

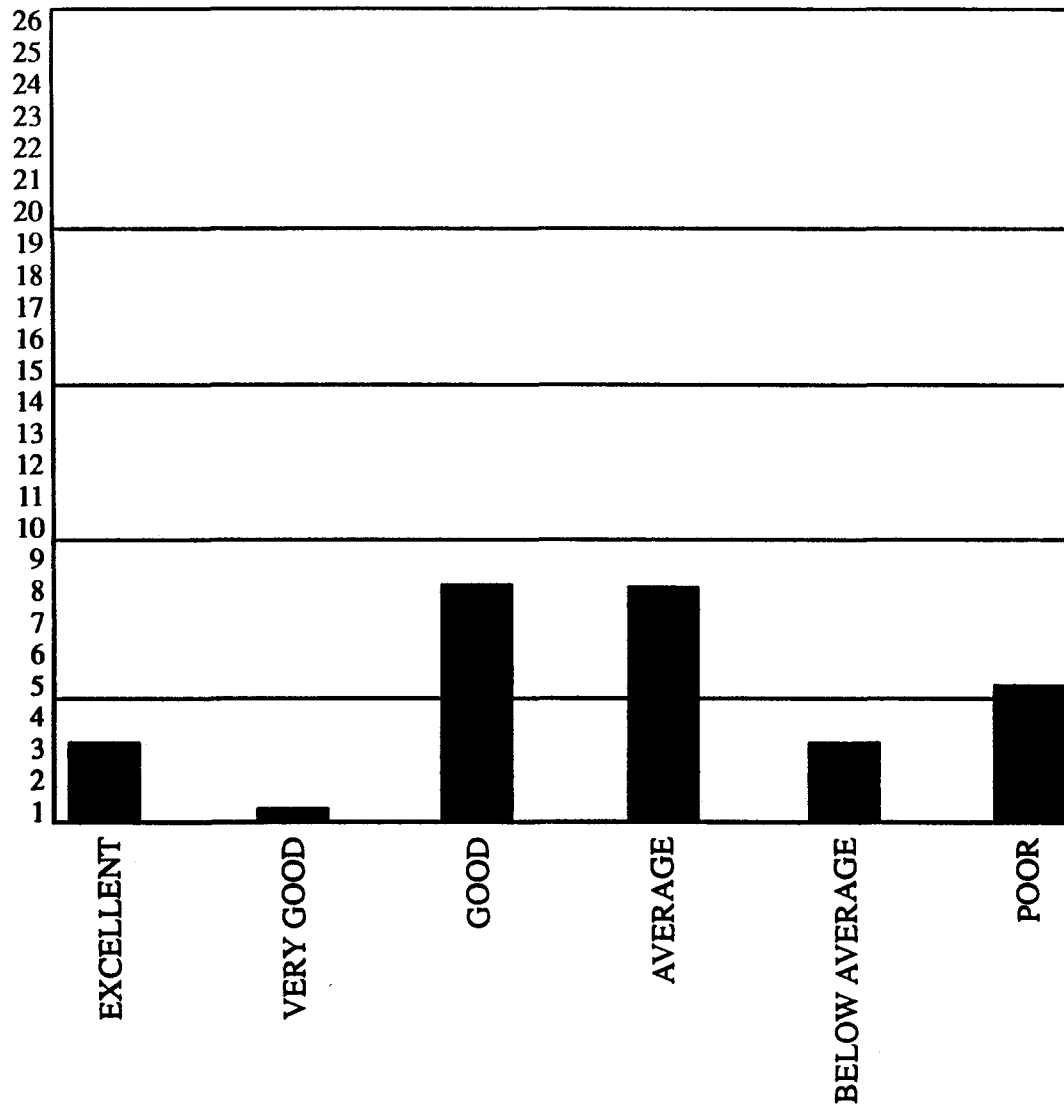|	EXCELLENT	VERY GOOD	GOOD	AVERAGE	BELOW AVERAGE	POOR
Value	4	6	6	4	3	3
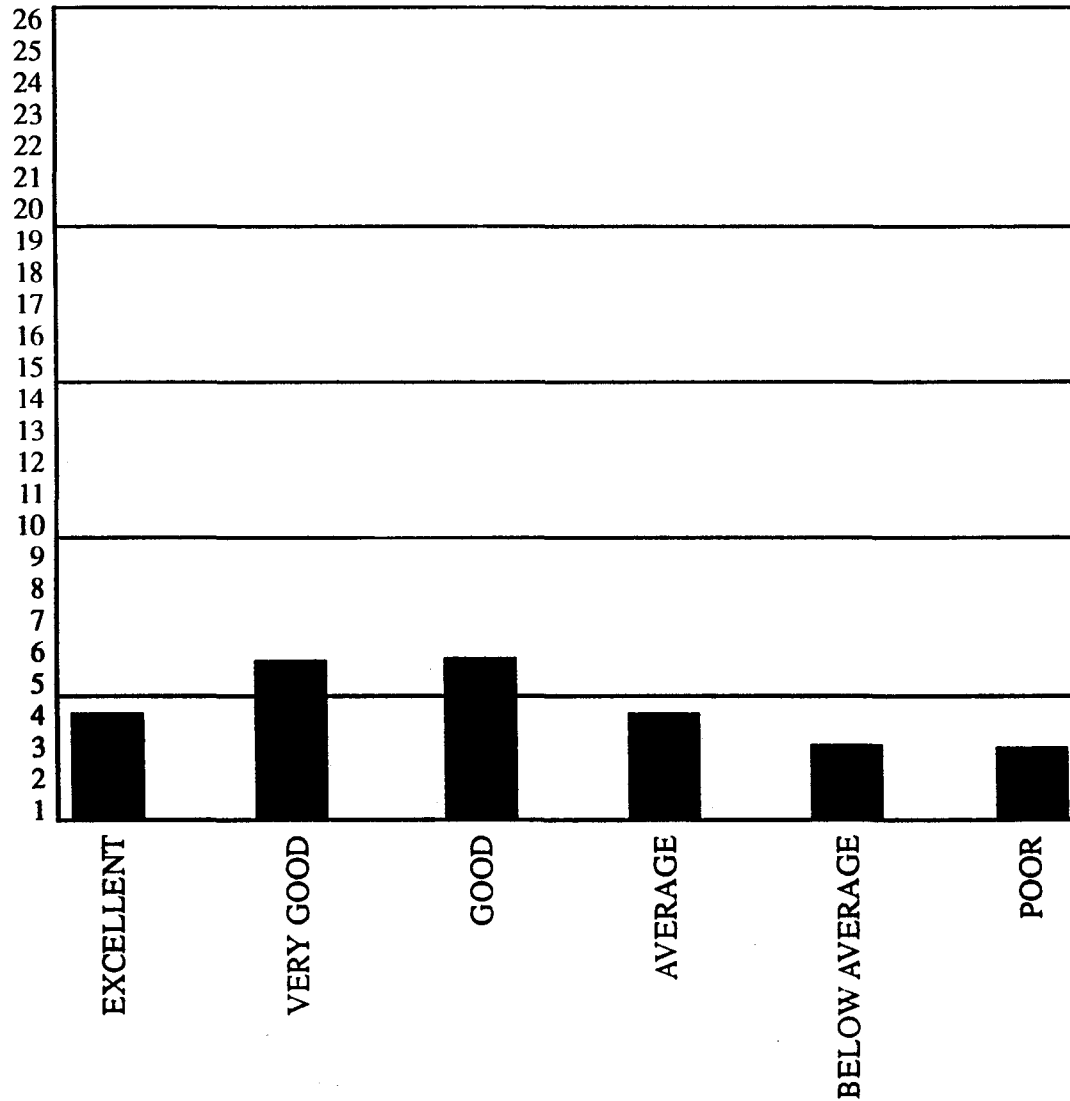
STUDENT EVALUATIONS
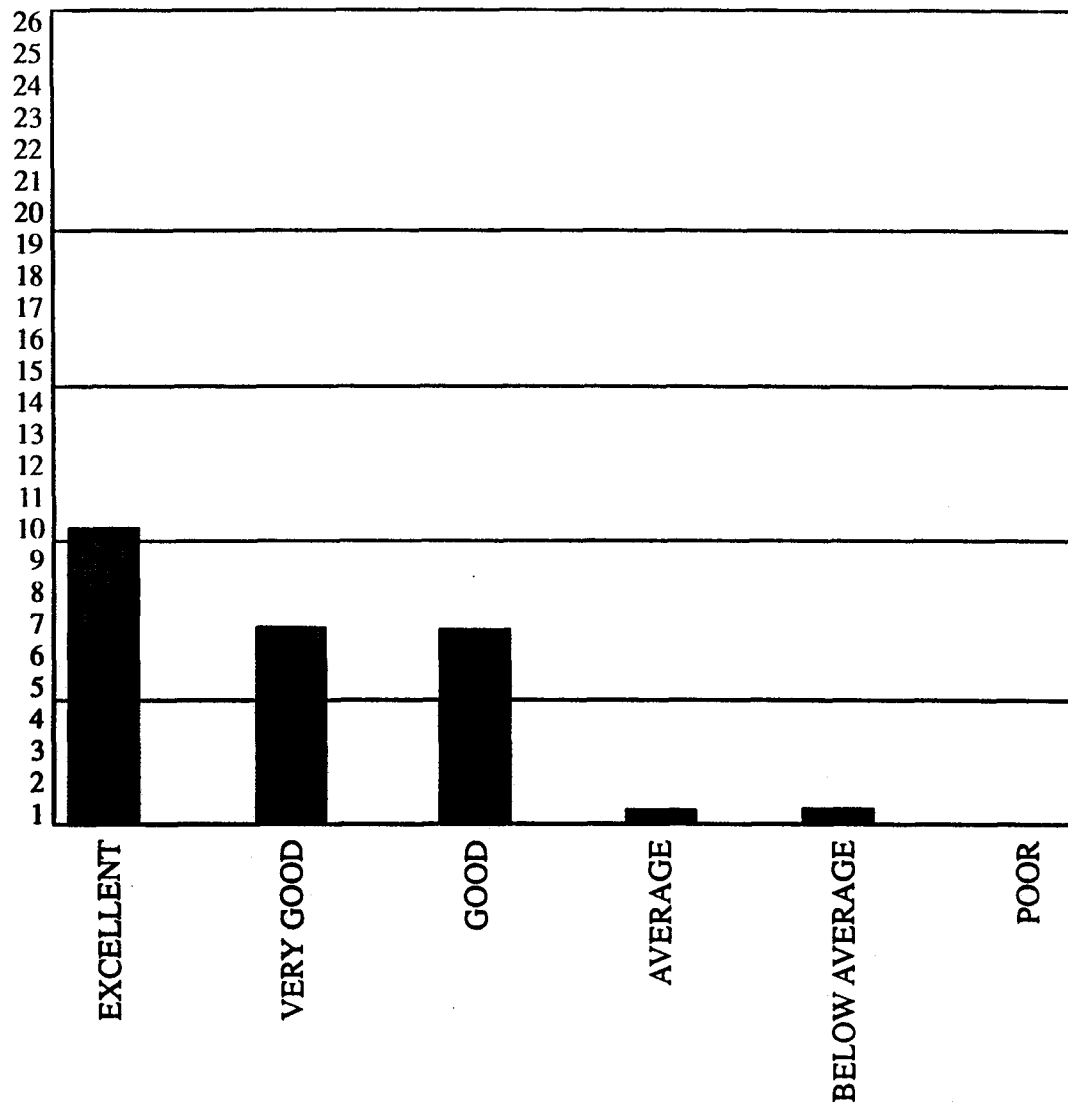
2. Did you have adequate help with planning your vocational career track?

STUDENT EVALUATIONS

3. Were you made aware of the variety of vocations available to you in the Graphic Arts and related vocations?
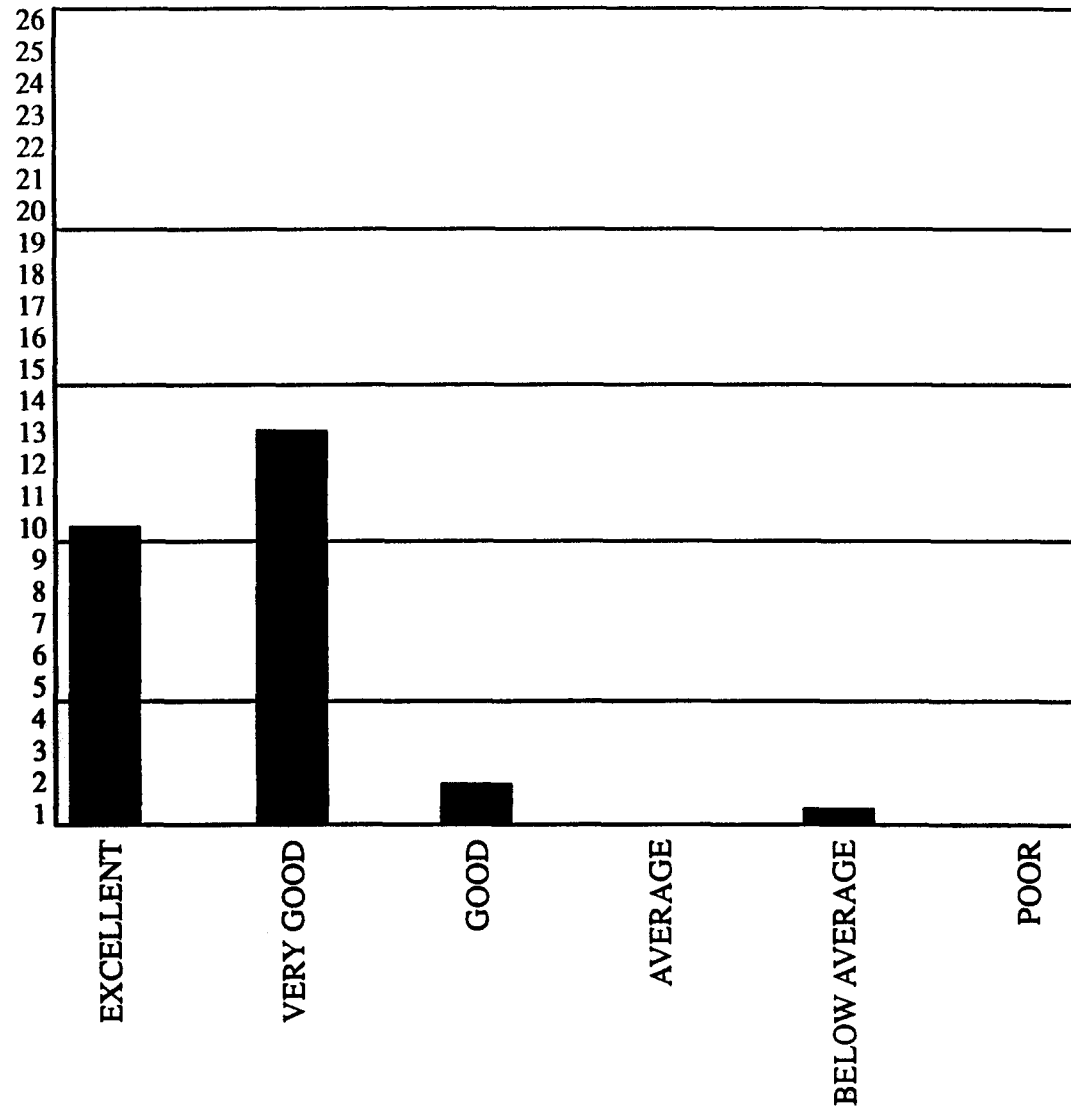
STUDENT EVALUATIONS

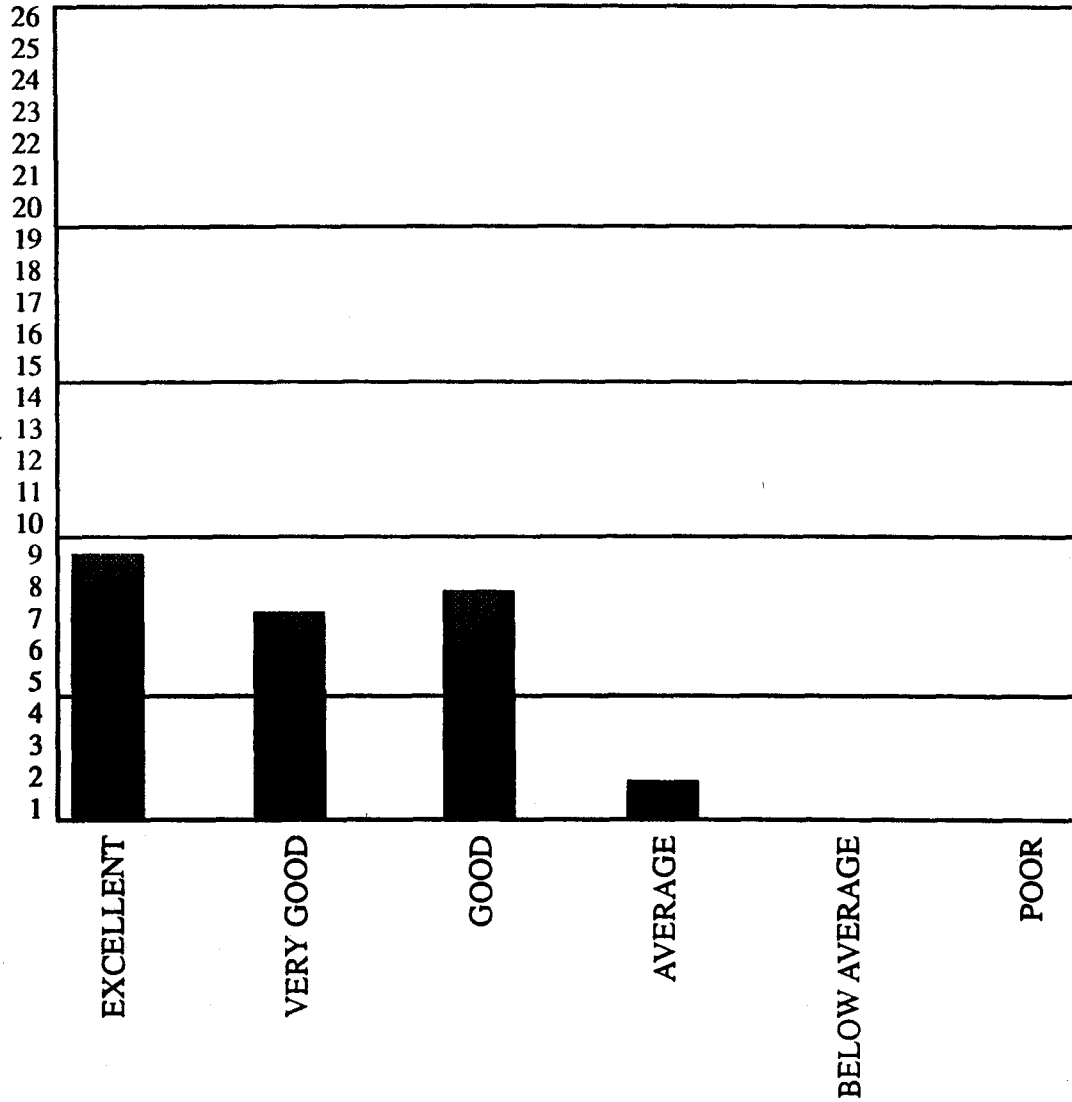5. Do you feel your instructors have a genine interest in your success here at FSU?

STUDENT EVALUATIONS

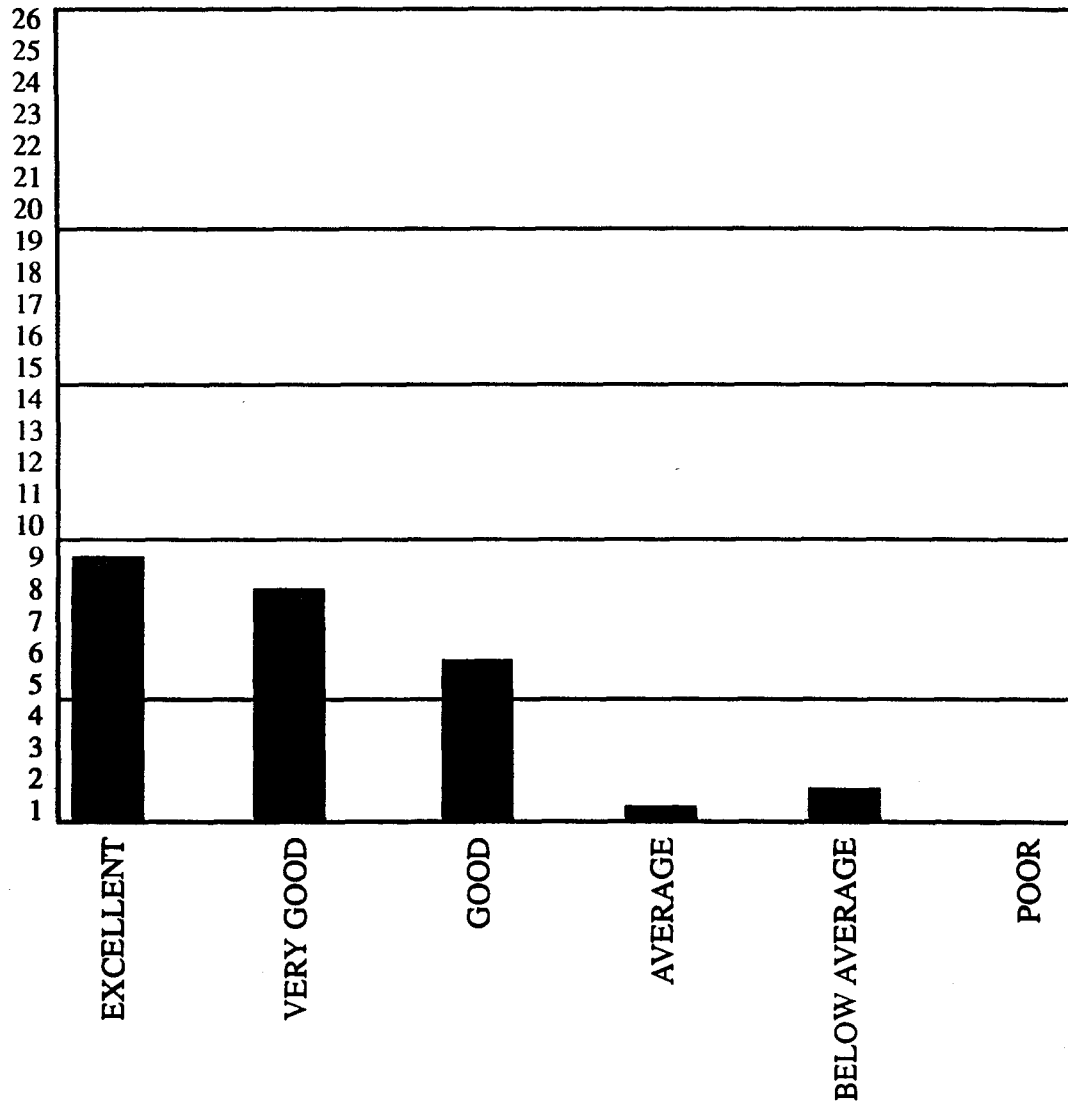6. How would you rate the faculty's knowledge in their fields?

STUDENT EVALUATIONS

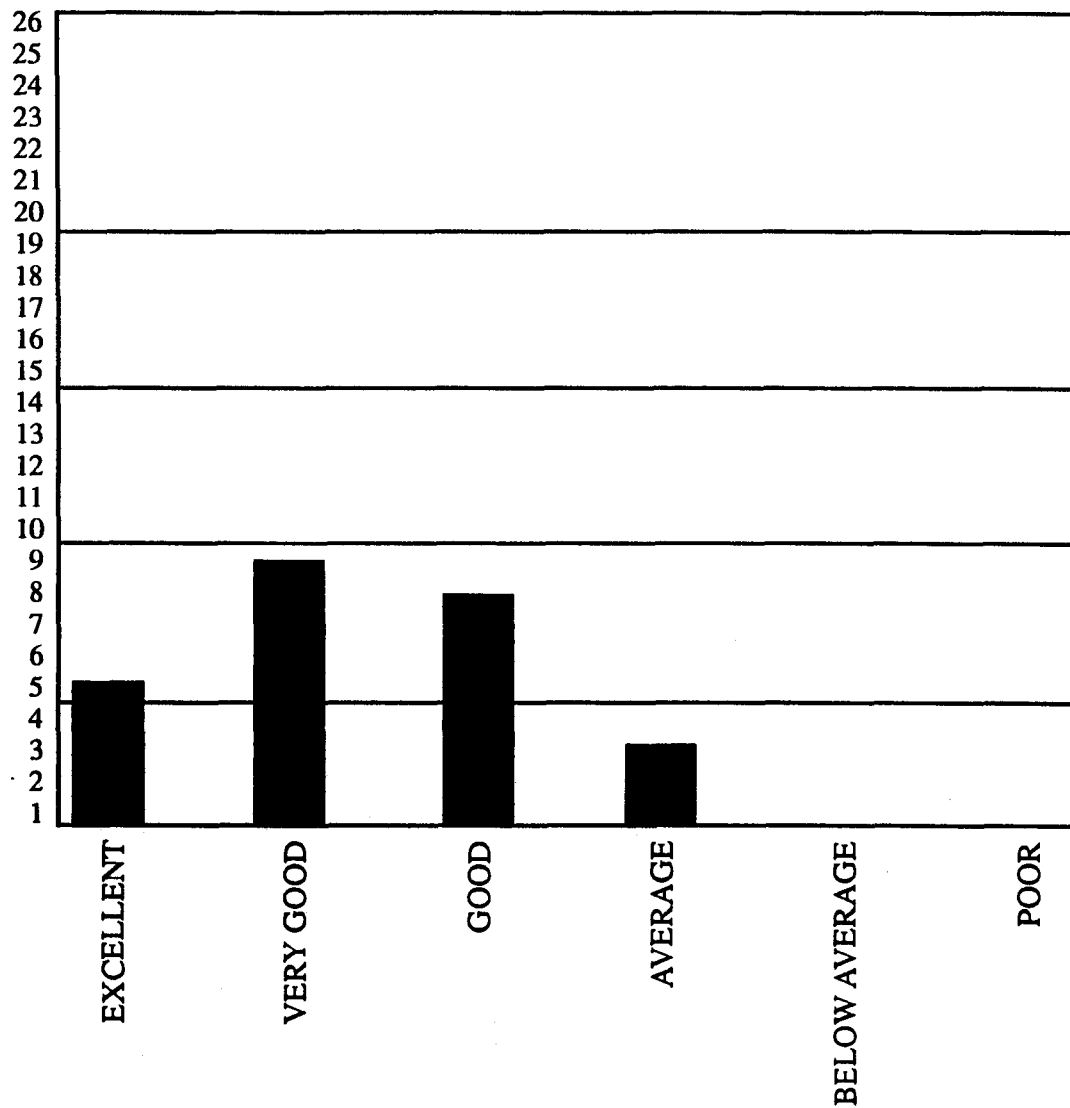10. Does your advisor provide adequate help to you?

STUDENT EVALUATIONS

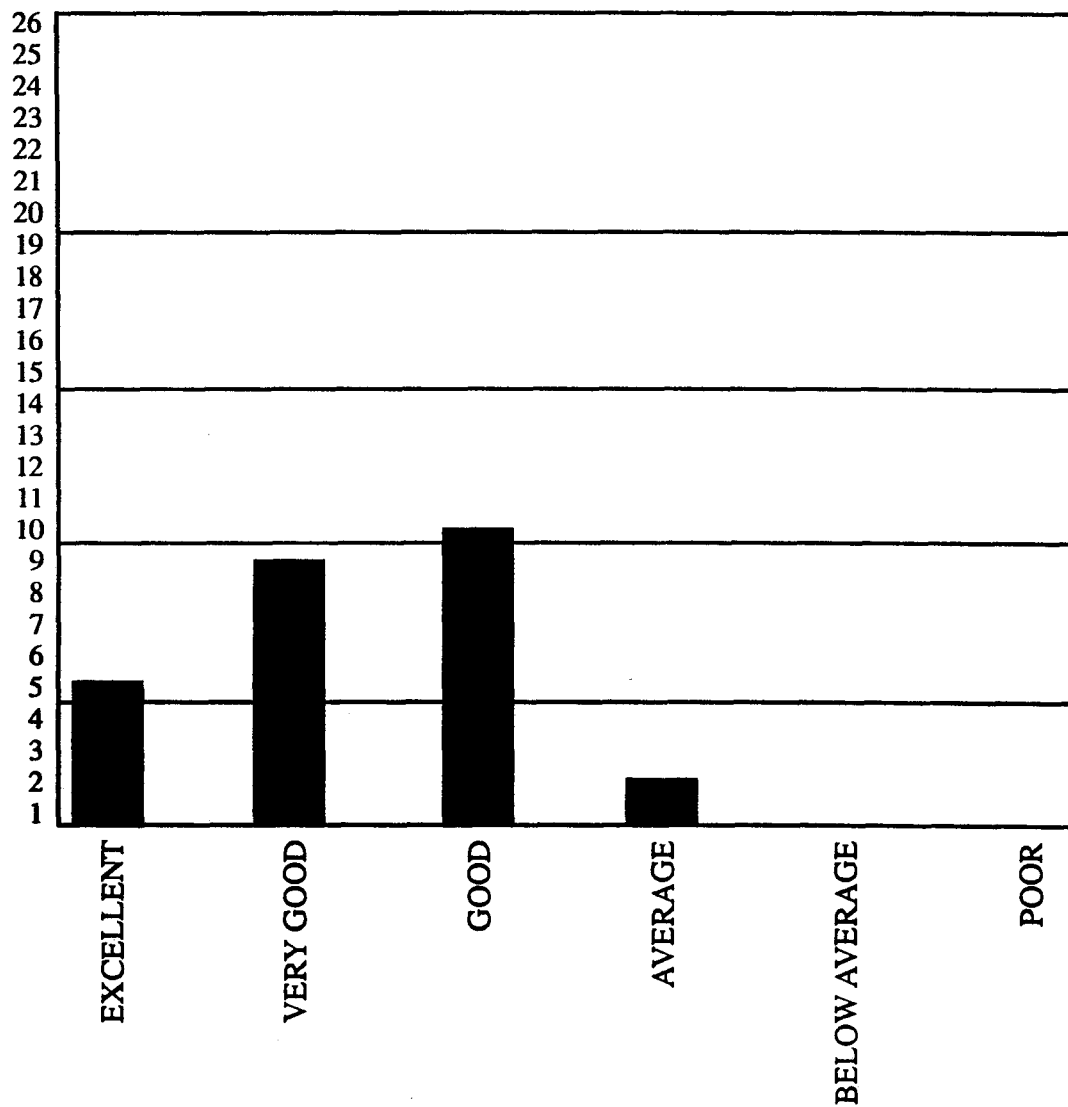11. Do you feel you have enough access to the equipment in your labs?

STUDENT EVALUATIONS

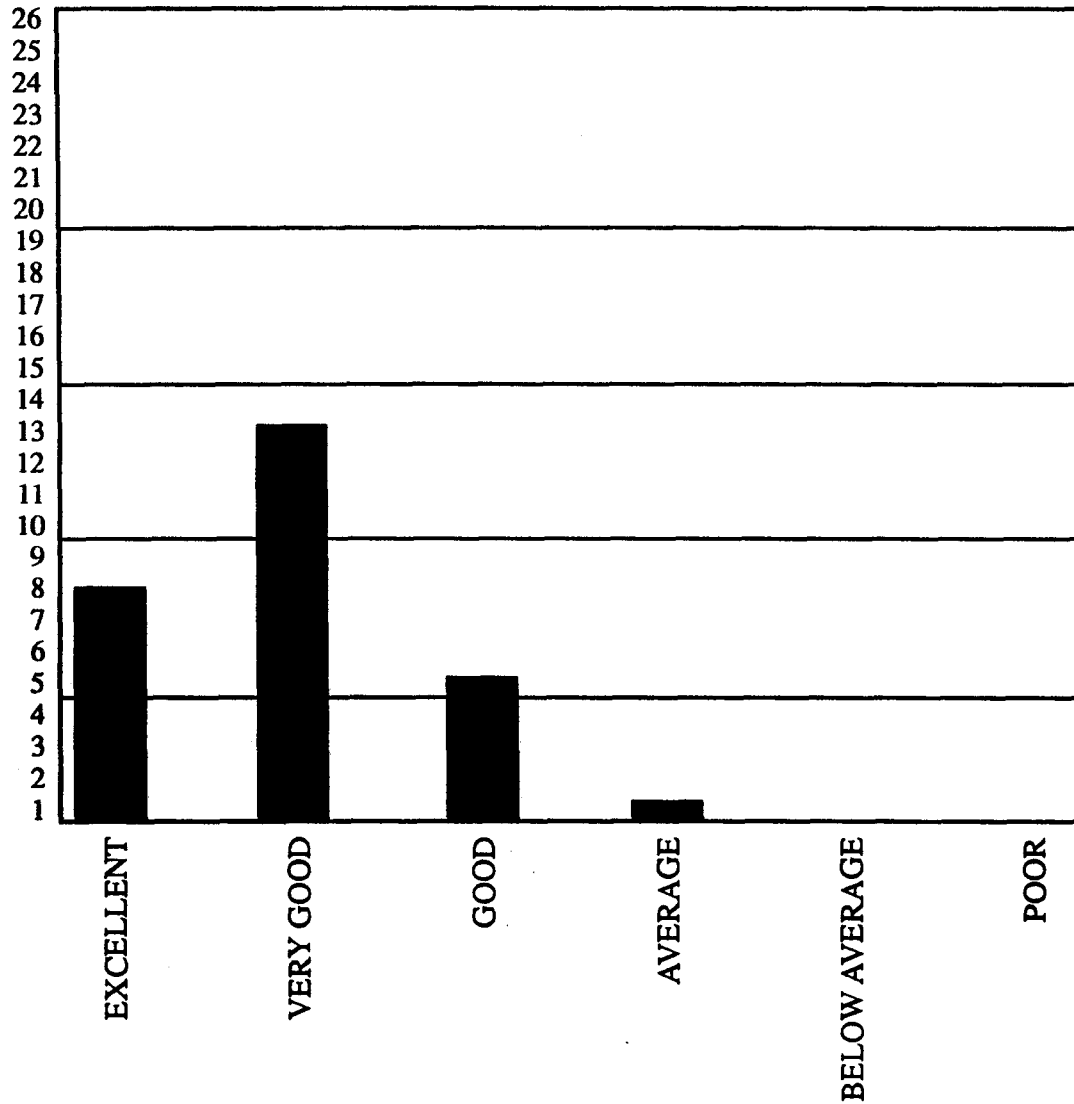12. How do you rate the condition of the lab equipment?

STUDENT EVALUATIONS

13. In your opinion, is the type of equipment in your labs representative of an actual work environment?
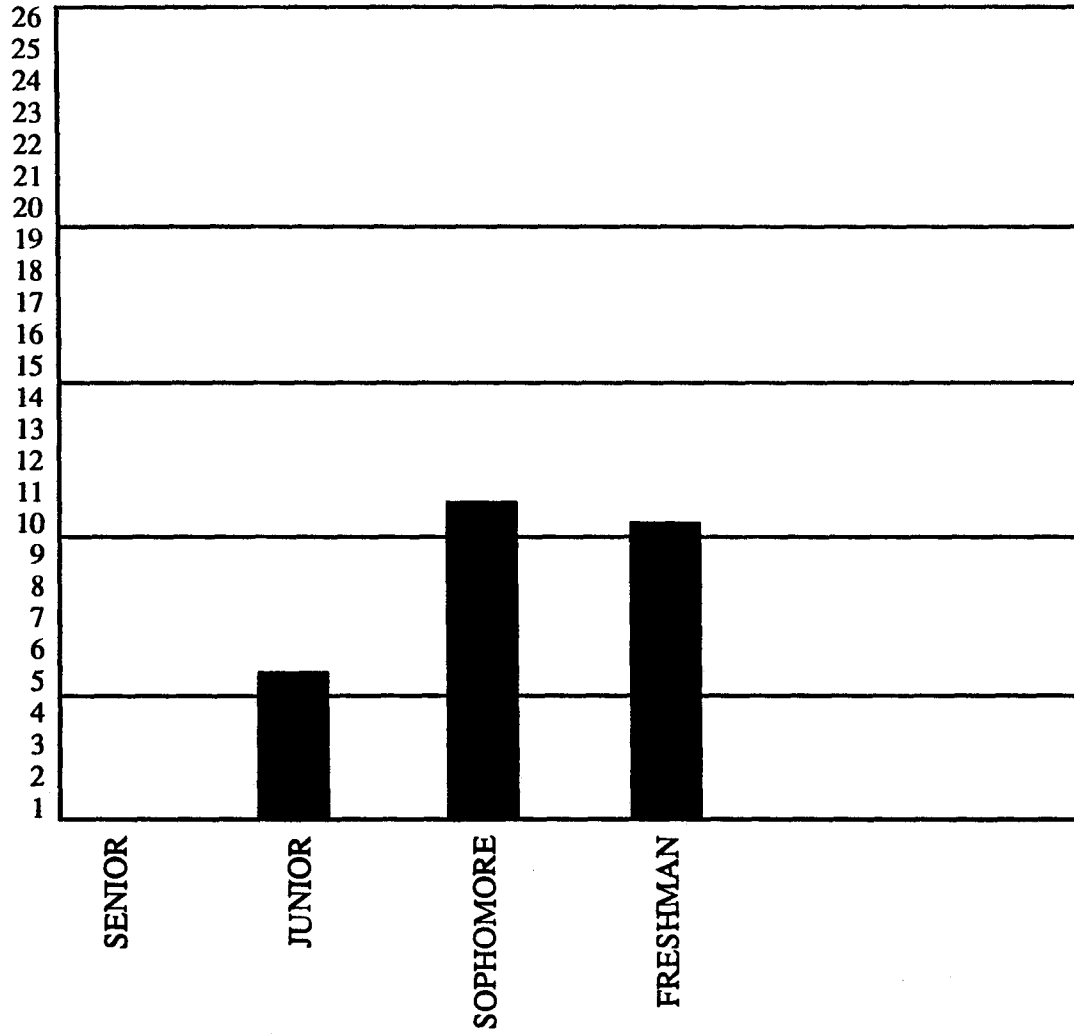
STUDENT EVALUATIONS

14. Over, how do you rate the quality of instruction in the Graphic Arts department?

STUDENT EVALUATIONS

15. Your current student classification is:

X

STUDENT EVALUATION *Use the back for additional comments or suggestions.*	EXCELLENT	VERY GOOD	GOOD	AVERAGE	BELOW AVER.	POOR
1. Did you have any prior experience in the Graphic Arts field before you came to Ferris State University?						
2. Did you have adequate help with planning your vocational career track?						
3. Were you made aware of the variety of vocations available to you in the Graphic Arts and related vocations?						
4. How relative do you feel your courses are toward preparing you for your career objective?						
5. Do you feel your instructors have a genuine interest in your success here at Ferris State University?						
6. How would you rate the faculty's knowledge in their fields?		✓				
7. Do your instructors create a classroom environment that is conducive to learning?						
8. Is the subject matter presented clearly and effectively?						
9. Are your instructors available outside of class if you need help?						
10. Does your advisor provide adequate help to you?						
11. Do you feel you have enough access to the equipment in your labs?						
12. How do you rate the condition of the lab equipment?						
13. In your opinion, is the type of equipment in your labs representative of an actual work environment?						
14. Overall, how do you rate the quality of instruction in the Graphic Arts department?						

	SENIOR	JUNIOR	SOPHOMORE	FRESHMAN
15. Your current student classification is:				

Appendix H

Results 12-3-96

Faculty Evaluation of the Printing Technology and Printing Management Programs						
Evaluate each of the following according to your knowledge and perception of the Printing program.	Poor	Acceptable	Good	Very Good	Excellent	N/A
1. The course objectives of the beginning labs prepare the student for advanced labs?		1		3	2	
2. The advanced labs prepare the student for employment in the industry?		1	1	1	3	
3. The equipment in the labs is representative of that used in the industry?			3	3		
4. The performance objectives of each course represent job skills for successful employment?			2	2	2	
5. The students have the choice of specializing in either Printing Technology or Management?	1		2	2	1	
6. The Instructors are qualified to teach the subjects they are teaching?				2	4	
7. The courses are written so that the students revieve the indepth information that they need to compete for the best jobs?				4	2	
8. All of the courses are written so all students have the opportunity to complete them?				2	4	
9. The labs are fitted with the proper safety devices where mechanical equipment is used?			2	4		
10. The classrooms meet Quality of Life standards: light?				4	2	
11. The classrooms meet Quality of Life stadards: air?		1		4	1	
12. The classrooms meet Quality of Life standards: Warm / Cool?		1	2	2	1	
13. The students have access to the instructors for "one on one" assistance?				2	4	
14. The College of Technology Administration supports the faculty for their teaching needs?		1	1	4		
15. The University Administration supports the faculty in their teaching needs?		3	2		1	
16. The operating capital allows the faculty to teach to the best of their ability?		6				

Ferris State University PTEC and PMGT Programs

Faculty Evaluation of the Printing Technology and Printing Management Programs						
Evaluate each of the following according to your knowledge and perception of the Printing program.	Poor	Acceptable	Good	Very Good	Excellent	N/A
1. The course objectives of the beginning labs prepare the student for advanced labs?						
2. The advanced labs prepare the student for employment in the industry?						
3. The equipment in the labs is representative of that used in the industry?						
4. The performance objectives of each course represent job skills for successful employment?						
5. The students have the choice of specializing in either Printing Technology or Management?						
6. The Instructors are qualified to teach the subjects they are teaching?						
7. The courses are written so that the students revieve the indepth information that they need to compete for the best jobs?						
8. All of the courses are written so all students have the opportunity to complete them?						
9. The labs are fitted with the proper safety devices where mechanical equipment is used?						
10. The classrooms meet Quality of Life standards: light?						
11. The classrooms meet Quality of Life stadards: air?						
12. The classrooms meet Quality of Life standards: Warm / Cool?						
13. The students have access to the instructors for "one on one" assistance?						
14. The College of Technology Administration supports the faculty for their teaching needs?						
15. The University Administration supports the faculty in their teaching needs?						
16. The operating capital allows the faculty to teach to the best of their ability?						

Appendix I

PRINTING MANAGEMENT
BACHELOR OF SCIENCE DEGREE
FALL SEMESTER 95\96
Curriculum Guide Sheet

NAME OF STUDENT _____   STUDENT I.D. _____

Total semester hours required for graduation: 130 credits

NOTE: Meeting the requirements for graduation indicated on this sheet is the responsibility of the student. Compliance with this agreement will assure the student completion of the program in the time frame indicated. Your advisor is available to assist you.

JUNIOR YEAR		CREDITS	COMMENTS/GRADE
PMGT 351	Printing Production Estimating (PTEC 251)	3	
PMGT 361	Printing Production Planning	5	
PMGT 362	Printing Management (PMGT 361)	5	
PMGT 383	Production Cost Analysis (PMGT 351, ACCT 201)	3	
ACCT 201	Principles of Accounting 1 (MATH 110)	3	
COMM 221	Small Group Decision Making	3	
MATH 122	Math Analysis for Business (MATH 115)	3	
MGMT 301	Applied Management	3	
ENGL 311	Advanced Technical Writing (ENGL 250 or 211)	3	

SUMMER JUNIOR/SENIOR YEAR

PMGT 393	Printing Management Internship (PMGT 351,361)	4	

SENIOR YEAR

PMGT 432	Printing Marketing and Purchasing (PMGT 362)	4	
PMGT 499	Printing Plant Layout, Organization, OSHA (PMGT 362)	4	
BLAW 301	Legal Environment of Business	3	
MGMT 371	Production/Operations Management (MGMT 301)	3	
ECON 221	Principles of Economics 1 (MATH 110)	3	
PSYC 326	Industrial/Organizational Psychology (PSYC 150)	3	
_____ __	Scientific Understanding Elective	3-4	
_____ __	Cultural Enrichment Elective	3	
_____ __	Cultural Enrichment (Non ARTH)	3	

Prerequisite courses are listed in Parentheses

PRINTING TECHNOLOGY
ASSOCIATE IN APPLIED SCIENCE DEGREE
1996-97
Curriculum Guide Sheet

NAME OF STUDENT _____   STUDENT I.D. _____

Total semester hours required for graduation: 65

NOTE: Meeting requirements for graduation indicated on this sheet is the responsibility of the student. Compliance with this agreement will assure the student completion of the program in the time frame indicated. Your advisor is available to assist you.

FRESHMAN YEAR		CREDIT	COMMENTS/GRADE
PTEC	123 Bindery and Finishing Operations	3	
PTEC	132 Black and White Imaging	4	
PTEC	143 Image Assembly	4	
PTEC	151 Paper and Ink Technology	3	
PTEC	153 Digital Page Layout	4	
PTEC	161 Sheet-fed Offset Presswork 1	4	
MATH	110 Fundamentals of Algebra	4	
ENGL	150 English 1	3	
PSYC	150 Introduction to Psychology	3	
____ ____	Scientific Understanding (LAB SCIENCE)	3-4	

SOPHOMORE YEAR			
PTEC	231 Screen Process Printing	4	
PTEC	232 Digital Color Imaging (PTEC 132)	4	
PTEC	233 Digital Color Management (PTEC 232)	4	
PTEC	243 Digital and Color Image Assembly (PTEC 143)	4	
PTEC	253 Advanced Digital Page Layout (PTEC 153)	4	
PTEC	261 Sheet-fed Offset Presswork 2 (PTEC 161)	4	
PTEC	267 Web-fed Offset Presswork (PTEC 132,143,161)	4	

STUDENT SELECTS FOUR OF THE ABOVE CLASSES

PTEC	251 Introduction to Estimating (PTEC 123)	2	
PTEC	271 Printing Layout and Design (PTEC 153 or instructor's consent)	2	
PTEC	281 Preventive Maintenance Systems (Sophomore standing)	2	
PTEC	284 Quality Control in Printing (sophomore standing)	2	
ENGL	250 English 2 (ENGL 150)	3	
ARTH	311 History of Graphic Design (Consent of instructor)	3	

Prerequisite courses are listed in Parentheses

STUDENTS MUST COMPLETE OR SHOW PROFICIENCY FOR MATH 115 - INTERMEDIATE ALGEBRA - BEFORE ENTERING THE BACHELOR PROGRAM.

Graphic Arts Course Descriptions

Printing Management

PMGT 351 Printing Production Estimating   **3 Cr. (3+0)**
A course designed to give the student a working knowledge of estimating the cost of a job in the graphic arts industry. Involves the estimating of materials and labor relative to current industry practices for the production of a printed product. Emphasis will be on estimating by analyzing the product to be produced and deciding the most economical ways of production. Prerequisite: PTEC 251. Semester offered: FW

PMGT 361 Printing Production Planning   **5 Cr. (2+9)**
Systemic and analytical approach to achieving an efficient production system in all areas of printing. Production and material control. Analyzing and planning jobs for most economical means of production. Production scheduling systems. Production record keeping including inventory system. Prerequisite: junior standing. Semester offered: FW

PMGT 362 Printing Management   **5 Cr. (2+9)**
Administrative organization of a printing business to include all necessary record keeping forms to operate an efficient printing plant. Accounting and bookkeeping system records; other management records. Develops an understanding of how an organization can operate more efficiently with all necessary record systems. Customer relations, customer contact skills, along with people management skills. Prerequisite: PMGT 361. Semester offered: FW

PMGT 383 Production Cost Analysis   **3 Cr. (3+0)**
A course designed to give the student knowledge of cost controls used in the graphic arts. The course includes break-even charts, budgeted hourly rates, cash flow projection, return-on-investment analysis, budget forecasting, and contribution analysis. Prerequisite: ACCT 201, PMGT 351. Semester offered: FW

PMGT 393 Printing Management Internship   **4 Cr.**
A 10 week minimum work experience in a printing plant or with a company directly related to the printing industry. Must be taken the summer prior to graduation, and must be a management-related position. Ten orientation sessions, which must be completed the semester prior to the internship, will focus on resume writing and the job search. Also required will be one all-day session on campus near the end of the internship period. Prerequisite: PMGT 351, 361. Semester offered: S

PMT 432 Printing Marketing & Purchasing   **4 Cr. (4+0)**
A course concerning various marketing/selling concepts as they are related to the printing industry. After establishing a marketing oriented approach, the course addresses the purchasing functions and how they are influenced by the marketing philosophy of the business. Prerequisite: PMGT 362. Semester offered: FW

PMGT 499 Print Plant Layout, Organ., OSHA   **4 Cr. (4+0)**
General organizational concepts for the printing plant; effective plant layout to best provide for efficient utilization of good organization; practical facilities management to maintain the investment; and the integration throughout of safety and environmental protection as they apply to the printing industry.

Students will complete a layout to scale of a graphic arts facility, including personnel used. Prerequisite: PMGT 362. Semester offered: FW

Printing Technology

PTEC 112 Printing Technology   **2 Cr. (2+0)**
Various graphic reproduction methods, terminology, materials used, employment opportunities, and general information for entry level positions. Semester offered: D

PTEC 123 Bindery and Finishing Operations   **3 Cr. (2+3)**
Designed to develop knowledge and skills in the finishing operations for printed products. Various methods of binding including folding, cutting, mechanical and perfect binding, padding, and shrink wrapping will be discussed and practiced in the printing laboratory. Also essential and specialties such as scoring, perforating, diecutting, imprinting, numbering, embossing, and foil stamping will be discussed and practiced in lecture and laboratory with emphasis on quality control. Semester offered: FW

PTEC 132 Black and White Imaging   **4 Cr. (2+6)**
Theory and methods of line and halftone reproduction photography utilizing a process camera, followed by black and white bitmap and grayscale digital imaging on the Macintosh platform, including scanning, printing, and proofing options. Theory is supplemented with laboratory exercises, and the principles of tone reproduction for quality printing is emphasized. Semester offered: FW

PTEC 143 Image Assembly   **4 Cr. (2+6)**
Designed as an introduction to conventional manual stripping and platemaking techniques for students in the commercial printing area. Primary emphasis of the course is to involve students in a variety of manual stripping techniques including use of stripping tools and equipment, pin registration, imposition of negatives within flats, use of multiple and complementary flats, spot color stripping, and process color stripping. Other techniques and topics covered include contacting procedures, proofing systems, and lithographic platemaking. Semester offered : FW

PTEC 151 Paper and Ink Technology   **3 Cr. (3+0)**
Classification of papers used in the printing processes will be studied. Paper and ink properties and their appropriate testing procedures will be discussed and demonstrated. The nature of light and color and the effects on paper and ink color will be explored. Includes a field trip to a papermaking mill. Semester offered: FW

PTEC 153 Digital Page Layout   **4 Cr. (2+6)**
A course in computerized typography and page make-up. Desktop composition software will be utilized to present typographic procedures, including mark-up, text preparation, page make-up, and proofreading. Composition terminology, software competency, and fundamental mechanical art preparation are also integral parts of the course. Keyboarding skills suggested. Semester offered: FW

PTEC 161 Sheet-fed Offset Presswork 1   **4 Cr. (2+6)**
Theory and operation of sheetfed offset presses. Extensive demonstration and practice in set-up, make ready, running, press adjustments, troubleshooting and chemistry of lithography. Includes care, maintenance, and performance capabilities of modern presses including inking and dampening systems. Semester offered: FW

PTEC 229 Printing Processes   **2 Cr. (1+2)**
For technical illustration students to acquaint them with many of the techniques used in industrial publications. Major emphasis will be on prepress functions relating directly to industrial manuals, instruction sheets, and other material encountered by technical illustrators. Corequisite:TECL 221. Semester offered: D

PTEC 231 Screen Process Printing   **4 Cr. (2+6)**
Begins with a basic screen printing course and ends with the student having advanced knowledge and abilities in screen printing. Instruction goes from fabric stretching and screen preparation to image creation. Lab projects are: hand printing, semiautomatic, and full automatic. Substrates range from posters, textiles, pressure sensitives to glass and plastic. Emphasis is placed on screen reclaiming and safety in the lab. Technical information on inks, fabrics, frames, squeegees, and stencils. Semester offered: FW

PTEC 232 Digital Color Imaging   **4 Cr. (2+6)**
Theory and methods of digital color imaging and page make-up on the Macintosh platform including rotary drum and flatbed scanning, color separation and correction, image editing techniques, and imagesetting and proofing options, technologies and procedures. The principles of tone reproduction, gray balance, gray component replacement, and related theory and technologies are also presented. Semester offered: FW

PTEC 233 Digital Color Management   **4 Cr. (2+6)**
Practice in color page make-up, scanning and color correction, and issues in digital color imaging on the Macintosh platform, including calibration of scanners, monitors, imagesetters, proofing systems and compensation for press dot gain. Topics include color management concerns, preflighting procedures, disk and storage management, productivity issues, the world-wide web, equipment selection criteria, digital file transfer standards, electronic publishing, digital printing and other trends. Semester offered: FW

PTEC 243 Digital & Color Image Assembly   **4 Cr. (2+6)**
Primary emphasis involves students in advanced conventional color image assembly and digital image assembly techniques. Specific topics covered include spot color, chokes and spreads, process color, digital imposition/trapping/fake color, digital color, proofing, and direct-to-film/plate technology. Students will perform these advanced image assembly techniques through lab assignments which will be accomplished in a conventional and digital electronic prepress environment. Semester offered: FW

PTEC 251 Introduction to Estimating   **2 Cr. (2+0)**
Designed to introduce the printing student to the basics of estimating the cost of a printed job. Each printing operation will be surveyed, and methods of determining their costs will be discussed. Use of the paper catalog and paper pricing will be studied along with the economical use of time and materials. Prerequisite: PTEC 123. Semester offered.: FW

PTEC 253 Advanced Digital Page Layout   **4 Cr. (2+6)**
The personal computer is used to introduce the advanced concepts of text manipulation and the creation of multi-page documents. Students will utilize page makeup and graphics programs. Continuing emphasis will be on proper typeface selection, kerning, letter and word spacing, and creating complex graphics for importation to a page makeup program. Prerequisite: PTEC 153. Semester offered: FW

PTEC 261 Sheetfed Offset Presswork 2   **4 Cr. (2+6)**
Theory and operation of sheetfed offset presses. Extensive hands-on lab work emphasizing make ready, press adjustments, and troubleshooting. Includes care, maintenance, and performance capabilities of modern presses. Prerequisite: PTEC 161. Semester offered: FW

PTEC 267 Web Offset Presswork   **4 Cr. (2+6)**
A course in offset printing by web (continuous roll of paper) selected by students desiring to enrich and extend their basic knowledge in the field of lithography. Technical terminology and operational techniques of pre-press stripping methods, platemaking, preparing and running the web press, problem solving and troubleshooting of presswork problems, performance testing, presswork auxiliary operations, and daily maintenance will be taught. Prerequisite: PTEC 132, 143, 161. Semester offered: FW

PTEC 271 Printing Layout and Design   **2 Cr. (2+0)**
Principles of conventional and modern layout. Instruction will be on the printers system of measurement as well as typographical treatment employed in commercial and newspaper typography. The student will gain a knowledge of typographical treatments, layout and design techniques, and the use of the Standard Rate and Date Service. Prerequisite: PTEC 153. Semester offered: FW

PTEC 281 Preventive Maintenance Systems   **2 Cr. (2+0)**
Designed to give the student the ability to organize an effective preventive maintenance program that will keep any mechanical equipment in the best possible operating condition. Four areas will be covered: lubrication, inspection, cleaning, and electrical inspection. Each area will be dealt with individually and then brought together to produce an effective preventive maintenance program. Prerequisite: sophomore standing in printing technology. Semester offered: FW

PTEC 284 Quality Control in Printing   **2 Cr. (2+0)**
An overview of the changing quality requirements in the printing industry and the resulting quality improvement methods now being introduced. The fundamental concepts and tools of statistical process control (SPC) will be reviewed, as well as terms, definitions, trends, and some of the control targets and measurement instruments common to the printing industry. Prerequisite: sophomore standing in printing technology. Semester offered: FW

Appendix J

GOAL 1.

   Teach our students the skills required by the rapidly
   changing print and digital communications industry.

MAJOR ACTIVITIES AND PROCESSES

- The faculty will review all the data collected from our
  industry to review our industry's needs
- Current curriculum will be continually reviewed
- New curriculum/programs will be written/revised
- New courses will be offered Fall `97
- Outcome assessment tools will be developed
- Emphasis will be placed on faculty development to
  increase faculty knowledge in these new technical areas
- Acquire new equipment to replace outdated or increase
  student work stations

EXPECTED OUTCOMES

- New curriculum will be more flexible allowing for
  continual change and revision to meet the dynamics of our
  industry
- Students will be prepared to meet challenges of our
  changing industry
- Productivity improvements
- Faculty will be more knowledgeable
- Quality of instruction will improve

INDICATORS/SOURCES

- Outcomes assessment are test post tests
- Surveys already taken of industry
- Advisory committee review
- Placement data

REPORTING PROCESS

- Dean

RESOURCE REQUIREMENTS

- Maintain current supply an expense budget of $36,000
- In place of Voc. Ed. funds, establish a $35,000 equipment
  budget
- Faculty development funds $5,000

GOAL 3.

> Review the feasibility of launching a degree track in
> multi-media technology.

MAJOR ACTIVITIES AND PROCESSES

- Survey industry to verify a need for this program
- Review existing courses currently offered on campus
- Develop new course outlines

EXPECTED OUTCOMES

- New program could be tested FY `98
- Students will be offered a unique degree
- Increased enrollment

INDICATORS/SOURCES

- Surveys
- Advisory Board

REPORTING PROCESS

- Dean
- Curriculum Committee
- Academic Senate

RESOURCE REQUIREMENTS

- Survey expense--$1,000

GOAL 5.

   Implement our instructional lab continuous improvement
   plan.

MAJOR ACTIVITIES AND PROCEDURES

- Secure funding from university.
- Increase the number of student high end computer work
  stations from 10 to 15.
- Replace low end computer work stations with machines that
  will run current software.
- Replace input and output devices with current technology.

EXPECTED OUTCOMES

- Productivity will increase
- New courses/programs can be offered
- Enrollment will increase

INDICATORS/SOURCES

- Enrollment data
- Productivity report

REPORTING PROCESS

- Dean

RESOURCE REQUIREMENTS

- Commitment of a minimum $50,000 a year for the next five
  years for lab equipment.

Appendix K

Appendix K

PROGRAM REVIEW PANEL EVALUATION FORM

Program _____

Instructions: Circle the number which most closely describes the program you are evaluating.

1.   **Student Perception of Instruction**   **Average Score** _4_

5	4	3	2	1

Currently enrolled
students rate instruc-
tional effectiveness as
extremely high

Currently enrolled stu-
dents rate the instruc-
tional effectiveness as
below average

2.   **Student Satisfaction with Program**   **Average Score** _4.14_

5	4	3	2	1

Currently enrolled stu-
dents are very satisfied
with the program faculty,
equipment, facilities, and
curriculum

Currently enrolled students
are not satisfied with
program faculty, equipment,
facilities, or curriculum

3.   **Advisory Committee Perceptions of Program**   **Average Score** _4.28_

5	4	3	2	1

Advisory committee
members perceive the
program curriculum,
facilities, and equipment
to be of the highest quality

Advisory committee members
perceive the program
curriculum, facilities, and
equipment needs improvement

4.   **Demand for Graduates**   **Average Score** _4.42_

5	4	3	2	1

Graduates easily find
employment in field

Graduates are sometimes forced
forced to find positions
of their field

3

9. Qualifications of Administrators and Supervisors   Average Score _4_

5	4	3	2	1

All persons responsible
for directing and coor-
dinating this program
demonstrate a high level
of administrative ability

Persons responsible for
directing and coordinating
this program have little
administrative training and
experience

10. Instructional Staffing   Average Score _4.71_

5	4	3	2	1

Instructional staffing
for this program is suf-
ficient to permit optimum
program effectiveness

Staffing is inadequate
to meet the needs of this
program effectively

11. Facilities   Average Score _3.42_

5	4	3	2	1

Present facilities are
sufficient to support a
high quality program

Present facilities are a
major problem for program
quality

12. Scheduling of Instructional Facilities   Average Score _3.71_

5	4	3	2	1

Scheduling of facilities
and equipment for this
program is planned to
maximize use and be
consistent with quality
instruction

Facilities and equipment
for this program are
significantly under-or-over-
scheduled

13. Equipment   Average Score _3.86_

5	4	3	2	1

Present equipment is
sufficient to support a
high quality program

Present equipment is not
adequate and represents a
threat to program quality

4

14. Adaption of Instruction

Average Score 4.43

5	4	3	2	1

Instruction in all courses required for this program recognizes and responds to individual student interests, learning styles, skills, and abilities through a variety of instructional methods (such as, small group or individualized instruction, laboratory or "hands on" experiences, credit by examination)

Instructional approaches in this program do not consider individual student differences

15. Adequate and Availability of Instructional Materials and Supplies

Average Score 3.43

5	4	3	2	1

Faculty rate that the instructional materials and supplies as being readily available and in sufficient quantity to support quality instruction

Faculty rate that the instructional materials are limited in amount, generally outdated, and lack relevance to program and student needs