

Computer Network & Systems, Industrial
Electronics Technology, Electrical Engineering
Technology

APRC 2001-2002

Section 1 of 4

- EEK1/CNS 2001-02 -

**THE
ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY
AND
COMPUTER NETWORKS & SYSTEMS
DEPARTMENT'S**

**BACHELOR OF SCIENCE
COMPUTER NETWORKS AND SYSTEMS**

**ASSOCIATE IN APPLIED SCIENCE
INDUSTRIAL ELECTRONICS TECHNOLOGY**

**BACHELOR OF SCIENCE
ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY**

**SELF STUDY
FOR
ACADEMIC PROGRAM REVIEW**

Ferris State University
College of Technology

September 14th, 2001

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OF THE
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Section 1

Overview

INTRODUCTION

This report covers the program review of the three programs: the Bachelor Degree in Computer Networks and Systems (BS-CNS), the Associate Degree in Industrial Electronics Technology (AAS-IET), and the Bachelor Degree in Electrical/Electronics Engineering Technology (BS-EET). The information for the three programs will be combined together in each of the sections and results of surveys and other data will be shown in that order throughout the document.

A. BACKGROUND

The EET & CNS Department is committed to educating students in Electrical/Electronics programs and computer networks and systems valuable to Michigan's economic future and to provide educational services to business and industry. The curriculum of each program with complementary technical specialty programming integrates the appropriate general education courses needed to prepare today's graduate with the foundation of knowledge required to cope with advancing technology within their professional careers. All three programs serve the technological needs of the community, state and nation by providing graduates with a well rounded education and firm foundation in technical principles and advanced topics which insures that they will be productive individuals.

The EET & CNS Department works very hard to provide its diverse student body with a strong technical curriculum that emphasizes practical, usable skills that prepare the graduate to analyze, synthesize and problem solve within their discipline. To that end, students are perceived as being individuals who have enrolled in programs to become employable and prepared for advancement in their chosen careers after graduation. The department takes this trust seriously and provides curriculum laddering for the two-year AAS-IET program into the four-year BS-EET program. CNS was designed as a 0-4 program.

B. CNS PROGRAM

The CNS program was opened to enrollment in the fall of 1996 with 15 (17 including 2 pre-CNS) students enrolled. Enrollment has climbed to a high of 70 (85 including 15 pre-CNS) in fall of 1999. The program provides a solid foundation in basic electronics, digital/microprocessor theory, real-time operating systems, networking and project management. Several students have obtained degrees in both CNS and EET. Because of the nature of this field, the curriculum is reviewed often. The curriculum was restructured in 1999 and work is currently being done to incorporate networking earlier in the curriculum. The objectives are to reduce attrition, enable students to acquire certification prior to internship, and increase the quality of network education within the program.

C. IET PROGRAM

During your first year in the IET program at Ferris, you build the foundation for understanding more complex devices such as electronic instruments, integrated circuits, solid-state devices, digital logic, digital electronic circuits and automatic control systems. Further instruction enhances this base of knowledge and skill to obtain a position in industry after graduation.

Applying computers, programmable logic controllers, and microprocessors are part of the IET program. Most industries from automotive and furniture manufactures to high technology microchip producers employ industrial electronics technologists. In recent years, there has been a trend for the graduates of the IET program to continue their studies toward a four-year degree with most choosing the EET program within the department. Enrollments have fluctuated from a low of 54 (69 including 15 pre-IET) in fall 1999 to a high of 74 (98 including 24 pre-IET) in fall 1998. The IET program participates in the SLA.

D. EET PROGRAM

The EET program was opened to enrollment in the fall of 1984. This program allows "laddering" from many two-year associate programs in electronics from around the state, region and nation. There is a high demand for Bachelor of Science graduates proficient in automation/controls, systems integrations, computer and PLC programming, communications and networking, instrumentation or electronic hardware. With the Great Lakes/Midwest region being the nation's major center of manufacturing, there is a particularly strong demand for industrial systems integrators. The program is accredited by TAC-ABET and graduates enjoy many employment opportunities both regionally and nationally. The program is based on structured Electrical/Electronics courses and is supported by appropriate mathematics, science and technical subjects to provide a focused sequence leading to a BS degree with areas of concentration in industrial automation, communications and technology integration. A required internship usually between the third and fourth year provides the opportunity for the student to gain experience in their field and establish work references. Attrition is typically low in this program and enrollments have fluctuated from a low of 31 students in the fall of 1997 to a high of 44 in fall of 1996. The combined IET/EET enrollment reached a high of 146 in fall of 1996 and a low of 104 in fall of 1999 (including pre-program students).

E. RELATED COURSES

It should also be noted that the EET & CNS Department offers electronics courses to the Plastics, Rubber, Manufacturing, Welding, HVACR, and Mechanical Design Departments. In a typical semester, the department will service between 150 and 175 students. This is between 30 and 35% of the load in the department in any given semester. All coursed have laboratory components with most courses specifically designed for the particular department. These courses are referred to as "Related" courses throughout this document.

F. DEPARTMENT WIDE ITEMS

The capacities of the programs (CNS/IET/EET) are 88/56/48. The combined IET/EET program capacity is 104 students (analysis performed in February, 2001). This is an update to the Administrative Program Review of 2000. The EET & CNS Department's Administrative Program Review for 2000 is available in Appendix A.

Financial: The resources utilized in the delivery of each of the three programs under review and the unreviewed Related courses are very integrated at this time. Therefore, the funding and expense tracking remains integrated. Following are expenditures for the Department over the years of interest.

FY 1997	\$23,425
FY 1998	\$30,407
FY 1999	\$30,586
FY 2000	\$42,617

Equipment dollars fluctuate significantly depending on the availability of Perkins money for the IET and some Related courses, and University equipment dollars that become available on an unpredictable basis.

Section 2

Graduate Survey

BS-Computer Networks and Systems Graduate Survey**A. INTRODUCTION**

Graduate follow-up survey: The purpose of this survey is to learn from the graduates their perceptions and experiences regarding employment based on program outcomes. The goal is to assess the effectiveness of the University and the program in terms of job placement and preparedness of the graduate for the marketplace.

Since the Computer Networks and Systems Program is relatively new, the numbers of graduates through to 2000' are only twelve. Some of these students transferred into CNS from other degree programs. A cover letter and survey instrument were developed to obtain several information elements from the responding graduate without requiring a significant investment of their time. The survey was both e-mailed and mailed with a self-addressed, stamped envelope enclosed. Responses from five alumni have been received (42%). The response rate would seem to indicate there is a good level of interest in the program among the graduate community.

The survey instrument is provided in the Appendix B.

B. BS-CNS SURVEY RESULTS

The survey asked a number of questions using several formats. A discussion of the results of the survey for each question is provided in this document. The graduate respondent's names are presented followed by a summary of the answers to the questionnaire.

Figure 2-1 Graduate Survey Results**BS-CNS Responses to questions:**

		Responses
Which one area best describes your field of work. ¹	a) networks	2
	b) software	2
	c) embedded systems	2
	d) system integration	0
	e) other (please state)	1
Which one best describes the work you perform.	a) network administration	0
	b) circuit/network design	0
	c) people management	0
	d) project management	0
	e) manufacturing support	0
	f) software design	3
	g) system/network design	1
	h) system integration	1
	i) other (please state):	0
Which one area best describes the industry you are employed in.	a) manufacturing	2
	b) instrumentation	0
	c) networks/communication	3
	d) education	0
	e) other (please state)	0

¹ Multiple response were included in these questions

My starting salary at my 1 st CNS related position after graduation was:	a) < 30,000 b) 30K to 34K c) 36K to 39K d) 40K to 44K e) 45K to 49K f) 50K to 54K g) 55K to 59K h) 60K to 64K i) 65K to 70K j) > 70,000	0 1 0 1 2 1 0 0 0 0
My current salary range is:	a) < 30,000 b) 30K to 34K c) 36K to 39K d) 40K to 44K e) 45K to 49K f) 50K to 54K g) 55K to 59K h) 60K to 64K i) 65K to 70K j) > 70,000	0 0 0 1 2 2 0 0 0 0
I am currently taking classes for:	a) certifications b) a Masters Degree c) a Bachelor Degree d) Interest only e) other: _____ f) not taking classes	1 1 0 0 0 3
I plan to further my education by:	a) Pursuing a Masters Degree b) Seminars c) Internet based courses d) Certifications e) No Plans	3 2 0 3 1

Please answer these questions based on your experience from FSU - Computer Networks and Systems program. Your thoughtful answers will help us to evaluate and direct our program quality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
As a CNS graduate:					
1. I perform well overall compared to graduates from other colleges:	3	1	0	0	0
2. I am able to use written and oral skills effectively:	2	1	1	0	0
3. I have developed good critical thinking, problem solving, and decision making skills.	3	1	0	0	0
4. I have a strong technical understanding:	4	0	0	0	0
5. I have the ability to apply technical theory to practical situations.	4	0	0	0	0
6. I have adequate mathematical skills.	1	2	0	1	0
7. I am self-motivated and enthusiastic.	4	0	0	0	0
8. I am ready and able to assume responsibility.	4	0	0	0	0
9. I am able to plan effective use of available resources.	4	0	0	0	0
10. I am able to participate as part of a team.	3	1	0	0	0
11. I work well with individuals from diverse backgrounds.	3	1	0	0	0
12. I have good ethical values.	4	0	0	0	0
13. The courses provided a good mix of subjects for my career options.	2	1	1	0	0
14. Courses challenged me intellectually.	1	3	0	0	0

15. Courses motivated me to a higher level of performance.	3	1	0	0	0
16. Overall CNS program developed my ability to reason and solve problems.	0	4	0	0	0
17. Coursework provided a solid electronics foundation.	3	1	0	0	0
18. Coursework provided a good understanding of digital/microprocessor electronics.	1	3	0	0	0
19. Coursework provided good programming skills.	0	3	1	0	0
20. Coursework provided a good foundation in network application, implementation, and operation.	0	1	3	0	0
21. Experiences other than coursework (i.e. part time work, seminars, student groups etc.) were a valuable part of my education at Ferris.	3	1	0	0	0
22. Internship experience was an important aspect of my education at Ferris.	3	1	0	0	0
23. My overall campus experience at Ferris was satisfying.	3	1	0	0	0
25. I would recommend the CNS program to others.	3	1	0	0	0
26. I would be interested in working to advance the CNS program (i.e. Advisory Committee member, etc.)	2	2	0	0	0

Please provide us with your comments regarding the CNS program curriculum.

DeMott, Jared (00') -

"Needed more TCP/IP"

"I liked CNS. Especially the assembly language (although not at the time) has been a huge help for me to develop attacks. Programming back ground is OK too. Needed a bit more math for my masters... but I would have hated that too.

Really though from CIS to CNS to EET (and all others) I feel like my undergrad did a good job of starting me out!

Thanks,

Jared

Brown, Roy (98') -

More emphasis on Network Electronics / Communications Protocols would be valuable. I believe I heard through the grapevine that this had been implemented in the past couple of years.

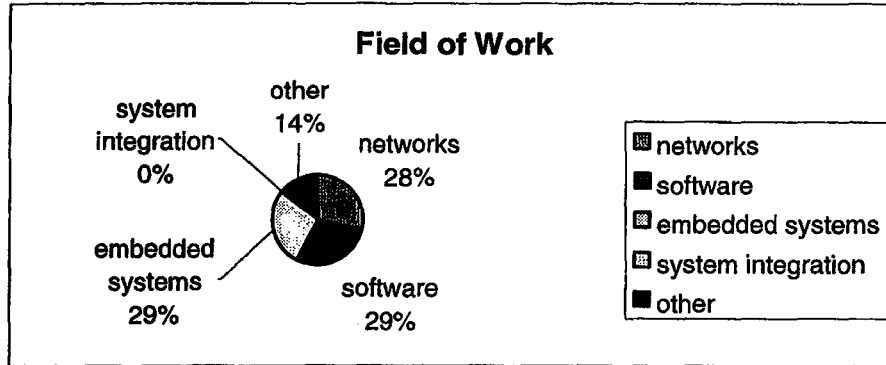
C. BS-CNS RESPONSE EVALUATION

Each part of the questionnaire was evaluated by drawing conclusions from the responses. These conclusions are stated below.

Graduates are employed in the three areas most target by the CNS program:

- i. networks
- ii. embedded systems
- iii. software (targeted for real-time/control applications)

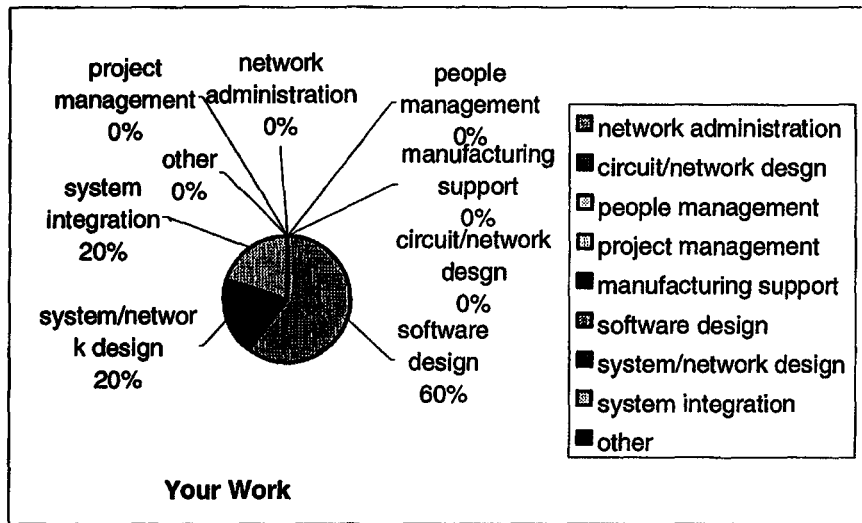
Which one area best describes your field of work.



[Multiple answers accepted.]

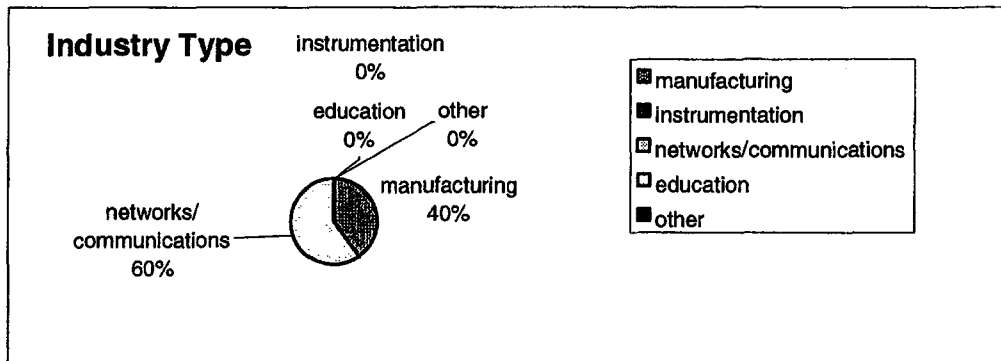
- *Graduates perform work in a mix of systems, networks, and software development.*

Which one best describes the work you perform.



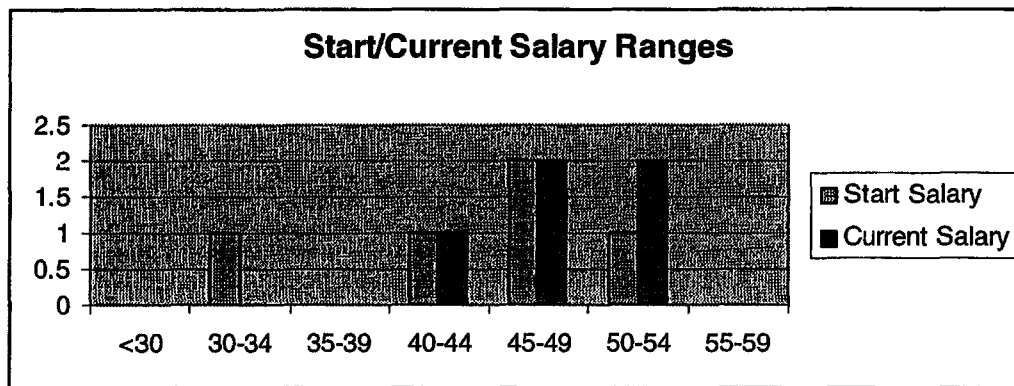
- *Graduates are employed primarily in the manufacturing and networks/communications industries.*

Which one area best describes the industry you are employed in.



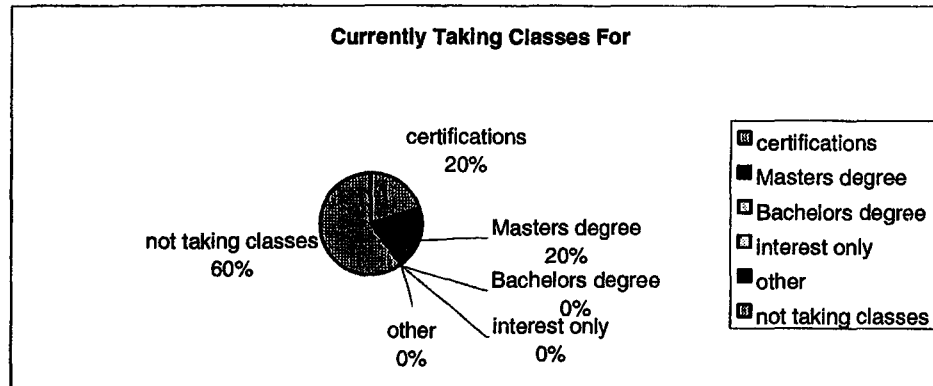
- *Graduates starting salary range: \$42,000 to \$45,200 (average across graduation years).*
- *Graduates from the class of 2000' starting salary range: \$45,000 to \$49,000.*
- *Graduates current salary range is: \$46,000 to \$50,000.*

My starting salary at my 1st CNS related position after graduation was:
 My current salary range is:



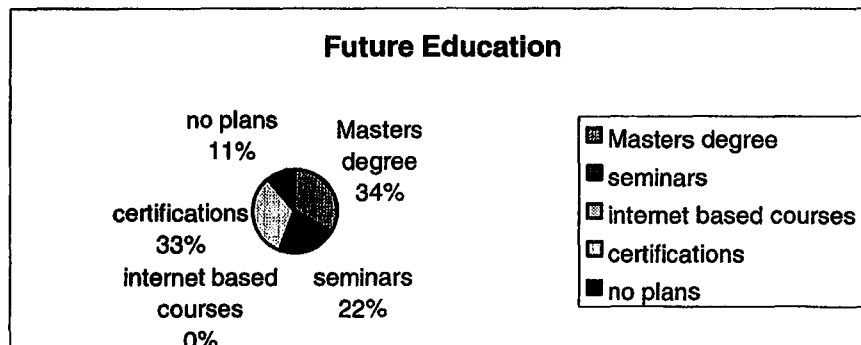
- *Graduates consider continuing education important to them – 80% plan to continue their education.*
- *Graduates consider a Masters degree important to their careers. – 50% are pursuing or plan to pursue a Masters degree.*

I am currently taking classes for:



[Multiple answers accepted.]

I plan to further my education by:



[Multiple answers accepted.]

- *Graduates are employed in engineering related positions - 80% of the respondents have the word Engineer in their title.*
- *Graduates largely decide to remain in this state - 100% of the respondents live in Michigan.*

BS-CNS Graduate's Opinions:

100%	of the graduates believe they perform well overall compared to graduates from other colleges:
75%	of the graduates believe they are able to use written and oral skills effectively:
100%	of the graduates believe they have developed good critical thinking, problem solving, and decision making skills.
100%	of the graduates believe they have a strong technical understanding:
100%	of the graduates believe they have the ability to apply technical theory to practical situations.
75%	of the graduates believe they have adequate mathematical skills.
100%	of the graduates believe they are self-motivated and enthusiastic.
100%	of the graduates believe they are ready and able to assume responsibility.

100%	of the graduates believe they are able to plan effective use of available resources.
100%	of the graduates believe they are able to participate as part of a team.
100%	of the graduates believe they work well with individuals from diverse backgrounds.
100%	of the graduates believe they have good ethical values.
75%	of the graduates believe courses provided a good mix of subjects for my career options.
100%	of the graduates believe courses challenged them intellectually.
100%	of the graduates state courses motivated them to a higher level of performance.
100%	of the graduates believe the overall CNS program developed their ability to reason and solve problems.
100%	of the graduates believe that coursework provided a solid electronics foundation.
100%	of the graduates believe that coursework provided a good understanding of digital/microprocessor electronics.
75%	of the graduates believe that coursework provided good programming skills.
25%	of the graduates believe that coursework provided a good foundation in network application, implementation, and operation.
100%	of the graduates believe that experiences other than coursework (i.e. part time work, seminars, student groups etc.) were a valuable part of their education at Ferris.
100%	of the graduates believe that internship experience was an important aspect of their education at Ferris.
100%	of the graduates state their overall campus experience at Ferris was satisfying.
100%	of the graduates state they would recommend the CNS program to others.
100%	of the graduates state they would be interested in working to advance the CNS program (i.e. Advisory Committee member, etc.)

D. BS-CNS Graduate Survey Summary

Due to the recent launch of the Computer Networks and Systems program, graduates are still ramping up. These Graduate Surveys however provide initial indication of the success of CNS. The only response of concern was that only 25% of the graduates believed coursework provided a good foundation in network application, implementation, and operation. We have already taken steps to strengthen networking technologies in CNS. The first was implemented last year. A new course in networks was introduced to the third year students "Control Networks" and another "Network Theory and Test" course was also enhanced. CNS strives to present both the theory and application of network technologies using a mix of course and hands-on labs. The second step provides a very strong and sequential sequence in network technologies beginning the very first semester. The step is in process as a proposal within the College and is very strongly advocated by both our Industrial Partners and students. We believe the end result will ensure CNS is the most advanced program for networks, embedded systems (microprocessor controlled systems), and control software technologies in the world.

Overall this survey indicates that graduates of the BS-CNS program enjoy excellent employment, compensation, and career growth opportunities. They are, as a group, well satisfied with the professional preparation provided by the program.

AAS Industrial Electronics Technology Graduate Survey

A. INTRODUCTION

Graduate follow-up survey: The purpose of this survey is to learn from the graduates their perceptions and experiences regarding employment based on program outcomes. The goal is to assess the effectiveness of the University and the program in terms of job placement and preparedness of the graduate for the marketplace.

The Ferris State University Alumni office was able to provide the names and addresses for 44 of the IET graduates. A cover letter and survey instrument were developed to obtain several information elements from the responding graduate without requiring a significant investment of time. The survey was mailed with a self-addressed, stamped envelope enclosed. Of the 44 surveys mailed there were 2 responses received for a 4.5% response rate. The response rate would seem to indicate there is a low level of interest in the program among the graduate community. **However, over 90% of our IET graduates do not acquire work positions after graduation, but continue on in our BS-EET program.**

B. SURVEY RESULTS

Upon examining the two returned IET graduate surveys, it was found the two individuals graduated from the BS-EET program. The individuals are:

Victor P. Manske - 1997 BS-EET and Richard Faber - 1998 BS-EET

The committee decided to include these individuals in the BS-EET graduate survey pool.

The IET Survey Instrument is provided in the Appendix B.

C. SUMMARY

Not one graduate responded who had only an Associates degree in the IET program. All respondents had gone on to obtain their BS-EET. These results, obviously, do not allow any independent evaluation of the IET program since all the graduates who responded were hired on the basis of having obtained a BS-EET.

Overall this survey indicates that the vast majority of the IET graduates continues on and do not strongly feel associated with the IET program once they have completed the BS-EET program.

BS Electrical/Electronics Engineering Technology Graduate Survey

A. INTRODUCTION

Graduate follow-up survey: The purpose of this survey is to learn from the graduates their perceptions and experiences regarding employment based on program outcomes. The goal is to assess the effectiveness of the University and the program in terms of job placement and preparedness of the graduate for the marketplace.

The Ferris State University Alumni office was able to provide the names and addresses for 108 of the BS-EET graduates. A cover letter and survey instrument were developed to obtain several information elements from the responding graduate without requiring a significant investment of time. The survey was mailed with a self-addressed, stamped envelope enclosed. Of the 108 surveys mailed there were 30 responses received for a 27.7% response rate. The response rate would seem to indicate there is a fairly good level of interest in the program among the graduate community.

The survey instrument is provided in the Appendix B.

B. SURVEY RESULTS

The survey asked a number of questions using several formats. A discussion of the results of the survey for each question is provided in this section. The graduate respondent's names are presented followed by a summary of the answers to the questionnaire.

The Survey instrument is provided in Appendix B.

C. Responses to questions:

Figure 2-2 GRADUATE SURVEY – RESULTS

Which one area best describes the over-all business facility at your work location?

<u>Number</u>	<u>Nature of employer's business</u>
11	a – Manufacturing Plant
6	b – OEM
3	c – Administrative Office
	d – R & D lab
	e – Parts/Equipment Warehouse
	f – Sales Office / Distributor
2	g – Field Service Center
5	h – Engineering Firm
3	i – other Education, System Integrator, Utility Company

Which one area best describes the type of product/service produced by your employer?

<u>Number</u>	<u>Product/Service</u>
3	a – Construction of Production Equipment
1	b – Sales/ Distribution of Product
6	c – Engineering of Product
4	d – Engineering of Manufacturing Control Systems
	e – Engineering of Facilities
	f – Contract Maintenance
3	g – Contract Engineering
10	h – Other Software Engineering, System Integrator, Production of Product, Service Telecom., Automatic Welding Equipment, Automobile Manufacture, Communications, Chemical Eng. Circuit Board, Drugs Manufacturer
3 No Responses	

Which one area best describes your primary work function?

<u>Number</u>	<u>Work Function</u>
	a – People management
7	b – Project management
4	c – Software design
9	d – Industrial Control System Integration
2	e – Circuit/network design
3	f – Computer System/network design
	g – Sales
2	h – Consultant
2	i – Other Test design, communications equipment install
3 No Responses	

My starting salary at my 1st BS-EET related position after graduation was:

<u>Number</u>	<u>\$Amount</u>
3	a - <30K
8	b – 30K to 35K
3	c – 36K to 39K
6	d – 40K to 44K
3	e – 45K to 49K
2	f – 50K to 54k
	g – 55K to 59K
1	h – 60k to 64K
	i – 65K to 70K
	j - >70K

4 No Responses

My current salary range is:

Number	Amount
	a - <30K
	b - 30K to 34K
3	c - 36K to 39K
2	d - 40K to 44K
5	e - 45K to 49K
7	f - 50K to 54K
1	g - 55K to 59K
1	h - 60K to 64K
3	i - 65k to 70K
3	j - >70K

5 No Responses

I am currently taking classes for:

Number	Type of Class
3	a - certifications
4	b - a Masters Degree
	c - a Bachelor Degree
2	d - interest only
1	e - other Training
18	f - not taking classes

2 No Responses

As a BS-EET Graduate:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Response
1. I perform well overall compared to graduates from other colleges:	11	11	6	0	1	1
2. I am able to use written and oral skills effectively:	9	19	2	0	0	
3. I have developed good critical thinking, problem solving, and decision-making skills.	14	14	2	0	0	
4. I have a strong technical understanding:	12	18	0	0	0	
5. I have the ability to apply technical theory to practical situations.	12	17	1	0	0	
6. I have adequate mathematical skills.	12	16	2	0	0	
7. I am self-motivated and enthusiastic.	15	13	1	1	0	
8. I am ready and able to assume responsibility.	17	12	0	1	0	

Academic Program Review ReportBS-CNS, AAS-IET, BS-EET

As a BS-EET Graduate:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Response
9. I am able to plan effective use of available resources.	10	17	3	0	0	
10. I am able to participate as part of a team.	14	15	1	0	0	
11. I work well with individuals from diverse backgrounds.	12	15	2	1	0	
12. I have good ethical values.	20	9	0	1	0	
13. The courses provided a good mix of subjects for my career options.	4	25	1	0	0	
14. Courses challenged me intellectually.	10	18	2	0	0	
15. Courses motivated me to a high level of performance.	5	18	5	0	0	2
16. Overall BS-EET program developed my ability to reason and solve problems.	6	19	4	1	0	
17. Coursework provided a solid electronics foundation.	8	21	0	0	0	1
18. Coursework provided a good understanding of digital/microprocessors	5	19	6	0	0	
Academic Program Review Report						2-15
BS Electrical/Electronics Engineering Technology						
19. Coursework provided good programming skills.	6	14	8	2	0	
20. Coursework provided a good foundation in Control Systems used in manufacturing.	9	12	7	0	0	2
21. Experiences other than coursework were a valuable part of my education.	8	15	4	2	0	1
22. Internship experience was an important aspect of my education.	8	9	9	0	1	3
23. My overall campus experience at Ferris was satisfying.	7	19	3	0	0	1
24. I would recommend the BS-EET program to others.	11	18	0	0	1	
25. I would be interested in working to advance the BS-EET program.	4	7	12	5	1	1

Please provide us with your comments regarding the BS-EET program curriculum.

I am extremely disappointed that no hiring of professors will be done without a masters degree. Some of my best student learning was done with a professor that had more industry background and no master's degree. There also should be more effort made for the women in the program and technology as a whole at Ferris. The programs are good but it is like fighting through a sea of testosterone at times to get to graduation. Support groups from industry for the women in the various programs should be pursued.

I think the BS-EET program offered at FSU provides students/graduates with the necessary skills to be knowledgeable and capable in an engineering/design environment. It also provides a decent baseline for ones problem solving skills. Obviously, now working as a controls engineer, I will say that all the industrial automation courses helped me out. I also enjoyed them. I did not take the advanced digital courses but I sometimes wish I had, as I occasionally have a microprocessor interface/architecture design issues. The math courses are another necessity to help with the problem solving skills.

Ferris BS-EET program is very good. I find that the Industrial Automation, Project Management, AutoCAD, and Industrial Communications class help me out the most. The internship program is an excellent starting point.

The Industrial Automation courses relate directly to my field. The people in my department are very happy with the people they have had that are Ferris graduates in the BS-EET Program.

I was and still am a little disturbed that I was never asked to _____. I felt a little shunned in my senior year as I was a quiet student who studied alone most of the time. It seemed that instructors were more interested in the "loud" students that talked a lot about \$ and new jobs. I am not feeling sorry for myself or blaming anyone here, just remember Ferris graduates all types of students. As a whole the program is decent. I would have taken the ECNS track if it was offered.

I think the program does a good job of providing students with the skills they need after graduation. I think the most valuable classes are: Sr. Project, PLC programming- especially the Petra project, AutoCAD, Hydraulics/Pneumatics. I am very pleased with the direction the program has taken in offering more courses that teach practical skills such as the new motion control and industrial communications network class. Bob Willison and Dan Smalley should be commended for their work in forming these courses. Another course you should consider adding is the National Electric Code. This is absolutely essential if anyone is considering writing for a license. I am amazed at the number of engineers who cannot size motor circuit components or size conduits without cheat sheets from manufacturers.

I enjoyed all 3 topical courses, but communications was probably not favorite. It was hard! But very interesting too. The instructors all had unique personalities which _____ in their respective coursework.

The curriculum as a whole was very good at preparing me for my job. I would like to see the college start toward PC controlled systems class. I believe that it is going to be a very advantageous skill for future graduates. Where I work we have only done one PC based system,

but it looks like it is going to become more prominent. The only class that I have a problem with is the EEET 110 class. This basic computer class wasted my time and money when students graduating from Michigan schools have to have taken computer to graduate. Spare the students. It is a giant waste. If a student needs that type of class it should be done on their own, not required by me. Thanks.

We need the BS-EET program to remain ABET Accredited for employers to take our program seriously.

All courses were challenging and helped improve my problem solving ability. Courses, which helped most, are: Industrial Control Systems theory, C++, Senior Project, Microprocessors, math courses.

My job currently is project engineer designing/building machine vision inspection products. I do a lot of visual C++ programming, I am able to prototype the electrical connections between cameras and computer hardware and control the I/O to the rest of these machines. There are many things in the coursework that I do not use on a regular basis, but the general knowledge is helpful overall.

I believe a more better PLC program is needed in the Industrial Courses of electronics.

My two concentrations digital systems and controls turned out to be excellent combination for my first job designing engine and transmission computer test systems. My skills in these areas helped me move quickly to engine test manager at Bauer Controls. I am currently at DaimlerChrysler to focus on product design to improve test methods for engines.

The programming courses were of most value to me. Also in my current position the Communication class was of great value. I would have taken computer-networking classes if they were available with my degree.

After being in the field for almost 2 years, I would have found it beneficial for these classes listed. - Motion "Interface PLC to Servo" - HMI "Interface PLC to HMI" - Other Industrial Controls like PC based, Open Control, Flow Pro, etc.

PLC courses quite useful, though I don't do much PLC programming at work. A necessity for troubleshooting and modification. Microprocessor - related courses helpful. Actually, going back to the Ind. Auto. Course, the design work was highly similar to the design work I do now. I think the course mix was good. A pretty good balance of theory and practice. (Unfortunately, some of the theory has worn off: I haven't used h-parameters or solved any ODE's on the job.) I can't think of any major flaws in the EET program. For what it's worth - I use quite a bit of LabView on the job.

The course work was invaluable. -For assembly language especially - lab experience in various courses. - The advanced math - 2 semester of Calc., network analysis, DSP. - Although I've not

had a change to use everything, having the skill level provided by the course work opened the door for my eventual employment.

I think that all of the cultural and social classes are not needed. All of the IET classes gave me a good foundation for my career.

At the time I finished school in 1998, 80% of the job market was in computer related fields. I am happy I stayed an extra year to get a second BS in computer network & Systems. All of the CNS courses helped me out a great deal especially the programming courses because they can be applied in almost every field. Unix training and programming in shell, Perl, and C are the most beneficial courses that should be taught. MQ Series is my specialty but MQ Series is a specific application so I don't expect this to be taught.

D. RESPONSE EVALUATION

Each part of the questionnaire was evaluated by drawing conclusions from the responses. These conclusions are stated below.

Personal Status: The majority of the respondents have the word Engineer in their position titles. A break down of the respondent's year of graduation is as follows:

1992 – 1 1995 – 2 1996 – 6 1997 – 5 1998 – 7 1999 – 4 2000 - 5

The number of respondents that live and work by State:

Arizona – 1
Indiana – 1
Michigan – 28

The vast majority, about 93%, live in the State of Michigan.

Nature of employer's business: About 37% of our graduates work in manufacturing plants. About 20% work for OEMs, and about 17% work for Engineering Firms.

Product/Service of Employer: About 20% of our graduates work for companies which Engineer Products; about 13% work for companies which do engineering with manufacturing control systems, and the others perform other functions.

Work Function: About 30% describe their primary work as Industrial Control System Integration; about 23% perform Project Management, and about 10% perform Software design.

Average Salaries: The average salaries of graduates from 1996 to 2000 are as listed below. Salary offers vary considerably from company to company and from position to position. Though based on a small sample size, the average **current** salary of the entire group is at least **\$53.1K** depending on the extent to which the top salaries exceed \$70K. The average **starting** salary for the 8 EEET alumni that graduated in the last two years is **\$44.6K**.

Year	Sample	Average	Average		
Grad.	Number	Start	2001	% Increase	%Increase /year
1996	5	\$35.8K	\$49K	36.9	7.4
1997	5	\$41.2K	\$60.5K	46.8	11.7
1998	6	\$37.8K	\$49.8K	31.7	10.6
1999	4	\$37K	\$48.3K	30.5	15.3
2000	4	\$52.1	\$52.1K	0.0	0.0 [most recent data]

Current Continuing Education: From the data, over 60% of the BS-EET graduates are presently not taking classes of any type. About 10% are taking certification classes and about 13% are taking a Masters Degree class.

BS-EET Graduate's Opinions: From the data, the following facts can be stated.

1. Over 73% feel they perform well compared to other graduates from other colleges.
2. Over 93% feel they are able to use written and oral skills effectively.
3. Over 93% feel they have developed good critical thinking and problem solving skills.
4. 100% feel they have a strong technical understanding.
5. Over 96% feel they have the ability to apply technical theory to practical situations.
6. Over 93% feel they have adequate mathematical skills.
7. Over 93% feel they are self-motivated and enthusiastic.
8. Over 96 % feel they are ready and able to assume responsibility.
9. 90% feel they are able to plan effective use of available resources.
10. Over 96% feel they are able to participate as part of a team.
11. 90% feel they work well with individuals from diverse backgrounds.
12. Over 96% feel they have good ethical values.

13. Over 96% feel the courses provided a good mix of subjects for my career options.
14. Over 93% feel the courses challenged me intellectually.
15. Over 76% feel the courses motivated them to a high level of performance.
16. Over 83% feel the overall BS-EET program developed their ability to reason and solve problems.
17. Over 96% feel the coursework provided a solid electronics foundation.
18. 80% feel the coursework provided a good understanding of digital/microprocessor electronics.
19. Over 66% feel the coursework provided good programming skills.
20. 70% feel the coursework provided a good foundation in Control Systems used in manufacturing.
21. Over 76% feel the experiences other than coursework were a valuable part of their education at Ferris.
22. Over 56% feel the internship experience was an important aspect of their education at Ferris.
23. Over 86% feel their overall campus experience at Ferris was satisfying.
24. Over 96% feel they would recommend the BS-EET program to others.
25. Over 36% feel they would be interested in working to advance the BS-EET program.

E. SUMMARY

The Graduate Survey had a reasonable rate of return and the response information is very positive. The survey provides clear indications of the strengths and weaknesses of the BS-EET program as perceived from a graduate's point of view. The relatively lower rating in question #19 (Programming Skills) and #22 (Internship Experience) should be investigated in more depth and improvements considered.

Overall this survey indicates that graduates of the BS-EET program enjoy excellent employment, compensation, and career growth opportunities. They are, as a group, well satisfied with the professional preparation provided by the program. One recommendation for improvement is the establishment of a graduate database in the EET & CNS Department. This database would provide a larger pool of alumni for future evaluations and provide sources for contacts for future program support, internships, and graduate placement.

Section 3

Employer Survey

BS Computer Networks and Systems Employer Survey

A. INTRODUCTION

Employer follow-up survey: This activity is intended to aid in assessing the employers' experiences with graduates and their perceptions of the program itself. A cover letter and survey instrument were developed to obtain several information elements from the responding employer without requiring a significant investment of time. The survey was both emailed and mailed with a self-addressed, stamped envelope enclosed. Due to the few CNS graduates up through 2000' few surveys were available to be evaluated.

The survey instrument is provided in the Appendix C.

B. SURVEY RESULTS

The survey asked a number of questions where the employer rated statements from "Strongly Agree" to "Strongly Disagree". A discussion of the results of the survey for each question is provided in this document. The employer's names are presented followed by a summary of the answers to the questionnaire.

Figure 3-2 EMPLOYER SURVEY – RESULTS

Employers:

<u>Company Names</u>	<u>Address</u>	<u>Contact Person</u>	<u>Position/Title</u>
Logic Plus	Reed City, MI	Jody Zolman	Owner/CEO
Department of Defense	Ft. Meade, MD	K. Rabenstein	Division Manager

Summary of Answers:

Dear Employer, Please answer these questions based on your perception and experience with FSU - Computer Networks and Systems graduate(s). Your thoughtful answers will help us to evaluate our program quality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
CNS Graduates:					
24. Perform well overall compared to graduates from other colleges:	2	0	0	0	0
25. Use written and oral skills effectively:	1	1	0	0	0
26. Use critical thinking, problem solving, and decision making skills:	2	0	0	0	0
27. Demonstrate a strong technical understanding:	1	1	0	0	0
28. Demonstrate the ability to apply technical theory to practical situations:	2	0	0	0	0
29. Have adequate mathematical skills:	0	1	1	0	0
30. Are self-motivated and enthusiastic:	2	0	0	0	0
31. Are ready and able to assume responsibility:	0	2	0	0	0
32. Plans effective use of available resources:	1	1	0	0	0
33. Demonstrate ability to participate as part of a team:	2	0	0	0	0
34. Work well with individuals from diverse backgrounds:	1	1	0	0	0

35. Demonstrate good ethical values:	2	0	0	0	0
I / my company would hire another FSU/CNS graduate:	2	0	0	0	0
I / my company would like to serve as an advisor to the CNS program.	0	0	1	1	0

Please provide us with your comments regarding the CNS program curriculum.
Jared's curriculum appears to have prepared him for real world problems. I would rate him right up there with analysts who have 2-3 year of experience.

C. Employer Response Summary

Although the number of responses is not sufficient to draw absolute conclusions, we are very pleased with the positive evaluations given by these employers.

It is worthy to note that the employer making the above comment usually only hires Master's level or PhD. level students from elite Universities. I am pleased that our graduate compares well against those with multiple years of experience. I am also aware that this student is being given release time to obtain a Masters degree at Carnegie Mellon University - School of Computer Science. His employer is paying for the education while continuing his full time salary.

As the CNS graduate/employer database increases, we fully expect excelling evaluations from industries. Our goal is to increase the demand for both our program and our graduate by increasing the quality of the latter.

AAS Industrial Electronics Technology Employer Survey

A. INTRODUCTION

Employer follow-up survey: This activity is intended to aid in assessing the employers' experiences with graduates and their perceptions of the program itself. The EET & CNS Department had no current list of graduate employers. Faculty were asked to provide names of employers from their knowledge of graduate placement activities. Another source was the returned graduate surveys. From these two sources a list of 8 employers was obtained. A cover letter and a survey instrument were developed to obtain several information elements from the responding employer without requiring a significant investment of time.

B. SURVEY RESULTS

The survey was mailed with a self-addressed, stamped envelope enclosed. Of the 8 surveys mailed there were 0 responses received for a 0% response rate. The response rate would seem to indicate there is a very poor level of interest in the program among the graduate community, but the initial number of employers was very low and more than 90% of our IET graduates go into our BS-EET program and are not available for hire.

The survey instrument is provided in Appendix C.

C. SUMMARY

No survey information was obtained from IET employers. A combination of a small sample size of responding companies and the small number of IET-only graduates out in the work force resulted in the lack of data. Again, in the last several years, a great majority of IET graduates go on for the 4-year BS-EET degree.

It is suggested that the EET & CNS Department start and maintain a database of IET employers to help with the next employer survey and to provide a support base for other activities like internships and donations.

BS Electrical/Electronics Engineering Technology Employer Survey

A. INTRODUCTION

Employer follow-up survey: This activity is intended to aid in assessing the employers' experiences with graduates and their perceptions of the program itself. The EET & CNS Department had no current list of graduate employers. Faculty were asked to provide names of employers from their knowledge of graduate placement activities. Another source was the returned graduate surveys. From these two sources a list of 26 employers was obtained. A cover letter and survey instrument were developed to obtain several information elements from the responding employer without requiring a significant investment of time. The survey was mailed with a self-addressed, stamped envelope enclosed. Of the 26 surveys mailed there were 5 responses received for a 19.3% response rate. The response rate would seem to indicate there is a fairly good level of interest in the program among the graduate community, but the initial number of employers was very low.

The survey instrument is provided in the Appendix C.

B. SURVEY RESULTS

The survey asked a number of questions where the employer rated statements from "Strongly Agree" to "Strongly Disagree". A discussion of the results of the survey for each question is provided in this document. The employer's names are presented followed by a summary of the answers to the questionnaire.

Figure 3-2 EMPLOYER SURVEY-RESULTS

<u>Summary of Answers:</u> As a BS-EET Employer, BS-EET Graduates:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Response
1. Perform well overall compared to graduates from other colleges	1	3	1	0	0	
2. Use written and oral skills effectively	1	3	1	0	0	
3. Use critical thinking, problem solving, and decision making skills	1	4	0	0	0	
4. Demonstrate the ability to apply technical theory to practical situations	0	4	1	0	0	
5. Have adequate mathematical skills	0	5	0	0	0	
6. Are self-motivated and enthusiastic	0	4	1	0	0	
7. Are ready and able to assume responsibility	1	3	1	0	0	
8. Plans effective use of available resources	0	4	1	0	0	

As a BS-EET Employer, BS-EET Graduates:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Response
9. Demonstrate ability to participate as part of a team	1	4	0	0	0	
10. Work well with individuals from diverse backgrounds	0	5	0	0	0	
I/my company would hire another FSU/BS-EET graduate	0	5	0	0	0	
I/my company would like to serve as advisor to the BSEE program	1	0	1	0	1	2

C. RESPONSE EVALUATION

Each part of the questionnaire was evaluated by drawing conclusions from the responses. These conclusions are stated below.

All of the respondent companies are located within the State of Michigan

Employers' Opinions: From the data, the following facts can be stated.

1. 80% feel our graduates perform well overall compared to graduates from other colleges.
2. 80% feel our graduates use written and oral skills effectively.
3. 100% feel our graduates use critical thinking, problem solving, and decision-making skills.
4. 80% feel our graduates demonstrate the ability to apply technical theory to practical situations.
5. 100% feel our graduates have adequate mathematical skills.
6. 80% feel our graduates are self-motivated and enthusiastic.
7. 80% feel our graduates are ready and able to assume responsibility.
8. 80% feel our graduates plan effective use of available resources.
9. 100% feel our graduates demonstrate ability to participate as part of a team.
10. 100% feel our graduates work well with individuals from diverse background.
11. 100% would hire another FSU/BS-EET graduate again.
12. 20% of the employers would like to serve as advisor to the BS-EET program.

D. SUMMARY

The Employer Survey provided some very positive information, but the small sample received should be viewed as suggestive only. Other than the information provided by the survey, there are some important fact, which are strongly indicative of the industrial support that the current BS-EET Program has received to include:

- 1) There are currently 15 scholarships for BS-EET students generated from employers.
- 2) The program received over the last 3 year \$120,000 in equipment donations from employers.
- 3) The Senior Project is especially highly rated by employers and industrial advisory members.
- 4) The Graduate Placement is about 100%.
- 5) There is a very large demand for BS-EET graduates with some salaries exceeding \$80,000 per year.

It is suggested that the EET & CNS Department start and maintain a data basic of prospect employers to help with the next employer survey and to provide a support base for other activities like internships and donations.

Section 4

Student Evaluations

Student Evaluation of Instruction for EET & CNS Department

A. INTRODUCTION

The student evaluation of instruction survey instrument, found in Appendix B, was given to students in all three programs; CNS, IET, and EET.

The results of the survey follow the sample survey with written summary after that. The results are broken down for the three programs; CNS, IET, and EET.

B. SURVEY RESULTS

Figure 4-1 RESULTS for CNS

(37 of 42 students completed the survey)

2. What year are you in? a. Fresh = 9 b. Soph = 7 c. Junior = 12 d. Senior = 14

3. Why did you select the EET & CNS programs at Ferris?

Please rate 1st reason, 2nd reason, etc for as many as apply.

- | | |
|---|------------------------------------|
| <u>3</u> Friend suggested program | <u>7</u> Teacher suggested program |
| <u>7</u> Family suggested program | <u>7</u> School counselor |
| <u>1</u> Advertising | <u>7</u> Reputation and quality |
| <u>4</u> Other : <u>Financial reasons</u> | |

4. What could Ferris do to better promote the EET & CNS programs?

Please rate 1st, 2nd, etc for as many as apply.

- | | |
|--|--------------------------------|
| <u>12</u> TV advertising | <u>7</u> Radio advertising |
| <u>13</u> Video sent to school | <u>15</u> Web page on Internet |
| <u>14</u> Visits from Ferris admission representative | |
| <u>14</u> Host field trips to Ferris to see facilities and talk to faculty | |
| <u>16</u> Brochures and materials sent to school counselors | |

5. What percentage of educational time in the EET & CNS classes should be spent in laboratory "hands on" experience?

- | | | | |
|---------------|---------------|---------------|---------------|
| a. 30% to 40% | b. 40% to 50% | c. 50% to 60% | d. 60% to 70% |
| 8.1% | 27% | 51.4% | 10.8% |

The small numbers below the letters indicate the percent that picked that response.

The small number under the statement indicates the "score" of this statement based on a 4.0 being best scale.

	Strongly Agree	B	neutral C	D	Strongly Disagree E
6. Quality of material presented is high: score = 2.73	A 8.1%	B 62.2%	C 24.3%	D 5.4%	E 0
7. Material presented meets current standards: score = 2.40	A 13.5%	B 35.1%	C 29.7%	D 21.6%	E 0
8. Pace of material is appropriate: score = 2.54	A 5.4%	B 56.8%	C 24.3%	D 13.5%	E 0

9. Instructors care about your learning: score = 2.54	A	B	C	D	E
	5.4%	56.8%	27%	8.1%	2.7%
10. Material presented is relevant to the curriculum: score = 2.72	A	B	C	D	E
	16.2%	48.6%	27%	2.7%	5.4%
11. Difficulty of material for level of course is appropriate: score = 2.59	A	B	C	D	E
	10.8%	51.4%	27%	8.1%	2.7%
12. Assignment objectives are made clear to students: score = 2.83	A	B	C	D	E
	18.9%	51.4%	24.3%	5.4%	0
13. Use of media, white boards, overheads, video is appropriate and helpful: score = 2.89	A	B	C	D	E
	18.9%	54.1%	24.3%	2.7%	0
14. Lectures are well prepared and organized: score = 2.97	A	B	C	D	E
	16.2%	59.5%	18.9%	5.4%	0
15. Student expectations and grading are clearly explained: score = 2.80	A	B	C	D	E
	21.6%	45.9%	24.3%	8.1%	0
16. Testing and evaluation procedures are fair: score = 2.78	A	B	C	D	E
	24.3%	37.8%	32.4%	2.7%	2.7%
17. Graded materials are returned within reasonable time: score = 2.81	A	B	C	D	E
	16.2%	54.1%	27.0%	0	2.7%
18. Laboratory exercises are relevant to lecture material: score = 2.86	A	B	C	D	E
	18.9%	56.8%	16.2%	8.1%	0
19. Laboratory equipment is in good condition: score = 1.91	A	B	C	D	E
	5.4%	32.4%	27%	18.9%	16.2%
20. Laboratory equipment is of high quality: score = 1.83	A	B	C	D	E
	5.4%	27%	27%	27%	13.5%
21. Reference materials are available and relevant: score = 1.94	A	B	C	D	E
	5.4%	21.6%	43.2%	21.6%	8.1%
22. Open lab hours are sufficient: score = 2.45	A	B	C	D	E
	21.6%	27%	29.7%	18.9%	2.7%
23. Classroom lighting, heating, etc is good: score = 2.37	A	B	C	D	E
	13.5%	24.3%	48.6%	13.5%	0
24. Advising is available and helpful: score = 2.29	A	B	C	D	E
	8.1%	40.5%	29.7%	16.2%	5.4%
25. General education courses are relevant to curriculum: score = 1.45	A	B	C	D	E
	2.7%	13.5%	32.4%	29.7%	21.6%
26. General education instruction is of high quality: score = 2.32	A	B	C	D	E
	10.8%	29.7%	45.9%	8.1%	5.4%

- | | | | | | |
|--|--|-------|-------|-------|-------|
| 27. Technical electives are relevant:
score = 2.40 | A | B | C | D | E |
| | 8.1% | 45.9% | 53.2% | 2.7% | 0 |
| 28. Technical electives instruction is of high quality:
score = 2.40 | A | B | C | D | E |
| | 8.1% | 32.4% | 54.1% | 2.7% | 2.7% |
| 29. The curriculum provides knowledge and skills:
required by employers
score = 2.40 | A | B | C | D | E |
| | 13.5% | 29.7% | 43.2% | 10.8% | 0 |
| 30. SLA labs in EEET were very worthwhile and helpful;
(answer only if you attended SLA labs)
score = 1.02 | A | B | C | D | E |
| | 0 | 21.6% | 13.5% | 10.8% | 13.5% |
| | There were 15 students who answered question #30 | | | | |
| 31. Student comments on how the EET & CNS Department could improve the overall program. | | | | | |

Get students involved in the program from their freshman year i.e. group organizations.

This is my 3rd year in college, this program tends to treat students like high school kids. I am not happy with the way some, not all, of instructors treat and act toward us.

Examples as to how EEET classes are relevant to CNS majors and their field are few. How do I apply knowledge from EEET 124 to my field in computer networks.

Fire *****.

Insure that all equipment is working before semester begins. Optional summer courses that review and preview what should have been learned and what to expect as well as a project to complete worthy of that level (excluding senior students) A mandatory department get together with students to discuss current department goals and student expectations.

Talk more about how what we are doing will pertain to the real world. I still have no idea what I want to do or will be doing once I graduate from this program.

Programming and hardware courses are too low level.

Teachers should get more involved, and relate with students better. Teacher/student relationship can be less formal.

Either start teaching networking to the CNS students or change the name of the program to computer programming and systems.

Fire *****.

Need more technical electives in mechanical. Need visual basic w/ or w/o C++. Dress code for senior year (tie and slacks).

The teachers need to be more responsive to student ideas and questions. Need to make sure labs are set up properly before class starts.

Figure 4-2: RESULTS for IET

(26 of 27 students completed the survey)

2. What year are you in? a. Fresh = 19 b. Soph = 7
3. Why did you select the EET & CNS programs at Ferris?
 Please rate 1st reason, 2nd reason, etc for as many as apply.
- | | |
|-----------------------------------|------------------------------------|
| <u>1</u> Friend suggested program | <u>0</u> Teacher suggested program |
| <u>3</u> Family suggested program | <u>2</u> School counselor |
| <u>2</u> Advertising | <u>3</u> Reputation and quality |
| <u>5</u> Other | |
4. What could Ferris do to better promote the EET & CNS programs?
 Please rate 1st, 2nd, etc for as many as apply.
- | | |
|---|-------------------------------|
| <u>3</u> TV advertising | <u>3</u> Radio advertising |
| <u>3</u> Video sent to school | <u>3</u> Web page on Internet |
| <u>2</u> Visits from Ferris admission representative | |
| <u>3</u> Host field trips to Ferris to see facilities and talk to faculty | |
| <u>8</u> Brochures and materials sent to school counselors | |
5. What percentage of educational time in the EET & CNS classes should be spent in laboratory "hands on" experience?
- | | | | |
|---------------|---------------|---------------|---------------|
| a. 30% to 40% | b. 40% to 50% | c. 50% to 60% | d. 60% to 70% |
| 20.8% | 25% | 41.7% | 8.3% |

The small numbers below the letters indicate the percent that picked that response.
 The small number under the statement indicates the "score" of this statement based on a 4.0 being best scale.

	Strongly Agree	B	neutral C	D	Strongly Disagree E
6. Quality of material presented is high: score = 2.81	A 16.7%	45.8%	25%	4.2%	0
7. Material presented meets current standards: score = 2.69	A 16.7%	45.8%	20.8%	12.5%	0
8. Pace of material is appropriate: score = 2.56	A 8.3%	54.2%	8.3%	12.5%	4.2%
9. Instructors care about your learning: score = 2.43	A 20.8%	20.8%	37.5%	12.5%	4.2%
10. Material presented is relevant to the curriculum: score = 3.17	A 37.5%	41.7%	12.5%	4.2%	0
11. Difficulty of material for level of course is appropriate: score = 2.74	A 8.3%	54.2%	33.3%	0	0
12. Assignment objectives are made clear to students: score = 2.95	A 29.2%	37.5%	25%	4.2%	0

13. Use of media, white boards, overheads, video is appropriate and helpful: score = 3.04	A	B	C	D	E		
	29.2%	50%	12.5%	0	4.2%		
14. Lectures are well prepared and organized: score = 2.82	A	B	C	D	E		
	8.3%	70.8%	8.3%	8.3%	0		
15. Student expectations and grading are clearly explained: score = 3.00	A	B	C	D	E		
	29.2%	41.7%	20.8%	4.2%	0		
16. Testing and evaluation procedures are fair: score = 2.96	A	B	C	D	E		
	29.2%	41.7%	16.7%	8.3%	0		
17. Graded materials are returned within reasonable time: score = 3.13	A	B	C	D	E		
	25%	58.3%	12.5%	0	0		
18. Laboratory exercises are relevant to lecture material: score = 3.04	A	B	C	D	E		
	33.3%	41.7%	12.5%	8.3%	0		
19. Laboratory equipment is in good condition: score = 1.91	A	B	C	D	E		
	5.3%	58.3%	8.3%	20.8%	0		
20. Laboratory equipment is of high quality: score = 2.33	A	B	C	D	E		
	5.4%	27%	27%	27%	13.5%		
21. Reference materials are available and relevant: score = 2.43	A	B	C	D	E		
	16.7%	25%	37.5%	16.7%	0		
22. Open lab hours are sufficient: score = 2.69	A	B	C	D	E		
	25%	33.3%	20.8%	16.7%	0		
23. Classroom lighting, heating, etc is good: score = 2.57	A	B	C	D	E		
	25%	54.2%	4.2%	4.2%	4.2%		
24. Advising is available and helpful: score = 2.56	A	B	C	D	E		
	16.7%	33.3%	33.3%	12.5%	0		
25. General education courses are relevant to curriculum: score = 1.95	A	B	C	D	E		
	4.2%	12.5%	58.3%	16.7%	4.2%		
26. General education instruction is of high quality: score = 2.73	A	B	C	D	E		
	20.8%	37.5%	29.2%	8.3%	0		
27. Technical electives are relevant: appropriate and helpful: score = 2.60	A	B	C	D	E		
			8.3%	58.3%	16.7%	8.3%	4.2%
28. Technical electives instruction is of high quality: score = 2.56	A	B	C	D	E		
	12.5%	37.5%	37.5%	8.3%	0		
29. The curriculum provides knowledge and skills: required by employers score = 3.03	A	B	CD	E			
		16.7%	58.3%	8.3%	12.5%	0	

30. SLA labs in EEET were very worthwhile and helpful; A B C D E
(answer only if you attended SLA labs) 23.5% 23.5% 5.9% 17.6% 35.3%
score = 1.93 There were 17 students who answered question #30

31. Student comments on how the EET & CNS Department could improve the overall program.

Provide classes during every semester & during summer.

Robots and lots of them.

Broader career track w/optional minors for a variety of special interests of study. The program is too broad and undefined, needs to be more specialized.

Just try to keep kids out of SLA, I think too many kids walk out of lecture not knowing how to do the work.

Slow down with the material taught. It's sometimes ridiculously hard to understand.

Go over material a little slower.

Doing an excellent job. No improvement necessary.

SLA needs to be improved and open labs needs more help.

Get rid of Mr ***** and get more teachers like Mr *****.

Larger windows.

More emphasis on homework and labs rather than your grade relying on major tests.

Fire *****.

Get quality SLA teachers. I leave SLA more confused because the instructor is also confused on how to do things.

Help students find summer jobs.

Figure 4-3 RESULTS for EET

(32 of 38 students completed the survey)

2. What year are you in? c. Junior = 21 d. Senior = 17
3. Why did you select the EET & CNS programs at Ferris?
Please rate 1st reason, 2nd reason, etc for as many as apply.
- | | |
|-----------------------------------|---------------------------------------|
| <u>1</u> Friend suggested program | <u>8</u> Teacher suggested program |
| <u>0</u> Family suggested program | <u>5</u> School counselor |
| <u>0</u> Advertising | <u>4</u> Reputation and quality |
| <u>3</u> Other | <u>3</u> College night at high school |
4. What could Ferris do to better promote the EET & CNS programs?
Please rate 1st, 2nd, etc for as many as apply.
- | | |
|---|--------------------------------|
| <u>5</u> TV advertising | <u>5</u> Radio advertising |
| <u>6</u> Video sent to school | <u>13</u> Web page on Internet |
| <u>14</u> Visits from Ferris admission representative | |
| <u>9</u> Host field trips to Ferris to see facilities and talk to faculty | |
| <u>14</u> Brochures and materials sent to school counselors | |
5. What percentage of educational time in the EET & CNS classes should be spent in laboratory "hands on" experience?
- | | | | |
|---------------|---------------|---------------|---------------|
| a. 30% to 40% | b. 40% to 50% | c. 50% to 60% | d. 60% to 70% |
| 21.9% | 15.6% | 43.8% | 15.6% |

The small numbers below the letters indicate the percent that picked that response.

The small number under the statement indicates the "score" of this statement based on a 4.0 being best scale.

	Strongly Agree		neutral	Strongly Disagree	
	A	B	C	D	E
6. Quality of material presented is high: score = 2.72	9.4%	62.5%	18.8%	9.4%	0
7. Material presented meets current standards: score = 2.53	12.5%	46.9%	25%	12.5%	3.1%
8. Pace of material is appropriate: score = 2.56	3.1%	62.5%	25%	6.3%	3.1%
9. Instructors care about your learning: score = 3.00	21.9%	59.4%	15.6%	3.1%	6.3%
10. Material presented is relevant to the curriculum: score = 2.78	21.9%	59.4%	55.6%	3.1%	0
11. Difficulty of material for level of course is appropriate: score = 2.78	18.8%	50%	25%	3.1%	3.1%
12. Assignment objectives are made clear to students: score = 2.81	12.5%	59.4%	25%	3.1%	0
13. Use of media, white boards, overheads, video is	A	B	C	D	E

appropriate and helpful: score = 2.93	25%	46.9%	25%	3.1%	0
14. Lectures are well prepared and organized: score = 2.84	A 15.6%	B 56.3%	C 25%	D 3.1%	E 0
15. Student expectations and grading are clearly explained: score = 2.96	A 25%	B 50%	C 21.9%	D 3.1%	E 0
16. Testing and evaluation procedures are fair: score = 2.94	A 18.8%	B 59.4%	C 18.8%	D 3.1%	E 0
17. Graded materials are returned within reasonable time: score = 2.75	A 15.6%	B 50%	C 31.3%	D 0	E 3.1%
18. Laboratory exercises are relevant to lecture material: score = 2.63	A 18.8%	B 43.7%	C 18.8%	D 18.8%	E 0
19. Laboratory equipment is in good condition: score = 1.54	A 0	B 9.4%	C 55.1%	D 15.6%	E 21.9%
20. Laboratory equipment is of high quality: score = 1.56	A 0	B 15.6%	C 37.5%	D 34.4%	E 12.5%
21. Reference materials are available and relevant: score = 2.03	A 3.1%	B 34.4%	C 31.3%	D 25%	E 6.3%
22. Open lab hours are sufficient: score = 2.53	A 9.4%	B 46.9%	C 31.3%	D 12.5%	E 0
23. Classroom lighting, heating, etc is good: score = 2.25	A 6.3%	B 43.8%	C 21.9%	D 25%	E 3.1%
24. Advising is available and helpful: score = 2.18	A 3.1%	B 34.4%	C 50%	D 3.1%	E 9.4%
25. General education courses are relevant to curriculum: score = 1.62	A 3.1%	B 21.9%	C 28.1%	D 28.1%	E 18.8%
26. General education instruction is of high quality: score = 2.09	A 3.1%	B 40.6%	C 28.1%	D 18.8%	E 9.4%
27. Technical electives are relevant: score = 2.65	A 9.4%	B 53.1%	C 31.3%	D 6.3%	E 0
28. Technical electives instruction is of high quality: score = 2.34	A 6.3%	B 43.8%	C 34.4%	D 9.4%	E 6.3%
29. The curriculum provides knowledge and skills: required by employers score = 2.62	A 9.4%	B 53.1%	C 28.1%	D 9.4%	E 0
30. SLA labs in EEET were very worthwhile and helpful; (answer only if you attended SLA labs)	A 21%	B 15.7%	C 21%	D 15.7%	E 21%

score = 1.88

There were 18 students who answered question #30

31. Student comments on how the EET & CNS Department could improve the overall program.

Do a better job in getting student internships for the program

Less digital design stuff for automation majors. More programming such as Visual basic. Remove C++ programming for automation. More HMI work as well as more panel building for automation.

New lab equipment (i.e. meters, o'scopes, etc) Classes involved with frequency and communications. Take home version of network assembly or RS logic, Q basic, and micro logic 500 software.

More open labs/computers should be available for those that need it.

The Dept needs tools, better breadboards, more electronic supplies in general. Rm 409 needs newer computers. Very outdated.

Classes are redundant.

Better lab equipment, newer, more up to date. Air conditioning.

Make software programs available to students @ home because many labs can only be worked on while in a lab on the 4th floor of Swan.

Improve lab equipment.

Have ***** teach all of the classes-unrealistic I know, but you asked.

Get more teachers like Mr. *****.

Air conditioning, more up to date lab (423) equipment, and more electrical code edu.

They could get better equipment in lab & lecture about new high tech things in industry.

NA

C. Summary

The survey was given in the classroom with 88% of students responding. The total number of students shown above each survey will not agree with the enrollment shown in section 10 of this review. This survey was given in the winter semester and the enrollment numbers are from the fall semester.

All three programs, CNS, IET, EET, were rated by the students with very similar results. The material presented, pace of courses, relevance of material, and difficulty all rated above average. Assignment objectives, use of media, lecture preparation, and laboratory exercises were also rated above average at about 72%.

The fairness of testing and the return of graded material were rated above average.

The laboratory equipment was rated average or below in quality and condition as was availability of reference material. This also shows in the written comments by the students. Classroom conditions were rated average or below.

Overall, the programs were rated above average with the exception of laboratory equipment and the general education courses.

Section 5

Faculty Perceptions

FACULTY PERCEPTIONS SURVEY RESULTS

A. Introduction and Methodology:

Six surveys were conducted, two for each of the three programs taught within the department. These are the Industrial Electronics Technology Associate in Applied Science Program (IET), the Electrical/Electronics Engineering Technology Bachelor of Science Program (EET), and the Computer Networks and Systems Bachelor of Science Program (CNS).

Two different survey forms were used for each program; one for the IET/EET/CNS faculty and another for faculty outside the program that teach required courses for the IET/EET/CNS degrees. The courses targeted were MATH, ENGL, COMM, PHYS, and ISYS. Class lists were included with the survey forms to help the non-IET/EET/CNS faculty to identify our students and discriminate them from students from other programs. Survey forms were sent out to twenty-six non-IET/EET/CNS faculty with completed survey forms received from 3 out of 10 MATH faculty, 2 out of 3 ENGL faculty, 0 out of 7 COMM faculty, 0 out of 1 PHYS faculty, and 2 out of 5 ISYS faculty. Several of these faculty responded by returning the survey forms and stating they did not have enough experience with our students to answer the survey forms.

Survey forms were sent out to all IET/EET/CNS faculty with seven faculty responding to the IET and EET surveys and five faculty responding to the CNS survey. The survey questions were broken down into six sections. The individual questions and responses to each question for each program are listed separately below.

B. COMPUTER NETWORKS and SYSTEMS

COMPUTER NETWORKS and SYSTEMS IET/EET/CNS Faculty Responses
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On a scale of 0 to 4, with 4 being the most desirable response, the overall average for each of the six sections are:

Your Perception of the Administration:	overall avg. = 1.70
Your Perception of our Students:	overall avg. = 1.65
Your Perceptions of the Facilities and Equipment	overall avg. = 1.99
Your Perceptions of the Curriculum:	overall avg. = 2.67
Your Perceptions of the Faculty :	overall avg. = 3.24
Your Perceptions of the Advisory Committee:	overall avg. = 2.60
Your Perception of the Administration:	overall avg. = 1.70

CNS Summary :

The IET/EET/CNS Faculty Perceptions were less than neutral in terms of the Administration, Students, and Facilities and Equipment. Specific questions in the survey results are **bolded** that had a high number of “negative” responses. Additionally, questions are *italicized* that had a high number of “ positive” responses.

	Disagree (0)		(2)		Agree (4)	
1. The scheduling of courses is done at appropriate times of the day	0	2	1	2	0	
2. <i>The scheduling is done in appropriate labs</i>	0	0	0	4	1	
3. The appropriate instructors are assigned to courses	0	1	0	2	2	
4. Lecture class sizes are appropriate for facilities	0	1	0	3	1	
5. Laboratory class sizes are appropriate for facilities	0	1	1	2	1	
6. The department get its fair share of capital improvement moneys	1	2	1	1	0	
7. The department operating budget is adequate	3	1	1	0	0	
8. Adequate funds are allocated for faculty development	3	1	0	1	0	
9. Adequate release time is provided for faculty development	2	3	0	0	0	
10. Adequate provsions are made for release time for course development	4	1	0	0	0	
11. Adequate technical support is provided to the department	1	2	2	0	0	
12. Secretarial support is adequate	0	3	0	2	0	
13. Computer support from the BTC is adequate	1	1	3	0	0	
14. Adequate resources for program marketing activities are provided	3	1	0	1	0	
15. The faculty are encouraged to stay current in their field	1	1	3	0	0	
16. The advisory committee is adequately utilized by our program	0	1	2	1	1	
17. The advisory committee’s suggestions are encouraged	0	1	2	1	1	
18. The advisory committee’s suggestions are acted upon	0	1	3	1	0	

Additional Comments concerning your perception of the Administration:

The administration is driving the chair and most faculty too hard under the circumstances. The administration has unrealistic timeliness to satisfy expectations. Training for the chair is next to non-existent. There is not a useable handbook for the chair. Policies and procedures are not organized in a manner, which allows for easy lookup. Their locations and currentness are uncertain. The chair spends too much time in a clerical/clerk capacity submitting reports to the Dean, V.P. of Academic Affairs, etc. that should be generated outside the department and given to the chair so that the chair could function much more as a manager and far less as a clerical or clerk. Adequate staffing for the office is a must that needs to be corrected. A workload analysis from HRD needs to be accomplished. The general sense I have is that academic administrators perceive faculty as having an easy job. Phrases like “they only work 20 or 30 hours a week for their pay” only shows their lack on knowledge of the work life of faculty in this department.

I have a strong feeling based on observations over several years that many students waste a lot of time in their dorm rooms plugged in to those high-speed internet ports surfing the net. What was the administration thinking when the decisions to install those ports were made? Money? WHAT ABOUT OUR CORE BUSINESS OF EDUCATION!! I assume they are smart enough to realize how those ports would impact student success. That decision demonstrates a lack of respect for the faculty, in my opinion.

Faculty development budgeting is woefully inadequate. Many faculty have requested support to attend seminars and training to keep current, but have been turned down. The responsibility rests solely on the administration; the faculty cannot be expected to absorb this cost. How can we be a “national leader in career-oriented education” without the administration supporting the faculty to stay current? Is this more “smoke and mirrors”?

Your Perception of our Students: overall avg. = 1.65

	Strongly Disagree (0)		Neutral (2)		Strongly Agree (4)
19. The incoming students are academically prepared for the curriculum	1	2	2	0	0
20. The incoming students possess good work ethics	2	1	2	0	0
21. The students posses adequate study habits	1	4	0	0	0
22. Adequate remedial electrical courses are offered	3	0	1	1	0
23. The students are aware of available tutoring opportunities	0	0	3	2	0
24. The students take advantage of available tutoring opportunities	1	2	1	1	0
25. The graduates have attained an appropriate level of maturity	0	1	1	3	0
26. The graduates have attained an appropriate level of competence	0	0	2	3	0
27. The graduates leave with good critical thinking skills	0	1	3	1	0
28. The graduates leave with a sense of professional identity	0	0	3	2	0
29. Students take advantage of professional organization membership	1	3	1	0	0

Additional Comments concerning your perception of our students :

Students are not prepared for the curriculum. Their expectation of the level of work necessary to learn is significantly low. Their reading skills for a technical subject matter are inappropriate. Their ability to persist in resolving a problem is very short compared to prior generations- they give up so quickly. They are not coming to class lectures and especially labs having studied their materials. The student's knowledge of the physical world in which they have grown up has become rather limited. They have a hard time mastering abstract topics like electricity and electronics when they have not learned principles from the physical sciences that they can sense better.

Too many students seem to think that paying tuition and attending class should earn them a C in the class. Perhaps this is their experience from high school (which is besides the point – this isn't high school). When they find out this is not the case, many become downright hostile towards the course in general and professor with obvious results on the SAI's. I will not "dummy down" my courses to keep the "customers" happy, SAI results acceptable to administration, and/or keep enrollment up. Education should not be a "smoke and mirrors" endeavor.

Too many CNS students perceive the required electronic courses as having no value to them. The CNS faculty should educate the CNS students about the importance of these courses or drop the electronics courses from the CNS program. I'm tired of having my SAI's suffer because of this.

Your Perceptions of the Facilities and Equipment: overall avg. = 1.99

	Strongly Disagree (0)		Neutral (2)		Strongly Agree(4)
30. The facilities are kept neat and clean	1	0	1	2	1
31. The facilities present a good image to students and visitors	1	1	0	2	1
32. Lecture rooms are adequate for the number of students scheduled	1	0	0	3	1
33. Laboratory rooms are adequate for the number of students scheduled	0	0	2	1	2
34. Laboratory equipment is adequate for the number of students scheduled	0	1	2	2	0
35. The instructional materials and supplies are adequate	0	1	2	2	0
36. Laboratory equipment is adequately provided and maintained	0	3	1	1	0
37. Adequate storage space is provided	1	2	1	1	0
38. The HVACR system is adequate in lecture rooms	1	3	0	1	0
39. The lighting system is adequate in lecture rooms	0	2	1	2	0

40.	The white boards are adequate in lecture rooms	0	1	1	3	0
41.	The noise level in lecture rooms is acceptable	1	1	2	1	0
42.	Audio visual equipment is up to date and adequate	4	0	1	0	0
43.	<i>The lighting system is adequate in lab rooms</i>	0	0	0	5	0
44.	The HVACR system is adequate in lab rooms	1	1	0	2	0

Additional Comments concerning your perceptions of the Facilities and Equipment:

The facilities are adequate for learning. However, the labs are unsightly. The quality of the program is hard to market with the condition of the facilities and age and condition of the equipment. Storage is a significant problem. The labs must keep items in them that need to be moved out. This would reduce the accidental breakage and improve the marketing image of the labs.

Your Perceptions of the Curriculum: overall avg. = 2.67

	Strongly Disagree (0)	Neutral (2)	Strongly Agree(4)			
45.	The curriculum provides the proper mix of courses	0	0	2	2	1
46.	The academic level of the curriculum is appropriate to the mission	0	0	2	2	1
47.	There is adequate continuity among courses	0	0	2	2	1
48.	The curriculum has a path for students who progress at a slower pace	3	1	0	1	0
49.	The curriculum provides adequate choices of specialization	0	0	2	0	3
50.	<i>The curriculum is relevant to the needs of industry</i>	0	0	0	2	3

Additional Comments concerning your perception of the Curriculum:

The curriculum changes much to frequently. This is a common complaint of students. Almost every year there has been changes that disproportionately effect the department. The curriculum is however well thought of by the advisory committee and local industry.

The curriculum evolves and evolves and evolves..... The move to Cisco should help stabilize the curriculum somewhat but still maintain currency.

Your Perceptions of the Faculty: overall avg. = 3.24

	Disagree (0)	(2)	Agree(4)			
51.	The faculty are technically competent	0	0	1	1	3
52.	The faculty know how to teach	0	0	1	3	1
53.	The faculty are well prepared for class	0	0	1	1	2
54.	The faculty are concerned with the educational needs of the students	0	0	1	0	4
55.	The faculty are active in committees	0	1	0	1	3
56.	The faculty are current in their field	0	0	1	2	2
57.	The faculty have adequate work experience	0	1	0	2	2

Additional Comments concerning your perception of the Faculty:

Most faculty in the department are hard working and diligent. Based on the workloads of the faculty in the last few years, they are averaging around a full load. Their concern for the students and the profession is genuine. They sometimes disagreeing on how best to accomplish this but that is to be expected. Some should work more in the committee area while others need to back off on their committee commitments. A complaint I have with the faculty is that they leave the labs such a mess for the next person. Amazingly, almost everyone agrees but they are not the one doing it.

Some faculty are reluctant to ever say anything negative about the students, even when a student is clearly at fault. For instance, when students leave the labs a mess, even after being reminded by the lab instructor to clean-up, somehow it is perceived to be the instructor's

Your Perceptions of the Advisory Committee: overall avg. = 2.60

	Strongly Disagree(0)	1	Neutral (2)	2	Strongly Agree(4)	1
58. The advisory committee is knowledgeable about the program	0	1	1	2	1	1
59. The advisory committee consists of the appropriate mix of people	0	1	1	2	1	1
60. The advisory committee is supportive of the program	0	1	1	2	1	1
61. The Advisory Committee provides good guidance for the program	0	1	1	2	1	1

Additional Comments concerning your perception of the Advisory Committee:

The advisory committee has only been active for a few years but seems to have a genuine interest and willingness to invest themselves in the success of the profession by helping this program.

COMPUTER NETWORKS and SYSTEMS

Non-IET/EET/CNS Faculty Responses

FACULTY PERCEPTIONS
2001 PROGRAM REVIEW SURVEY

1. I would describe the preparation of the typical CNS student for my course as follows when compared to other members of the FSU student population.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	2	0	0

Comments : none

2. I would rate the written communication skills of the typical CNS student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	1	1	0

Comments: none

3. I would rate the verbal communications skills of the typical CNS student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
2	0	0	0	0

Comments : none

4. I would rate the reading skills of the typical CNS student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	1	1	0

Comments : none

5.
 6. I would rate the comprehension skills of the typical CNS student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	1	1	0

Comments : none

7. I would rate the quantitative skills of the typical CNS student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments: none

8. I would rate the problem solving ability of the typical CNS student to those of other students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	2	0	0

Comments: none

9. I would rate the critical thinking skills of the typical CNS student to those of other students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	1	1	0

Comments : none

Please describe the extent of your experience with our CNS students:

- I typically work 1 on 1 with students in a lab setting for 0 minutes a week. The IEET students needed little help.

Please suggest any courses/requirements, which you believe, should be added:

- Make sure they have the math and reading skills to succeed.

Please include any additional comments you may like to share concerning the CNS students:

- The CNS sophomores I have taught this last year are not enthusiastic or excited about their field of study.

Computer Networks & Systems,
Industrial Electronics Technology,
Electrical Engineering Technology

APRC 2001-2002

Section 2 of 4

C. INDUSTRIAL ELECTRONICS TECHNOLOGY PROGRAM

INDUSTRIAL ELECTRONICS TECHNOLOGY
IET/EET/CNS Faculty Responses

- On a scale of 0 to 4, with 4 being the most desirable response, the overall average for each of the six sections are:

Your Perception of the Administration:	overall avg. = 1.43
Your Perception of our Students:	overall avg. = 1.52
Your Perceptions of the Facilities and Equipment :	overall avg. = 1.63
Your Perceptions of the Curriculum:	overall avg. = 2.55
Your Perceptions of the Faculty :	overall avg. = 3.04

IET Summary :

The IET/EET/CNS Faculty Perceptions were less than neutral in terms of the Administration, Students, and

Facilities/ Equipment. Specific questions in the survey results are **bolded** that had a high number of “negative” responses. Additionally, questions are *italicized* that had a high number of “ positive” responses.

Your Perceptions of the Advisory Committee: overall avg. = 1.83

		Strongly Disagree (0)	Neutral (2)	Strongly Agree(4)	
Your Perception of the Administration: overall avg. = 1.43					
1. The scheduling of courses is done at appropriate times of the day	0	1	3	3	0
2. <i>The scheduling is done in appropriate labs</i>	0	1	0	4	2
3. <i>The appropriate instructors are assigned to courses</i>	0	1	0	6	0
4. Lecture class sizes are appropriate for facilities	0	1	2	3	1
5. Laboratory class sizes are appropriate for facilities	0	0	3	4	0
6. The department get its fair share of capital improvement moneys	1	6	0	0	0
7. The department operating budget is adequate	5	2	0	0	0
8. Adequate funds are allocated for faculty development	7	2	0	0	0
9. Adequate release time is provided for faculty development	5	2	0	0	0
10. Adequate provisions are made for course development release time	7	0	0	0	0
11. Adequate technical support is provided to the department	2	2	3	0	0
12. Secretarial support is adequate	1	3	1	2	0
13. Computer support from the BTC is adequate	2	2	3	0	0
14. Adequate resources for program marketing activities are provided	5	2	0	0	0
15. The faculty are encouraged to stay current in their field	1	3	3	0	0
16. The advisory committee is adequately utilized by our program	0	3	2	2	0
17. The advisory committee’s suggestions are encouraged	0	2	2	2	0
18. The advisory committee’s suggestions are acted upon	0	2	4	1	0

Additional Comments concerning your perception of the Administration:

The administration is driving the chair and most faculty too hard under the circumstances. The administration has unrealistic timeliness to satisfy expectations. Training for the chair is next to non-existent. There is not a useable handbook for the chair. Policies and procedures are not organized in a manner which allows for easy lookup. Their locations and currentness are uncertain. The chair spends too much time in a clerical/clerk capacity submitting reports to the Dean, V.P. of Academic Affairs, etc. that should be generated outside the department and given to the chair so that the chair could function much more as a manager and far less as a clerical or clerk. Adequate staffing for the office is a must that needs to be corrected. A workload analysis from HRD needs to be accomplished. The general sense I have is that academic administrators perceive faculty as having an easy job. Phrases like "they only work 20 or 30 hours a week for their pay" only shows their lack on knowledge of the work life of faculty in this department.

I have a strong feeling based on observations over several years that many students waste a lot of time in their dorm rooms plugged in to those high-speed internet ports surfing the net. What was the administration thinking when the decision to install those ports were made? Money? WHAT ABOUT OUR CORE BUSINESS OF EDUCATION !! I assume they are smart enough to realize how those ports would impact student success. That decision demonstrates a lack of respect for the faculty, in my opinion.

Faculty development budgeting is woefully inadequate. Many faculty have requested support to attend seminars and training to keep current, but have been turned down. The responsibility rests solely on the administration; the faculty cannot be expected to absorb this cost. How can we be a "national leader in career-oriented education" without the administration supporting the faculty to stay current? Is this more "smoke and mirrors"?

Your Perception of our Students:		Strongly Disagree (0)	Neutral (2)	Strongly Agree (4)		
	overall avg. = 1.52					
19.	The incoming students are academically prepared for the curriculum	3	2	2	0	0
20.	The incoming students possess good work ethics	3	4	0	0	0
21.	The students possess adequate study habits	3	4	0	0	0
22.	Adequate remedial electrical courses are offered	4	0	1	2	0
23.	<i>IET Structured Learning Assistance (SLA) should be available</i>	0	0	1	4	2
24.	The students are aware of available tutoring opportunities	0	1	3	3	0
25.	The students take advantage of available tutoring opportunities	1	5	1	0	0
26.	The graduates have attained an appropriate level of maturity	0	3	4	0	0
27.	The graduates have attained an appropriate level of competence	0	1	5	1	0
28.	The graduates leave with good critical thinking skills	0	1	5	1	0
29.	The graduates leave with a sense of professional identity	0	1	5	1	0
30.	Students take advantage of professional organization membership	0	4	2	1	0

Additional Comments concerning your perception of our students :

I wonder how the SLA is doing?

Students are not prepared for the curriculum. Their expectations of the level of work necessary to learn is significantly low. Their reading skills for a technical subject matter are inappropriate. Their ability to persist in resolving a problem is very short compared to prior generations- they give up so quickly. They are not coming to class lectures and especially labs having studied their materials. The student's knowledge of the physical world in which they have grown up has become rather limited. They have a hard time mastering abstract topics like electricity and electronics when they have not learned principles from the physical sciences that they can sense better.

Too many students seem to think that paying tuition and attending class should earn them a C in the class. Perhaps this is their experience from high school (which is besides the point – this isn't high school). When they find out this is not the case, many become down-right hostile towards the course in general and professor with obvious results on the SAI's. I will not "dummy down" my courses to keep the "customers" happy, SAI results acceptable to administration, and/or keep enrollment up. Education should not be a "smoke and mirrors" endeavor.

Many students are here because they did not do well previously. Students need to understand that a big change is necessary on their part. They have a tremendous opportunity at FSU but it involves **HARD WORK**. We all know from experience that learning is usually not "fun", especially in difficult technical subjects. Students need to hear this from administrators as well as their professors!

I expect a degree from my program at FSU to be worth something and not a joke to industry. It is important to maintain our standards.

Your Perceptions of the Facilities and Equipment: overall avg. = 1.63

	Strongly Disagree (0)	Neutral (2)	Strongly Agree (4)		
31. The facilities are kept neat and clean	1	1	5	0	0
32. The facilities present a good image to students and visitors	2	3	2	0	0
33. Lecture rooms are adequate for the number of students scheduled	1	1	3	2	0
34. Laboratory rooms are adequate for the number of students scheduled	0	1	3	3	0
35. Laboratory equipment is adequate for the number of students scheduled	1	1	4	1	0
36. The instructional materials and supplies are adequate	0	2	2	3	0
37. Laboratory equipment is adequately provided and maintained	0	2	5	0	0
38. Adequate storage space is provided	1	2	3	1	0
39. The HVACR system is adequate in lecture rooms	3	3	0	1	0
40. The lighting system is adequate in lecture rooms	1	1	2	3	0
41. The white boards are adequate in lecture rooms	0	1	2	4	0
42. The noise level in lecture rooms is acceptable	1	2	3	1	0
43. Audio visual equipment is up to date and adequate	5	0	2	0	0
44. The lighting system is adequate in lab rooms	1	1	2	3	0
45. The HVACR system is adequate in lab rooms	3	1	2	1	0

Additional Comments concerning your perceptions of the Facilities and Equipment:

The facilities are adequate for learning. However, the labs are unsightly. The quality of the program is hard to market with the condition of the facilities and age and condition of the equipment. Storage is a significant problem. The labs must keep items in them that need to be moved out. This would reduce the accidental breakage and improve the marketing image of the labs.

The custodian does her best (a good job) for general cleaning but she is not responsible for leads left out, equipment on the benches, etc.

The labs look like they are out of the 50's. The professors know they are adequate for learning, but DO NOT IMPRESS our current students, visitors and potential students touring the labs. The university understands the importance of marketing so why doesn't the university budget money to at least "spruce up" the labs? This has been an on-going concern for years in the department. This cannot wait until new labs are built.

Your Perceptions of the Curriculum: overall avg. = 2.55

	Strongly Disagree (0)		Neutral (2)		Strongly Agree (4)
46. <i>The curriculum provides the proper mix of courses</i>	0	0	2	2	3
47. The academic level of the curriculum is appropriate to the mission	0	1	0	4	2
48. <i>There is adequate continuity among courses</i>	0	1	0	5	1
49. <i>The curriculum has a path for students who progress at a slower pace</i>	3	2	1	1	0
50. The curriculum provides adequate choices of specialization	0	2	2	2	1
51. <i>The curriculum is relevant to the needs of industry</i>	0	0	2	3	2

Additional Comments concerning your perception of the Curriculum:

The mixes of courses are getting better, but too slow to implement.

I would put our IET program against any other associates degree in the state. Associate degrees from most junior and community colleges do not even come close to ours based on our experience with our EET transfer students.

The only "problem" with the curriculum is that it is much better than our average student and our advisory committee says not to dummy it down !

The IET curriculum has become essentially the first two years of a BS degree. This is fine for those going on to the BSEET, Business, Technical writing or other plus 2 bachelor programs. The curriculum does not address the under prepared student that lately has been entering the program. However, without more release time for the faculty there is not much they can do.

Your Perceptions of the Faculty : overall avg. = 3.04

	Strongly Disagree (0)	Neutral (2)	Strongly Agree (4)		
52. <i>The faculty are technically competent</i>	0	0	1	4	2
53. <i>The faculty know how to teach</i>	0	0	0	6	1
54. <i>The faculty are well prepared for class</i>	0	0	1	3	2
55. <i>The faculty are concerned with the educational needs of the students</i>	0	0	0	3	4
56. <i>The faculty are active in committees</i>	0	2	1	2	2
57. <i>The faculty are current in their field</i>	0	0	4	2	1
58. <i>The faculty have adequate work experience</i>	0	0	1	4	2

Additional Comments concerning your perception of the Faculty:

Most faculty in the department are hard working and diligent. Based on the workloads of the faculty in the last few years, they are averaging around a full load. Their concern for the students and the profession is genuine. They sometimes disagreeing on how best to accomplish this but that is to be expected. Some should work more in the committee area while others need to back off on their committee commitments. A complaint I have with the faculty is that they leave the labs such a mess for the next person. Amazingly, almost everyone agrees but they are not the one doing it.

Some faculty are reluctant to ever say anything negative about the students, even when a student is clearly at fault. For instance, when students leave the labs a mess, even after being reminded by the lab instructor to clean-up, somehow it is perceived to be the instructor's fault.

Some faculty have never gone back to their field for any practical work since beginning teaching at FSU.

Your Perceptions of the Advisory Committee: overall avg. = 1.83

	Strongly Disagree (0)	Neutral (2)	Strongly Agree (4)		
59. <i>The advisory committee is knowledgeable about the program</i>	0	2	3	2	0
60. <i>The advisory committee consists of the appropriate mix of people</i>	1	2	3	1	0
61. <i>The advisory committee is supportive of the program</i>	0	1	4	2	0
62. <i>The Advisory Committee provides good guidance for the program</i>	1	1	5	0	0

Additional Comments concerning your perception of the Advisory Committee:

The advisory committee is a joint committee discussing the IET & EET programs.

INDUSTRIAL ELECTRONICS TECHNOLOGY
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Non-IET/EET/CNS Faculty Responses
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1. I would describe the preparation of the typical IET student for my course as follows when compared to other members of the FSU student population.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	2	0	1	0

Comments : none

2. I would rate the written communication skills of the typical IET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments: [missing responses from one survey]

3. I would rate the verbal communications skills of the typical IET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
2	0	0	0	0

Comments : [missing responses from one survey]

4. I would rate the reading skills of the typical IET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments : [missing responses from one survey]

5. I would rate the comprehension skills of the typical IET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	1	0

Comments : none

6. I would rate the quantitative skills of the typical IET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)

0 1 1 1 0

Comments: none

7. I would rate the problem solving ability of the typical IET student to those of other students.

Better-Prepared (4) (3) Average (2) (1) Inadequately Prepared (0)

0 2 0 1 0

Comments: none

8. I would rate the critical thinking skills of the typical IET student to those of other students.

Better-Prepared (4) (3) Average (2) (1) Inadequately Prepared (0)

0 2 0 0 0

Comments : [missing responses from one survey]

Please describe the extent of your experience with our IET students:

- I typically work 1 on 1 with students in a lab setting for 0 minutes a week. The IET students needed little help.

Please suggest any courses/requirements, which you believe, should be added:

- Keep math standards higher than average FSU student.

Please include any additional comments you may like to share concerning the IET students:

- Students seem enthusiastic and ready to handle new material. Computer skills were above average.

D. ELECTRICAL/ELECTRONIS ENGINEERING TECHNOLOGY PROGRAM

ELECTRICAL/ELECTRONIS ENGINEERING TECHNOLOGY PROGRAM

IET/EET/CNS Faculty Responses

- On a scale of 0 to 4 , with 4 being the most desirable response, the overall average for each of the six sections are:

Your Perception of the Administration:	overall avg. = 1.41
Your Perception of our Students:	overall avg. = 1.70
Your Perceptions of the Facilities and Equipment :	overall avg. = 1.67
Your Perceptions of the Curriculum:	overall avg. = 2.58
Your Perceptions of the Faculty :	overall avg. = 2.99
Your Perceptions of the Advisory Committee:	overall avg. = 2.05

EET Summary :

The IET/EET/CNS Faculty Perceptions were less than neutral in terms of the Administration, Students, and

Facilities/ Equipment. Specific questions in the survey results are **bolded** that had a high number of "negative" responses. Additionally, questions are *italicized* that had a high number of "positive" responses.

Your Perception of the Administration: overall avg. = 1.41

	Strongly Disagree (0)	Neutral (1) (2)	(3)	Strongly Agree (4)
1. The scheduling of courses is done at appropriate times of the day	1	1 2	3	0
2. <i>The scheduling is done in appropriate labs</i>	0	1 0	5	1
3. The appropriate instructors are assigned to courses	0	1 1	5	0
4. Lecture class sizes are appropriate for facilities	0	1 2	3	1
5. <i>Laboratory class sizes are appropriate for facilities</i>	0	0 2	5	0
6. The department get its fair share of capital improvement moneys	1	6 0	0	0
7. The department operating budget is adequate	5	2 0	0	0
8. Adequate funds are allocated for faculty development	7	0 0	0	0
9. Adequate release time is provided for faculty development	5	2 0	0	0
10. Adequate provisions are made for course development release time	7	0 0	0	0
11. Adequate technical support is provided to the department	2	2 3	0	0
12. Secretarial support is adequate	1	3 1	2	0
13. Computer support from the BTC is adequate	2	2 3	0	0
14. Adequate resources for program marketing activities are provided	5	2 0	0	0
15. The faculty are encouraged to stay current in their field	1	3 3	0	0
16. The advisory committee is adequately utilized by our program	0	4 2	1	0

17. The advisory committee's suggestions are encouraged	0	2	2	3	0
18. The advisory committee's suggestions are acted upon	0	2	4	1	0

Additional Comments concerning your perception of the Administration:

The administration is driving the chair and most faculty too hard under the circumstances. The administration has unrealistic timeliness to satisfy expectations. Training for the chair is next to non-existent. There is not a useable handbook for the chair. Policies and procedures are not organized in a manner, which allows for easy lookup. Their locations and currentness are uncertain. The chair spends too much time in a clerical/clerk capacity submitting reports to the Dean, V.P. of Academic Affairs, etc. that should be generated outside the department and given to the chair so that the chair could function much more as a manager and far less as a clerical or clerk. Adequate staffing for the office is a must that needs to be corrected. A workload analysis from HRD needs to be accomplished. The general sense I have is that academic administrators perceive faculty as having an easy job. Phrases like "they only work 20 or 30 hours a week for their pay" only shows their lack on knowledge of the work life of faculty in this department.

I have a strong feeling based on observations over several years that many students waste a lot of time in their dorm rooms plugged in to those high-speed internet ports surfing the net. What was the administration thinking when the decisions to install those ports were made? Money? **WHAT ABOUT OUR CORE BUSINESS OF EDUCATION!!** I assume they are smart enough to realize how those ports would impact student success. That decision demonstrates a lack of respect for the faculty, in my opinion.

Faculty development budgeting is woefully inadequate. Many faculty have requested support to attend seminars and training to keep current, but have been turned down. The responsibility rests solely on the administration; the faculty cannot be expected to absorb this cost. How can we be a "national leader in career-oriented education" without the administration supporting the faculty to stay current? Is this more "smoke and mirrors"?

The secretary is getting swamped with double duties. This will have a negative impact on our program, eventually.

Your Perception of our Students: overall avg. = 1.70

	Strongly Disagree (0)	Neutral (1) (2) (3)	Strongly Agree (4)
19. The incoming students are academically prepared for the curriculum	1	3 3 0	0
20. The incoming students possess good work ethics	1	4 2 0	0
21. The students possess adequate study habits	1	6 0 0	0
22. Adequate remedial electrical courses are offered	4	0 2 1	0
23. The students are aware of available tutoring opportunities	0	0 4 3	0
24. The students take advantage of available tutoring opportunities	1	4 2 0	0
25. The graduates have attained an appropriate level of maturity	0	1 4 2	0
26. The graduates have attained an appropriate level of competence	0	0 3 4	0
27. The graduates leave with good critical thinking skills	0	1 3 3	0
28. The graduates leave with a sense of professional identity	0	1 3 3	0
29. Students take advantage of professional organization membership	0	4 2 1	0

Additional Comments concerning your perception of our students :

Students are not prepared for the curriculum. Their expectations of the level of work necessary to learn is significantly low. Their reading skills for a technical subject matter are inappropriate. Their ability to persist in resolving a problem is very short compared to prior generations- they give up so quickly. They are not coming to class lectures and especially labs having studied their materials. The student's knowledge of the physical world in which they have grown up has become rather limited. They have a hard time mastering abstract topics like electricity and electronics when they have not learned principles from the physical sciences that they can sense better.

Too many students seem to think that paying tuition and attending class should earn them a C in the class. Perhaps this is their experience from high school (which is besides the point – this isn't high school). When they find out this is not the case, many become downright hostile towards the course in general and professor with obvious results on the SAI's. I will not "dummy down" my courses to keep the "customers" happy, SAI results acceptable to administration, and/or keep enrollment up. Education should not be a "smoke and mirrors" endeavor.

Many transfer students have a difficult time adjusting to the expectations of the four-year program. Transfer students need to understand that a big change is probably necessary on their part. They have a tremendous opportunity at FSU but it involves **HARD WORK**. We all know from experience that learning is usually not "fun", especially in difficult technical subjects. Students need to hear this from administrators as well as their professors!

I expect a degree from my program at FSU to be worth something and not a joke to industry. It is important to maintain our standards

Minimum to no tutoring are available for the upper level classes.

Your Perceptions of the Facilities and Equipment: overall avg. = 1.67

	Strongly Disagree (0)	Neutral (1) (2) (3)			Strongly Agree (4)
30. The facilities are kept neat and clean	1	1	4	1	0
31. The facilities present a good image to students and visitors	2	2	2	0	0
32. Lecture rooms are adequate for the number of students scheduled	1	1	2	3	0
33. Laboratory rooms are adequate for the number of students scheduled	0	1	3	3	0
34. Laboratory equipment is adequate for the number of students scheduled	1	0	5	1	0
35. The instructional materials and supplies are adequate	1	1	3	2	0
36. Laboratory equipment is adequately provided and maintained	0	3	4	0	0
37. Adequate storage space is provided	1	2	3	1	0
38. The HVACR system is adequate in lecture rooms	2	4	0	1	0
39. The lighting system is adequate in lecture rooms	1	1	2	3	0
40. The white boards are adequate in lecture rooms	0	1	2	4	0
41. The noise level in lecture rooms is acceptable	1	2	4	0	0
42. Audio visual equipment is up to date and adequate	5	0	2	0	0
43. The lighting system is adequate in lab rooms	1	0	2	4	0
44. The HVACR system is adequate in lab rooms	2	2	2	1	0

Additional Comments concerning your perception of the Facilities and Equipment:

The facilities are adequate for learning. However, the labs are unsightly. The quality of the program is hard to market with the condition of the facilities and age and condition of the equipment. Storage is a significant problem. The labs must keep items in them that need to be moved out. This would reduce the accidental breakage and improve the marketing image of the labs.

Students and faculty are responsible for clean-up after each lab and lecture.

The labs look like they are out of the 50's. The professors know they are adequate for learning, but **DO NOT IMPRESS** our current students, visitors and potential students touring the labs. The university understands the importance of marketing so why doesn't the university budget money to at least "spruce up" the labs? This has been an on-going concern for years in the department. This cannot wait until new labs are built.

Your Perceptions of the Curriculum: overall avg. = 2.58

	Strongly Disagree (0)	(1)	Neutral (2)	(3)	Strongly Agree(4)
45. <i>The curriculum provides the proper mix of courses</i>	0	0	1	4	2
46. <i>The academic level of the curriculum is appropriate to the mission</i>	0	0	2	4	1
47. <i>There is adequate continuity among courses</i>	0	1	1	4	1
48. <i>The curriculum has a path for students who progress at a slower pace</i>	2	3	1	1	0
49. <i>The curriculum provides adequate choices of specialization</i>	0	2	1	2	2
50. <i>The curriculum is relevant to the needs of industry</i>	0	1	0	3	3

Additional Comments concerning your perception of the Curriculum:

The curriculum has three tracks. The Industrial Automation track has the best mix, academic level, continuity of courses, and relevance to industry. Next best is the Communications track. It has moderate mix, excellent academic level, moderate continuity of courses, moderate specialization, and moderate relevance to industry. The Technical Integration track is essentially a Bachelor of Science in Electronic general studies. It has too many courses to mix and match, a good academic level for most courses, a poor continuity of courses, moderate specialization, and poor relevance to industry in the Great Lakes region.

Getting better on the mix.

Students have a variety of tracks to pick from, including the Technical Integration track which allows both a depth and breath of courses material.

Your Perceptions of the Faculty: overall avg. = 2.99

	Strongly Disagree (0)	(1)	Neutral (2)	(3)	Strongly Agree (4)
51. <i>The faculty are technically competent</i>	0	0	3	2	2
52. <i>The faculty know how to teach</i>	0	0	1	5	1
53. <i>The faculty are well prepared for class</i>	0	0	1	3	2
54. <i>The faculty are concerned with the educational needs of the students</i>	0	0	1	3	3
55. <i>The faculty are active in committees</i>	0	1	1	2	2
56. <i>The faculty are current in their field</i>	0	0	3	3	1
57. <i>The faculty have adequate work experience</i>	0	0	2	3	2

Additional Comments concerning your perception of the Faculty

Most faculty in the department are hard working and diligent. Based on the workloads of the faculty in the last few years, they are averaging around a full load. Their concern for the students and the profession is genuine. They sometimes disagreeing on how best to accomplish this but that is to be expected. Some should work more in the committee area while others need to back off on their committee commitments. A complaint I have with the faculty is that they leave the labs such a mess for the next person. Amazingly, almost everyone agrees but they are not the one doing it.

Some faculty are reluctant to ever say anything negative about the students, even when a student is clearly at fault. For instance, when students leave the labs a mess, even after being reminded by the lab instructor to clean-up, somehow it is perceived to be the instructor's fault.

Your Perceptions of the Advisory Committee: overall avg. = 2.05

	Strongly Disagree (0)	(1)	Neutral (2)	(3)	Strongly Agree (4)
58. The advisory committee is knowledgeable about the program	0	1	3	2	1
59. The advisory committee consists of the appropriate mix of people	0	4	2	1	0
60. The advisory committee is supportive of the program	0	1	4	2	0
61. The Advisory Committee provides good guidance for the program	0	1	4	2	0

Additional Comments concerning your perception of the Advisory Committee:

The advisory committee is a joint committee discussing the IET & EET programs.

I think there should be an understanding with the advisory committee members that their companies will offer internships to our students. Many of their companies have never had one of students as an intern or hired a graduate.

We need more members who are willing to help both in time, equipment, and internships.

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

Non-IET/EET/CNS Faculty Responses

1. I would describe the preparation of the typical EET student for my course as follows when compared to other members of the FSU student population.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments : none

2. I would rate the written communication skills of the typical EET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments: none

3. I would rate the verbal communications skills of the typical EET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments: none

4. I would rate the reading skills of the typical EET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	2	0	0

Comments: none

5. I would rate the comprehension skills of the typical EET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	0	2	0	0

Comments: none

6. I would rate the quantitative skills of the typical EET student relative to those of other FSU students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)

0	2	0	0	0
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Comments: none

7. I would rate the problem solving ability of the typical EET student to those of other students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	2	0	1	0

Comments: none

8. I would rate the critical thinking skills of the typical EET student to those of other students.

Better-Prepared (4)	(3)	Average (2)	(1)	Inadequately Prepared (0)
0	1	1	0	0

Comments: none

Please describe the extent of your experience with our EET students:

- Teach MATH 116,126,216, 226

Please suggest any courses/requirements, which you believe, should be added:

- Some of the programs in Technology start students in MATH116 even though they do not have the pre-req of MATH110 – I am not sure if this is a problem with your students, though. Students who transfer in as juniors and start in MATH216 may not have the pre-req. even though their background indicates they do.

Please include any additional comments you may like to share concerning the EET students:

- none

Section 6

Advisory Board Perceptions

A. Introduction

Advisory Committee Perceptions: The purpose of this activity is to assess advisory committee perceptions regarding the following aspects of the program: curriculum, outcomes, facilities, equipment, graduates, micro-and mega trends that might affect job placement (both positively and adversely) and other relevant information. Recommendations for improvement are sought from this group.

B. CNS Advisory Committee Survey Results

The purpose of the CNS advisory committee survey was to provide information from the committee on curriculum, outcomes, facilities, equipment, graduates, and trends in industry that might affect the graduates and the program. The response was seven out of 11 surveys returned. Multiple requests were sent and phone follow up was conducted as necessary.

The following are the questions with the numerical responses. In addition comments from the respondents are included. The numbering system used is shown below:

A=Excellent B=Good C=Average D=Fair E=Poor

1) How would you rate the curriculum of the CNS program?

A=1 B=3 C=0 D=0 E=0

I consider your target student body to be those looking for jobs below development engineers, and significantly above small shop technician. I believe your curriculum has evolved very well to provide interesting training for students wanting to move after a few years into lead positions in large organizations. I believe the University Curriculum will have to evolve much faster in the future then it has been able to in the past.

I feel a lot better about it with the Cisco courses being added.

A solid curriculum that appears to provide an excellent and broad gauge education. I like the fundamentals being taught.

2) How would you rate the quality of the equipment used in the program?

A=0 B=1 C=3 D=0 E=0

There is always room for growth in equipment.

If there is some way for us to help, we will. Some of the PC's need updating as well as the network equipment. We may be able to help with the Network.

Equipment while adequate for teaching the basics is getting dated. Updates required for the Cisco Academy are a beginning step. I would suggest that once the Academy is in place. The Advisors can work with one or more groups of student in obtaining more advanced equipment that can first be part of a student project.

This is based on networking gear used in your academic program only.

3) How would you rate the quality of the facilities used in the program?

A=1 B=2 C=1 D=0 E=0

Facilities are fair to good and don't limit students progress. None the less, there are improvements needed in some labs and I understand these are on the way. The first floor of Swan is a model of what I would like to see upstairs.

The "Facilities" meaning the buildings / rooms are clean and properly lit. I consider them adequate for the program

4) How would your rate the graduates abilities in the program?

A=1 B=3 C=0 D=0 E=0

I have seen very bright student pass through your program

I have had very good luck wit the two graduates that I have hired. Ferris has prepared them to learn. Both graduates have indicated that the real world learning curve was substantial they started at Dow Corning. The planned incorporation of the Cisco Network Academy should help provide a more detailed network understanding

The program seems to attract a good grade of student that makes a good graduate.

The person that we have worked with was very competent.

5) Are the outcomes for the program appropriate for current industrial practice?

A=1 B=3 C=0 D=0 E=0

Program is right on track and needs to keep its flexibility.

---especially with the use of Cisco---they are the market leader and research leader

6) What micro or macro trends do you see in your industry that might affect job placement?

There is a current shift, industry wide for more emphasis on consumer applications (PDA's and interfaces) and Ebusiness. Also network intelligence is appearing into non I.S products (household appliances...) which will shift the skill demand for students pursuing non I.S careers.

Turn over (job changing) will become more prevalent. More students will go to work in consulting organizations as. Support organizations within large companies find it harder and harder to hold employees and move to consultants to provide services that once were in house.

Steady growth in job complexity means graduates need to learn quickly and think on their feet. As always a graduate's ability to communicate is very important. Don't downplay the value of many of the General Ed. courses. Pure technical education is not enough. The ability to reason is also more and more important since this skill isn't addressed in some educational settings. Technically I see increasing distributed processing with many ASICs found in many places. Wireless networking also introduces a variety of challenges beyond protocols and into security, data integrity and network reliability. The wireless explosion has some serious side effects due to interference. I don't see this problem getting anything but worse.

In our industry, the explosion of data is causing a need for bigger, faster networks. People who are adept in designing and supporting reliable networks will be more in demand.

7) How could we improve the CNS program?

Ferris does a great job of trying to stay on top of industry trends...keep up the good work.

You need to get the Network Academy as outlined to the Advisors incorporated into the 2001/2002 year. I believe other course evolution is required, over time. At this time I am just suggesting the single focus and look forward to other ideas that you and Ron are coming up with.

Tough question to answer. Never let up on fundamentals.

Perhaps a new approach to industrial exposure with first rate guest lecturers and even field trips (possible senior seminar??.) Also why not evaluate and, confidentially, rate intern sites and experience. Industry can be a huge help to a student if they use them properly. If industry doesn't help them grow the student has wasted time, not been challenged and possibly soured on the field. Get out of the box in your thinking as to how to expose students to outside practice. The CNS graduate that headed to NSA had a lot of confidence which is not a characteristic of many Ferris students. Lack of student confidence (read that self esteem if you want) is a problem that is far too common and not, evidently, addressed at the University.

I have been involved in the Cisco piece of the program, so I am happy with the first step. I would continue with Corp sponsorship to help fund the equipment.

C. IET & EET Advisory Committee Survey Results

A=Excellent B=Good C=Average D=Fair E=Poor

1) How would you rate the curriculum of the IET program?

A=2 B=2 C=2 D=0 E=0

--I believe that the 2-year program should be viewed as an excellent education for an individual who cannot obtain the 4-year degree. A broader knowledge of industrial is needed. This can be gained through exposure.

--Curriculum fits well with the needs of industry and has adequate theory to support developing technology.

--The faculty has responded very well to the suggestions of the advisory committee. The program provides a very solid base on which to build further study or job experience.

--It appears that this 2-yr program produces a good background and gets a student some practical automation experience. But, is there a way to enhance the student's exposure to industrial networks (profibus, industrial ethernet, devicenet, controlnet, etcetera) and to EO/SCADA software tools?

--Excellent curriculum. Faculty listens to suggestions made by advisory committee members.

2) How would you rate the quality of the equipment used in both programs?

A=1 B=4 C=2 D=1 E=0

--The equipment quality trend is positive for both programs. For example, the mix of digital and analog oscilloscopes is representative of industry. Students are learning to use both types and, more importantly, are learning advantages and disadvantages of both types for specific applications. Smart use of equipment is a favor in student and employee growth. I don't know about availability of equipment, i.e. is there enough and is it operating and in calibration.

--Improvements have been made in recent years; hopefully equipment can be brought into the programs, which will keep the labs current.

--The faculty has done an excellent job in obtaining equipment but the equipment will always lag behind that in use by industry.

--It looks like the ET department has done a really good job of upgrading the facilities and including a broad spectrum of the latest industrial and computer based technologies.

--It seems that the labs are short on basic needs...meters, power supplies, scopes, etc. but that there has been an aggressive program to get software, plc's, software tools, etc.

--I would rate the quality of the equipment between 3 and 4. This has been a big improvement over the last three years.

--Equipment used in the program is of the same quality and type used in industry. The test equipment ranges from older equipment still used in industry to state of the art test equipment. New equipment is purchased as budget permits. Up-keep on test equipment is better since a technician was hired.

3) How would you rate the quality of the facilities for both programs?

A=0 B=3 C=3 D=1 E=0

--Ferris is gradually improving facilities for these programs. I don't believe that "fair" facilities, per se, impair learning, however, it seems to me that better facilities tend to build self-esteem and pride in students and faculty. This factor may result in improved performance.

--I understand that some labs will be upgraded with better lighting, lab benches, layout and infrastructure. i.e. networks, power distribution, video access and so forth. Classrooms seem good although acoustic treatment in rooms and halls could be improved. The first floor of Swan looks very good and is a model for further improvement upstairs. An aside; the Flight facility will have a very positive influence on the entire university. As the most important building on campus, it is right on track.

--There could be some infrastructure improvements such as the addition of compressed air and 3-phase power to the labs for use in experiments.

--Many improvements have been made in the classrooms in the last several years.

--The building needs an infrastructure update to provide networking at all stations, better restrooms, high-speed internet access

Again, I believe there have been significant improvements over the last three years and I would rate it currently between 3 and 4

--Classrooms and labs have recently been painted. Plans have been made to recondition bench tops. Bulletin boards are kept up-to-date and contain information pertinent to the electronic industry.

4) How would you rate the graduates' abilities in each program?

IET A=1 B=2 C=2 D=0 E=0

BS-EET A=2 B=3 C=0 D=0 E=0

--I see a definite trend toward computer-based control and interface with a manufacturing process. Of course this opinion is largely skewed because I work for National Instruments, but our growth rate (>20% per year for 16 of the last 17 years) supports this position. PLC programming skills will continue to remain a major industry requirement, but computer interface skills to those PLCs combined with programming skills in Visual Basic and LabView will be highly prized by employers. In fact, this skill-set will turn

into a requirement within the next five years in my estimation. Personally, I view PLC programming jobs as those that will remain near the low end of the career food chain, but computer-based job skills will help graduates move up the ladder more quickly.

--Manufacturing Industry needs employees who can properly apply readily available solutions to their plant floor. Those solutions, while available on the market, demand an engineering capability to be properly applied. If students can combine the math, electrical/mechanical analysis and design methodologies along with practical class work that uses these readily available solutions, you would have an ideal candidate.

--Fewer employees. Students will be required to contribute from the minute they are hired. Less training is available for students so they will be expected to stay current with technology on their own.

5) How might we improve the IET and BS-EET programs?

--Update lab equipment at a faster pace

--It think the inclusion of a little more class work that focuses on technologies/products that are used in the manufacturing world would benefit these programs.

--Keep the programs current. Keep contact with industry and continue to "tweak" the program to keep content current. Try to obtain feedback from graduates to make adjustments to the programs.

--Solicit industrial experts as well as industrial input and react on that input. The university must become more flexible in its ability to offer revised curriculum and update programs.

--C is the best structured programming language to use as a core course because it teaches general programming concepts and logic in a "neutral" manner. Visual Basic and LabView are both skewed slightly toward vendor-oriented solutions, Microsoft and National Instruments respectively. VB and LabView will generally be used to a greater degree than C in industry, however. C is a little more difficult to learn for students, or anyone for that matter, but that lends itself to learning the "hard stuff" in the structured environment of college. C is to engineering students as English is to the general student populace.

--Preparation is good but many of the graduates don't aim high enough. They are better than they think. As interns they may be underused, that's an industry problem. Faculty should encourage interns and graduates to look at positions that challenge them and that don't make them into bench technicians. Easy to say, hard to accomplish if industry exposure is limited. IET may have an advantage here.

--I can't evaluate this since we don't interview at or hire from Ferris St. I have come into contact with two or three Ferris St. ET grads (graduation dates ranged over the last 10 years or so) and they definitely have a higher degree of competency than most of the customers in my territory.

6) For both programs, are the outcomes appropriate for current industrial practice?

A=1 B=2 C=2 D=0 E=0

--The discussions that the advisory committee has had over the past two years to include motion, HMI/SCADA, AutoCad, and industrial networks would change my rating from 3 to 4 or 5

--The programs do an excellent job preparing the students for industry.

--Yes, I believe so.

7) What micro or macro trends do you see in your industry that might affect job placement?

--I see that there is a continued mixing of the trades in engineering. Electrical oriented persons must be able to write control and test software programs as well as properly calculate the size 3 phase equipment. These same engineers must also understand motion control as well as the criteria for selecting hardware. Eventually, the CNS and BS-EET program will have to become one or they will have to break into hardware/software divisions.

--Microprocessor, software, integration of systems. Artificial intelligence, self-diagnostic systems, redundant processing

D. Summary of Data

Of those responding, the majority feels the CNS, IET and EET curriculum is current and relevant. The biggest concern is keeping the programs current and moving fast enough with curriculum revisions so the programs do not become outdated. The surveys did indicate concern for keeping the equipment up to date. Most respondents felt that the quality of the graduates is high. Stressing fundamentals and flexibility are important to a graduate for success in industry.

Section 7

Labor Market Analysis

Labor Market Demands for EET & CNS Department

A. PREFACE

There is no separate category for Electrical Electronics Engineering Technology in the Bureau of Labor Statistics. While the degree from the EET/CNS department is not an engineering degree, many graduates of the EET & CNS programs are hired as engineers. Most graduates of the IET associate degree program go on to the EET program.

Information from the Occupational Outlook Handbook projects that the employment for both Electrical and Electronic Engineers and for Computer Systems Engineers is going to be increasing at a much faster than average rate through 2008.

Information elsewhere in this report will show the satisfaction of employers with the graduates of the EET & CNS programs.

B. Labor market projections from the Occupational Outlook Handbook

1) CNS GRADUATES:

(This information is edited. The complete report can be obtained on the Department of Labor web site at www.bls.gov and clicking on Occupational Outlook Handbook)

As computer applications continue to expand, these occupations are projected to be the fastest growing and rank among the top 20 in the number of new jobs created over the 1998-2008 period.

Relevant work experience and a bachelor's degree are prerequisites for many jobs; for more complex jobs, a graduate degree is preferred.

The rapid spread of computers and information technology has generated a need for highly trained workers to design and develop new hardware and software systems and to incorporate new technologies. These workers—computer systems analysts, engineers, and scientists—include a wide range of computer-related occupations. Job tasks and occupational titles used to describe this broad category of workers evolve rapidly, reflecting new areas of specialization or changes in technology, as well as the preferences and practices of employers.

i. Computer systems analysts, engineers, and scientists held about 1.5 million jobs in 1998, including about 114,000 who were self-employed. Their employment was distributed among the following detailed occupations:

Computer systems analysts	617,000
Computer support specialists	429,000
Computer engineers	299,000
Database administrators	87,000
All other computer scientists	97,000

Computer systems analysts, engineers, and scientists are expected to be the fastest growing occupations through 2008. Employment of computing professionals is

expected to increase much faster than average as technology becomes more sophisticated and organizations continue to adopt and integrate these technologies. Growth will be driven by very rapid growth in computer and data processing services, which is projected to be the fastest growing industry in the U.S. economy. In addition, thousands of job openings will arise annually from the need to replace workers who move into managerial positions or other occupations or who leave the labor force.

The demand for networking to facilitate the sharing of information, the expansion of client/server environments, and the need for specialists to use their knowledge and skills in a problem solving capacity will be major factors in the rising demand for computer systems analysts, engineers, and scientists. Moreover, falling prices of computer hardware and software should continue to induce more businesses to expand computerized operations and integrate new technologies. In order to maintain a competitive edge and operate more cost effectively, firms will continue to demand computer professionals who are knowledgeable about the latest technologies and able to apply them to meet the needs of businesses.

Increasingly, more sophisticated and complex technology is being made available to individual users who can design and implement more of their own applications and programs. The result is a growing demand for computer support specialists, help-desk personnel, and technical consultants. Likewise, the explosive growth in electronic commerce—doing business on the World Wide Web—and the continuing need to build and maintain databases that store critical information on customers, inventory, and projects is fueling demand for database administrators current on the latest technology.

College graduates with a bachelor's degree in computer science, computer engineering, information science, or management information systems should also enjoy favorable prospects for employment, particularly if they have supplemented their formal education with practical experience. Because employers continue to seek computer professionals who can combine strong technical skills with good interpersonal and business skills, graduates with non-computer science degrees, who have had courses in computer programming, systems analysis, and other information technology areas, should also continue to find jobs as computer professionals. In fact, individuals with the right experience and training can work in a computer-related occupation regardless of their major or level of formal education.

Median annual earnings of computer systems analysts were \$52,180 in 1998. The middle 50 percent earned between \$40,570 and \$74,180 a year. The lowest 10 percent earned less than \$32,470 and the highest 10 percent earned more than \$87,810. Median annual earnings in the industries employing the largest numbers of computer systems analysts in 1997 were:

Telephone communications	\$63,300
Federal Government	56,900
Computer and data processing services	51,000
State government, except education and hospitals	43,500
Colleges and universities	38,400

Median annual earnings of computer engineers were \$61,910 in 1998. The middle 50 percent earned between \$46,240 and \$80,500. The lowest 10 percent earned less than \$37,150 and the highest 10 percent earned more than \$92,850. Median annual

earnings in the industries employing the largest numbers of computer engineers in 1997 were:

Computer and office equipment	\$63,700
Measuring and controlling devices	62,000
Management and public relations	59,000
Computer and data processing services	56,700
Guided missiles, space vehicles, and parts	49,500

Median annual earnings of database administrators were \$47,980 in 1998. The middle 50 percent earned between \$36,440 and \$69,920. The lowest 10 percent earned less than \$28,320 and the highest 10 percent earned more than \$86,200. Median annual earnings of database administrators employed in computer and data processing services in 1997 were \$49,000.

Median annual earnings of all other computer scientists were \$46,670 in 1998. The middle 50 percent earned between \$34,290 and \$70,250. The lowest 10 percent earned less than \$26,690 and the highest 10 percent earned more than \$87,730. Median annual earnings of all other computer scientists employed in computer and data processing services were \$46,500 and in personnel supply services, \$33,600 in 1997.

Starting salaries for computer scientists or computer engineers with a bachelor's degree can be significantly higher than starting salaries of bachelor's degree graduates in many other fields. According to the National Association of Colleges and Employers, starting salary offers for graduates with a bachelor's degree in computer engineering averaged about \$45,700 in 1999; those with a master's degree, \$58,700. Starting offers for graduates with a bachelor's degree in computer science averaged about \$44,600; in computer programming, about \$40,800; in information sciences, about \$38,900; and in management information systems, \$41,800 in 1999. Offers for those with the bachelor's degree vary by functional area for all types of employers, as shown in the following tabulation.

Hardware design and development	\$45,900
Software design and development	45,600
Information systems	41,600
Systems analysis and design	41,100

**ii. Companies interviewing on campus for CNS graduates
(from FSU Placement Office) and position titles**

ASG Renaissance; Southfield, Mi	Engineer Network Engineer Software Engineer Web Developer
Auto Owners; Lansing, Mi	Assoc Actuarial Tech Programmer
Berrian County ISD; Berrian Springs, Mi	Program Analyst
Compuware Corp; Farmington Hills, Mi	Multiple Positions
General Motors-Manufacturing; Detroit, Mi	Production Supervision Quality Engineering
Howmet Corporation; Whitehall, Mi	Information Tech Training
Johnson Controls-Holland; Holland, Mi	Computer Information
Lincoln Electric; Cleveland, Oh	Staff Engineer
MedStat; Ann Arbor, Mi	Data Base Support Specialist Information Systems Pro Installation Programmer
Meijer; Grand Rapids, Mi	Information Technology
National City; Cleveland, Oh	Information Technology
Schoolzone Publishing; Grand Haven, Mi	Multimedia Programmer Technical Specialist
Siemens; Buffalo Grove; Ill	Design Engineer
State Farm; Bloomington, Ill	Command Center Tech Financial Bus Analyst Networking Technician

2) EET GRADUATES:

Electrical and electronics engineers specialize in different areas such as power generation, transmission, and distribution; communications; computer electronics; and electrical equipment manufacturing—or a subdivision of these areas—industrial robot control systems or aviation electronics, for example. Electrical and electronics engineers design new products, write performance requirements, and develop maintenance schedules. They also test equipment, solve operating problems, and estimate the time and cost of engineering projects.

Electrical and electronics engineers held about 357,000 jobs in 1998, making it the largest branch of engineering. Most jobs were in engineering and business consulting firms, government agencies, and manufacturers of electrical and electronic equipment, industrial machinery, and professional and scientific instruments. Communications and utilities firms, manufacturers of aircraft and guided missiles, and computer and data processing services firms accounted for most of the remaining jobs.

California, Texas, New York, and New Jersey—states with many large electronics firms—employ over one-third of all electrical and electronics engineers.

Electrical and electronics engineering graduates should have favorable job opportunities. The number of job openings resulting from employment growth and the need to replace electrical engineers who transfer to other occupations or leave the labor force is expected to be in rough balance with the supply of graduates. Employment of electrical and electronics engineers is expected to grow *faster than the average* for all occupations through 2008.

Projected job growth stems largely from increased demand for electrical and electronic goods, including computers and communications equipment. The need for electronics manufacturers to invest heavily in research and development to remain competitive and have a scientific edge will provide openings for graduates who have learned the latest technologies. Opportunities for electronics engineers in defense-related firms should improve as aircraft and weapons systems are upgraded with improved navigation, control, guidance, and targeting systems. However, job growth is expected to be fastest in services industries—particularly consulting firms that provide electronic engineering expertise.

Median annual earnings of electrical and electronics engineers were \$62,660 in 1998. The middle 50 percent earned between \$47,080 and \$80,160. The lowest 10 percent earned less than \$38,470 and the highest 10 percent earned more than \$91,490. Median annual earnings in the industries employing the largest numbers of electrical and electronics engineers in 1997 were:

Federal government	\$68,000
Computer and office equipment	67,100
Electronic components and accessories	59,900
Communications equipment	59,400
Engineering and architectural services	58,900

According to a 1999 salary survey by the National Association of Colleges and Employers, bachelor's degree candidates in electrical and electronics engineering received starting offers averaging about \$45,200 a year; master's degree candidates, \$57,200; and Ph.D. candidates, \$70,800.

**i. Companies interviewing on campus for EET graduates
 (from FSU Placement Office) and position titles**

Applied Manufacturing Technologies; Auburn Hills, Mi	Controls Engineer Simulation Specialist
ASG Renaissance; Troy, Mi	Engineer
Compuware Corp ; Farmington, Mi	Multiple positions
Denso Manufacturing; Battle Creek, Mi	Electrical Engineer
Detroit Diesel; Detroit, Mi	Electrical Engineer
General Motors-Manufacturing ; Detroit, Mi	Production Supervisor Quality Engineer
Granger Electric Co; Lansing, Mi	Field Service Tech
ITT Industries; Odessa, Mi	Electronic Engineer intern
Johnson Controls-Milwaukee, Wi	Application Engineer System Application Engineer Technical Sales Engineer
Johnson Controls-Holland; Holland, Mi	Electrical Engineer
Mears/CPG, LLC; Rosebush, Mi	Electrical Engineer
Seimens; Buffalo Grove, Ill	Design Engineer
TRAM, INC; Plymouth, Mi	Electrical Engineer
Trane Company; Rushville, In	Electrical Engineer
Trane West Michigan; Grand Rapids, Mi	DDC Technician
Triple S Plastics; Vicksburg, Mi	Automation Technician
United McGill Corporation; Groveport, Oh	Sales Associate Sales Engineer

3) SUMMARY

According to projections from the Bureau of Labor Statistics Occupational Outlook Handbook, employment opportunities for the graduates of the CNS, IET, and EET programs will continue to be above average for the next several years. Employers interviewing on campus also show a demand for the graduates especially the BS degree graduates. It appears that the EET & CNS Department is doing an above average job of preparing the students for employment in their field.

Section 8

Facilities and Equipment

Evaluation of Facilities and Equipment

1. In the past, two Minor Capital Improvement Project Requests, an Academic Equipment Request List, and a Strategic Plan List have been compiled concerning facilities and equipment needed in the EET & CNS Dept. Those lists are included at the end of this section of this report, and the improvements and equipment are still needed.
2. The EET & CNS Dept. consists of most of the 4th floor of the Swan building. The hallway walls and floor were recently painted and repaired. All classrooms and labs need remodeling. This is reportedly a bond initiative on campus.
3. The fact that faculty offices are in Johnson Hall and classrooms are on Swan 4th floor makes it very difficult to transport faculty materials to classes and labs when faculty have multiple classes back-to-back. Every effort should be made to locate faculty offices, classrooms, and labs in the same building in the future.
4. The elevators in the Swan building are on the wrong end of the building. The West entrance to Swan has become the main entrance, and the elevators are on the East end of the building. This makes the EET & CNS Dept. inaccessible to visitors and inconvenient for students and faculty. The elevators should be moved to the West end of the building as part of any remodeling of Swan.
5. Most rooms on the floor are not air conditioned and in August and September the heat is sometimes unbearable. Air conditioning is addressed in the Minor Capital Improvement Project Request dated 1/18/2001.
6. The heating in most rooms/labs is not consistent; it is either too hot or too cold and when the heat is on it so noisy that the lecturer cannot be heard.
7. The computer network infrastructure needs to be replaced with a faster, more reliable system.
8. Lab signs projecting perpendicularly from above the doors of each lab should be installed to identify labs to students and visitors. Suggested names would be:
 - Swan 401 = ECAD Lab
 - Swan 403 = CNS Lab
 - Swan 406 = PLC Lab
 - Swan 408 = General/Open/Digital Lab
 - Swan 411 = Communications/Controls Lab
 - Swan 413 = Machines Lab
 - Swan 416 = 1st Year Lab

9. A summary of the EET & CNS Department room usage and some of their deficiencies follows. Some of these deficiencies are on the Minor Capital Improvement Project Requests, Academic Equipment Request List, and Strategic Plan List at the end of this section of this report.

Swan 401:

This is the ECAD lab and has state-of-the-art furnishings and equipment.

Swan 402:

This is the technician's office and equipment repair area.

Swan 403:

This is the CNS lab. The University awarded the Computer Networks and Systems program \$27,650 to purchase furniture for this laboratory in 1999. Nearly all computers, network equipment, and software used in the lab have been obtained through industrial donation or as recovered used equipment. The nature of the labs, require students to assemble, disassemble, load software, and build networks utilizing lab computers. The recovered, non-consortium equipment works well for these applications.

Swan 404:

This is the larger of two lecture rooms in the department. It has the following deficiencies:

1. No clock
2. Unusable shades on the windows make it hard to see the white board, videos, overheads, etc.
3. The room needs a permanent VCR, computer projection system. This is priority item 21 on the Academic Equipment Request List. Presently, carts must be wheeled in each time a VCR is shown, and there is only one monitor on the cart. A shared computer projection system must be scheduled and wheeled in anytime a computer presentation is made.

Swan 405:

This is the EET & CNS and the MET offices.

Swan 406:

This is a PLC and Related's lab. It has the following deficiencies:

1. Two of the lab benches are not wired to the master shut-off switch for the lab.
2. This lab needs 3 phase power brought down to the benches.
3. The stools are very old and many are in need of repair.
4. A ceiling is needed to hide unsightly pipes and wiring.
5. The emergency power shut-off is a recessed button and should be replaced with a mushroom button.

Swan 408:

This is the general purpos/open/digital lab.

1. A ceiling is needed to hide unsightly pipes and wiring.
2. The emergency power shut-off buttons are recessed and should be replaced with mushroom buttons.

Swan 409:

This is the faculty and students work/break room.

1. Some faculty have questioned the benefit of having this be a student work/break room, and feel the entire room should be dedicated to a faculty work/break/conference room.
2. A small whiteboard should be installed on the South wall of the faculty break room.

Swan 411:

This is the communications/controls lab. It has the following deficiencies:

1. When the heater is on it is too noisy to lecture.
2. No clock.
3. The North wall needs painted.
4. Either the bench table tops need refinished and the metal parts repainted, or the benches need to be replaced by larger more up-to-date benches.

5. The stools are old and many are in need of repair.
6. A ceiling is needed to hide unsightly pipes and wiring.
7. The emergency power shut-off is a recessed button and should be replaced with a mushroom button.
8. The window shades need to be repaired/replaced.
9. The chalk board should be replaced with a whiteboard to reduce dust in the lab.

Swan 412:

This is a faculty resource/storage/printed circuit board fabrication room.

1. This room needs a general cleanup and obsolete items need to be thrown away.

Swan 413:

This is the machines lab. It has the following deficiencies.

1. The old Hampton machine needs the main rheostat repaired.
2. All Hampton machines need their meters calibrated. This is presently in progress.
3. The old Hampton machine needs its stall pin repaired.
4. The stools are old and many are in need of repair.
5. A ceiling is needed to hide unsightly pipes and wiring.
6. The emergency power shut-off is a recessed button and should be replaced with a mushroom button.
7. The chalkboard should be replaced by a whiteboard.
8. The Crow machines have not been used in at least 15 years and should be discarded.

Swan 415:

This is the smaller of two lecture rooms in the department. It has the following deficiencies.

1. This lecture room is too small for the number of students usually scheduled into it. Screen 1C1 of the SIS+ mainframe computer lists the capacity of this room as 26, but there are only 12 student tables that do not face the wall, making the maximum capacity 24 students. Even with 24 students, the students are shoulder-to-shoulder at the tables making testing without the possibility of cheating impossible. The instructor cannot get between the rows of tables to hand out papers, etc. The overhead projector cannot be positioned far enough away from the white board. The maximum occupancy of this room needs to be re-evaluated.
2. Unusable shades on the windows make it hard to see the white board, videos, overheads, etc.
3. When the heater is on it is too noisy to lecture.

Swan 416:

This is the 1st year lab. It has the following deficiencies.

1. Missing shades on the windows make it hard to see the black board, videos, overheads, etc.
2. The stools are old and many are in need of repair.
3. A ceiling is needed to hide unsightly pipes and wiring.
4. The emergency power shut-off is a recessed button and should be replaced with a mushroom button. The power on switch should be a keyed switch like the other labs.

Please see Appendix F for more detailed facilities and equipment needs.

Section 9

Curriculum

CURRICULUM EVALUATION

Evaluating the curriculum centers on answering the question of whether or not the curriculum meets the needs of industry. This question will can be answered in terms the work history of our graduates, the judgment of the program advisory committee, and evaluation by accreditation organizations. The following will be considered:

Are our graduates being hired into the appropriate positions ?

Are employers that hired our graduates satisfied with our graduate's performance as demonstrated by salary increases, promotions and increased job responsibilities?

--Again, the faculty has responded well to the committee suggestions. The courses offered provide and excellent base and the multi-path program allows the student to "channel" the education to their interests.

--The faculty has done an excellent job in obtaining equipment but the equipment will always lag behind that in use by industry.

--Equipment used in the program is of the same quality and type used in industry. The test equipment ranges from older equipment still used in industry to state of the art test equipment. New equipment is purchased as budget permits. Up-keep on test equipment is better since a technician was hired.

--Preparation is good but many of the graduates don't aim high enough. They are better than they think. As interns they may be underused, that's an industry problem. Faculty should encourage interns and graduates to look at positions that challenge them and that doesn't make them into bench technicians. Easy to say, hard to accomplish if industry exposure is limited. IET may have an advantage here.

--The programs do an excellent job preparing the students for industry.

What is the program advisory committee opinion with respect to the program curriculum ?

What was the outcome of accreditation evaluations ?

CNS PROGRAM

The CNS Program is a relatively new program that first admitted students the fall semester of 1996. The program has graduated 12 students thus far. The placement rate of our CNS graduates is 100 % and graduates have obtained appropriate positions in their field of study. Many graduates have positions with "engineer" in their titles, even with "only" an engineering technology degree.

Based on graduate surveys, starting salaries have been acceptable and graduates are making progress in their careers in short order. One graduate is pursuing a master's degree full-time while being fully compensated by his employer. 100 % of the graduates responding either **strongly agree** or **agree** to the statement "**I would recommend the CNS program to others**".

The CNS faculty has done an excellent job in selecting the members of the CNS Advisory Committee. The CNS Advisory Committee is very active in supporting the CNS program in terms of curriculum

recommendations and feedback on faculty proposed curriculum changes. The CNS faculty and curriculum must continue to keep pace with rapidly developing computer and network technologies. Many curriculum and course updates have been made since the start of the CNS program in 1996. Currently, a proposal exists that will strengthen the first two years of the curriculum by incorporating Cisco Network Academy materials. The change will enable better articulation with high schools that have joined the Academy. The resulting increase in network courses and their targeted sequence is also expected to reduce first year attrition. This proposal has strong support from the CNS Advisory Committee.

Computer Networks and Systems also utilizes many CIS courses in order to increase campus efficiencies and a provide our students broader experience.

The following comments are taken from Section 6 - Industrial Advisory Committee Perceptions for the CNS Program:

A solid curriculum that appears to provide an excellent and broad gauge education. I like the fundamentals being taught.

I have seen very bright student pass through your program

I have had very good luck wit the two graduates that I have hired. Ferris has prepared them to learn. Both graduates have indicated that the real world learning curve was substantial they started at Dow Corning. The planned incorporation of the Cisco Network Academy should help provide a more detailed network understanding.

The program seems to attract a good grade of student that makes a good graduate

The person that we have worked with was very competent

Program is right on track and needs to keep its flexibility.

IET and EET Programs

Most of the IET graduates continue on into the 2+2 BS-EET program. Therefore, very little data is available on IET graduates that do not continue into the BS-EET program. For this reason, the IET curriculum can not be evaluated separately. Since the IET program comprises the first two years of the BS-EET program, it is indirectly evaluated when evaluating the BS-EET program.

Since the last program review the placement rate of our BS-EET graduates has consistently been 90+ % and graduates have obtained appropriate positions in their field of study. Many graduates have positions with "engineer" in their titles, even with "only" an engineering technology degree.

Based on graduate surveys, starting salaries have been acceptable and in general graduates appear to be making normal progress in their careers. Several graduates have indicated they are pursuing graduate work and one graduate has his own engineering company. 97 % of graduates responding either **strongly agree** or **agree** to the statement "**I would recommend the BS-EET program to others**".

The IET/EET Advisory Committee is asked on a regular basis to submit suggestions on curriculum improvements. The advisory committee is asked for their opinion with respect to curriculum changes proposed by the faculty. Appropriate curriculum and course changes have been made since the last program review.

The following comments are taken from Section 6 - Industrial Advisory Committee Perceptions for IET, and **BS-EET** Programs :

Section 10

Enrollment Trends

Enrollment Trends for EET & CNS Department

The CNS, IET, and EET enrollment for the past five years is shown below. The CNS program was started in 1996. The EET program was started in 1984. The IET program has been on campus for over 30 years.

On campus enrollment CNS, IET, and EET (Regular/Pre-tech):

	<u>1996-1997</u>	<u>1997-1998</u>	<u>1998-1999</u>	<u>1999-2000</u>	<u>2000-2001</u>
CNS	17/2	43/8	60/5	70/15	64/22
IET	56/25	47/16	40/24	35/15	43/21
EET	90/2	92/2	98/1	69/2	76/1

Data taken from Fact Book 2000-2001 published by FSU

Off campus enrollment CNS, IET, and EET:

There is no off campus enrollment.

On campus enrollment COT:

	<u>1996-1997</u>	<u>1997-1998</u>	<u>1998-99</u>	<u>1999-2000</u>	<u>2000-2001</u>
	2238	2204	2234	2224	2356

Data taken from Fact Book 2000-2001 published by FSU

Off campus enrollment COT:

	<u>1996-1997</u>	<u>1997-1998</u>	<u>1998-99</u>	<u>1999-2000</u>	<u>2000-2001</u>
	273	236	212	196	197

Data taken from Fact Book 2000-2001 published by FSU

On campus enrollment FSU:

	<u>1996-1997</u>	<u>1997-1998</u>	<u>1998-99</u>	<u>1999-2000</u>	<u>2000-2001</u>
	9495	9468	9651	9668	9847

Data taken from Fact Book 2000-2001 published by FSU

GRADUATION AND PLACEMENT

Graduates for CNS, IET, and EET:

	<u>1996-1997</u>	<u>1997-1998</u>	<u>1998-99</u>	<u>1999-2000</u>	<u>2000-2001</u>
CNS	0	1	3	2	5
IET	22	18	24	16	17
EET	6	17	11	11	19

Data taken from Administrative Program Review: 2000

Placement for CNS, IET, and EET graduates (in percent):

	1996-1997	1997-1998	1998-99	1999-2000	2000-2001
CNS	NA	NA	100	100	?
IET	100	100	100	100	?
EET	NA	100	100	100	?

Data taken form Administrative Program Review: 2000

CAPACITY

The capacities of the programs (CNS/IET/EET) are 88/56/48. The combined IET/EET program capacity is 104 students (analysis performed in February, 2001).

The number of faculty is the primary limiting factor. Other minor factors are the ability to schedule our lab and lecture courses in conjunction with our other required courses and the lack of three phase power in some of our labs.

ANALYSIS OF ON CAMPUS ENROLLMENT TRENDS

The available enrollment data indicates a relative stability with growth in the CNS program. The outlook for the future indicates that demand for CNS and EET graduates should provide a stable or increasing enrollment for the CNS & EET department. While IET has shown a slight decline, new and increased recruiting efforts can benefit the enrollment numbers. A proposal to implement Cisco Network Academy materials will reduce attrition and draw additional students into the CNS program. Introduction of Motion Control and PLC network communications will also enhance the enrollment numbers in the EET program.

Section 11

Program Productivity

Program Productivity for EET & CNS Department

Program productivity measures Student Credit Hours (SCH) and Full Time Equivalent Faculty (FTEF) assigned to the program and the ratio (SCH/FTEF) of credit hours generated by the faculty teaching in courses with a specific identifying prefix. Electronic Computer and Networks Systems courses are identified with the prefix ECNS and Electrical and Electronic Engineering Technology courses are identified with the prefix EEET. There is no separate identifier for IET courses. The EEET prefix also identifies courses taught to other majors (Related). A high SCH/FTEF ratio indicates that many credit hours are "produced" per faculty. Courses taught in a mass lecture without laboratory sections usually have the best SCH/FTEF ratio. All EEET courses have laboratory sections and all but one of the ECNS courses have laboratory sections.

SCH/FTEF ratio for FSU, COT, ECNS, and EEET:

	1995/96	1996/97	1997/98	1998/99	1999/2000
FSU	464	447	442	457	454
COT	339	333	323	330	331
ECNS	NA	221	120	170	184
EEET	361	319	313	342	325
ECNS + EEET	361	314	292	323	306

IET, EET and Related courses all have an EEET course prefix.

Data taken from Degree Program Costs 1998-1999, FSU

The SCH/FTEF ratio for the EEET and (ECNS + EEET) are very close to the COT average. The CNS program is quite new and is showing an increase from 1997 to 2000. Several EEET prefix courses are taken by CNS students.

The program costs for CNS, IET, and EET are shown below. FSU and COT costs are shown for a comparison..

	Average Instructor Cost/SCH	Average Department Cost/SCH	Average Dean's Cost/SCH	TOTAL COST/ SCH
FSU	\$132.12	\$35.81	\$14.97	\$182.90
COT	\$152.95	\$45.75	\$15.33	\$214.03
CNS	\$191.17	\$42.14	\$14.30	\$247.61
IET	\$153.04	\$46.63	\$15.74	\$215.40
EET	\$175.47	\$29.62	\$14.30	\$219.87

The IET and EET costs are very close to the COT average with the CNS costs being approximately 15% above COT average. The CNS average is 23rd out of 183 programs, IET is 48th out of 183 programs and EET is 46th out of 183 programs. Courses taught to not-ECNS and EEET majors (Related courses) are approximately 30% to 40% of the class load and are also in the IET and EET numbers.

Section 12

Conclusions

A. Introduction

The EET & CNS Department provides valuable services to the student, College of Technology, Ferris State University, and the State of Michigan through its offering of the BS-CNS, AAS-IET, and BS-EET degrees. The BS-CNS has been offered for 5 years. The AAS-IET has been offered for. The BS-EET has been offered for 17 years. The computers, communications, and controls that are taught are indeed the head, nerves, and muscles of the industrial sector of this nation. Each measure for all degrees shows a positive impact is being made with these degrees.

B. Conclusions

The graduate surveys conducted show graduates of all programs enjoy excellent employment, compensation, and career growth opportunities. They are, as a group, well satisfied with the professional preparation provided by the program. A concern in the CNS program voiced by the graduates is the lack of a strong networking component in the program. Curriculum updates have already been made to address this issue. In addition, a curriculum proposal for further changes to the program is currently in the system to address this concern.

The employer survey response, in all three programs, was lower than expected. The newer BS-CNS program has not yet produced a significant number of graduates. Most students of the IET program continue into the BS-EET program and there are few current employers of IET graduates. The response for the BS-EET program was also lower than expected. This was a surprise and action needs to be taken to improve the response rate.

The present student surveys show similar results for all three programs. The material presented, pace of the courses, relevance of material, and course difficulty are all rated above average. However, the laboratory equipment rated average or below in quality and condition. The availability of reference material was also rated average or below but with the opening of FLITE, this concern should be eased.

The faculty perceptions were less than neutral when responding to questions about the administration, quality of students, and facilities/equipment. Of particular note, all responding faculty strongly felt that there was inadequate funds for professional development and release time for course development. There is also strong concern that the facilities need upgrading with new floor covering, ceilings, paint, and laboratory furniture. Some work has recently been done, but it is inadequate to solve the problem.

The industrial advisory boards strongly support the faculty, curriculum, and programs. The biggest concern is keeping the programs and equipment current with industry practice by having up-to-date equipment in the labs, especially the CNS lab. Most respondents felt that the quality of the graduates is high and that stressing fundamentals and flexibility are important to a graduate's success in the workplace.

Labor market demand for graduates in BS-CNS, AAS-IET, and BS-EET is excellent. According to the Bureau of Labor Statistics, demand for graduates in the computer and electronics fields will continue to be strong for the next several years. Based on information from the Ferris State Placement office, nearly 100% of all graduates in the department get jobs in the field or go on for continuing education.

Facilities and equipment are a major concern to faculty. Some minor painting and floor covering has been done over the past several years. The perception of prospective students and their parents when touring the laboratories is one of surprise. Some find it difficult to believe we have an up-to-date curriculum in such old looking facilities.

The curriculum in all three programs is strong and reviewed often. The BS-EET program is TAC-ABET accredited and has minor curriculum proposal changes pending. The BS-CNS program currently has a proposal in the college curriculum committee for consideration of adding networking courses as strongly suggested by the students, industrial advisory committee and employers.

Enrollments in the IET and BS-EET have been up and down over the past years. Attrition has been a problem in the IET and CNS programs but no more so than other similar programs around the country or other COT programs. SLA classes are offered in the freshman year and tutoring is offered by a student professional organization (IEEE) for most freshman and sophomore classes in the department. The BS-CNS program has seen very good growth since starting. Fall of 2001 saw the largest class with 48 students. The current curriculum proposal should address some of the attrition problem with this program and also make the program appealing to a better-prepared student.

Productivity in all programs is very near the average for the College of Technology. Most faculty are teaching at the maximum load with some overload. There has been some fluctuation due to student population but the cost per student credit hour and the SCH/FTEF ratio is near the average for the College of Technology.

It should be noted that the EET & CNS department provides several classes to other programs in the COT including Welding, Plastics, Elastomer, HVAC, Product Design, Mechanical, and Manufacturing. These programs recognize the importance of electrical and industrial automation skills in their programs. About 50% of the students who take classes in the EET and CNS department are from other COT programs. These courses make up approximately 30% to 35% of the faculty load in both fall and winter semesters. Between 150 and 175 non-department students will take classes in both fall and winter semesters. These student numbers are not reflected in our enrollment figures. All Related courses have laboratory components associated with them.

Overall, the CNS, IET, and EET programs are going very well. There are concerns within the programs that are being addressed by on-going proposals. Support from all constituents is strong and this support is reflected in each of the programs.

The BS-CNS program, though relatively new, is a highly innovation and timely addition to Ferris State University. It is unique in combining hardware skills and software expertise to give students the edge in working with the computerized products, systems, and information networks of today and tomorrow. The BS-EET program here at Ferris is the only TAC-ABET accredited EET program in West Michigan and is one of only three in the entire state. This region of West Michigan is a powerhouse of manufacturing capability, which includes nearly 11,000 manufacturing companies.

The EET & CNS Department is right on target with regard to the implementation of the FSU vision statement adopted by the Board of Trustees in 1997 in that we do provide opportunities for innovation learning in career-oriented, technological and professional education.

Computer Networks + Systems,
Industrial Electronics Technology,
Electrical Engineering Technology

APRC 2001-2002

section 3 of 4

Section 13

Recommendations

Recommendations for IET/EEET and CNS Programs

The EET and CNS Department makes a strong contribution to the College of Technology, FSU, and the State with the IET, EET, and CNS programs. From the data presented in this document, the following recommendations are proposed as a means to maintain and enhance the quality of those programs:

- 1) Provide additional funding to the department for faculty development
- 2) Obtain administrative approval of the curriculum proposal to increase the networking component of the CNS program.
- 3) Provide funds to update lab facilities with new lab benches, seating, floor coverings, and ceilings.
- 4) Improve efforts to keep labs updated with state of the art equipment to provide students with an educational experience more like the "real world".
- 5) Increase marketing efforts to draw a student that is better prepared to succeed in the demanding programs offered.
- 6) Complete curriculum proposal to streamline the set of courses offered to non-majors from other COT programs.
- 7) Complete CNS curriculum proposal that incorporates Cisco Academy course material.
- 8) Develop a comprehensive data base to track alumni and their employers to improve efforts at improving our programs.
- 9) Provide realistic full office staffing levels and support for the programs.
- 10) Need more technician time than is provided. Equipment repair, calibration, and fabrication are inadequate.

Following is the Program Review Panels
 Evaluation of each of the programs:

PRP Evaluation Form Results

Question	CNS	IET	BSEET
1 Student Perception of Instruction	3.86	3.86	3.86
2 Student Satisfaction with Program	3.93	3.86	4.00
3 Advisory Committee Perceptions of Program	4.29	3.86	4.00
4 Demand for Graduates	4.86	3.57	5.00
5 Use of Information on Labor Market	4.00	3.14	3.71
6 Use of Professional / Industry Standards	3.86	3.43	4.00
7 Use of Student Follow-up Information	3.29	3.00	3.57
8 Relevance of Supportive Courses	4.00	4.00	3.86
9 Qualifications of Administrators and Supervisors	3.29	3.57	3.29
10 Instructional Staffing	4.29	4.57	4.14
11 Facilities	2.86	2.86	3.14
12 Scheduling of Instructional Facilities	4.00	4.14	4.14
13 Equipment	2.57	2.71	3.00
14 Adaption of Instruction	3.57	3.86	3.86
15 Adequate and Availability of Instructional Materials and Supplies	2.86	3.00	3.00

Appendix A

Supporting Information for Section 1-Overview

Curriculum Guide Sheets

Administrative Program Review 2000

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

**COMPUTER NETWORKS AND SYSTEMS
BACHELOR OF SCIENCE
Curriculum Guide Sheet**

StudentName _____ Student I.D. _____

NOTE: Meeting the requirements for graduation indicated on this sheet is the responsibility of the student. All general education requirements for this degree as outlined in the current university catalog must be satisfied (see catalog). The student's advisor must be consulted each semester before registering. ECNS & EET courses are offered and/or run based upon faculty availability and sufficient student sign-up and/or enrollment. The student may NOT be able to schedule some combinations of track electives. All prerequisites & corequisites, current and cumulative, must be satisfied or have Department Chair waiver to take a course.

1ST YEAR - FALL SEMESTER

EET 110 IET Technical Prep 3 _____
 EET 114 Electric Circuits 1 4 _____
 MATH 116 Int. Algebra & Numerical Trigonometry 4 _____
 ENGL 150 English I 3 _____
 Elective _____ Cultural Enrichment 3 _____

1ST YEAR - WINTER SEMESTER

EET 121 Electronics 1 4 _____
 EET 122 Digital 1 4 _____
 EET 124 Electric Circuits 2 4 _____
 MATH 126 Algebra & Analytic Trigonometry 4 _____

2ND YEAR - FALL SEMESTER

EET 210 Communication Circuits 3 _____
 EET 212 Digital 2 4 _____
 ISYS 204 Visual Basic Programming 3 _____
 PHYS 211 Introductory Physics I 4 _____
 ENGL 250 English 2 3 _____

2ND YEAR - WINTER SEMESTER

ECNS 221 PC Data Acquisition and Control 3 _____
 EET 222 Microcomputer Applications 4 _____
 ISYS 310 Networking Administration 3 _____
 COMM 121 Fundamentals of Public Speaking 3 _____
 Elective _____ Social Awareness 3 _____

3RD YEAR - FALL SEMESTER

ECNS 311 High Level Programming 2 _____
 ECNS 310 C++ Programming Applications 1 _____
 ECNS 312 Control Networks 3 _____
 MATH 216 Applied Calculus 4 _____
 PHYS 212 Introductory Physics 2 4 _____
 ENGL 311 Advanced Technical Writing 3 _____

3RD YEAR - WINTER SEMESTER

ECNS 321 Network Theory and Testing 3 _____
 ISYS 312 Advanced C++ Programming 3 _____
 ISYS _____ Elective (List on Reverse Side) 3 _____
 MATH 226 Fourier Series & Applied Differential Eqns. 4 _____
 Elective _____ Cultural Enrichment (200+) 3 _____

3RD YEAR - SUMMER SEMESTER

EET 393 Internship 4 _____

4TH YEAR - FALL SEMESTER

ECNS 412 Real Time Operating Systems 4 _____
 EET 412 Advanced Digital 1 4 _____
 EET 418 Project Management 2 _____
 _____ Track Course 4 _____
 _____ Social Awareness 3 _____

4TH YEAR - WINTER SEMESTER

EET 422 Advanced Digital 2 4 _____
 EET 428 Senior Project 2 _____
 _____ Track Course 4 _____
 Elective _____ Cultural Enrichment 3 _____
 Elective _____ Social Awareness (300-400) 3 _____

Communications Track

EET 411 Advanced Communications 1 4 _____
 EET 421 Advanced Communications 2 4 _____

Embedded Systems Track

ECNS 410 Digital Signal Processing 4 _____
 ECNS 421 Embedded Computer Systems 4 _____

Industrial Automation Track

EET 413 Electrical Power and Machines 4 _____
 EET 423 Industrial Automation Controls 4 _____

Information Systems Track*

ISYS 315 JAVA for C++ Programmers 3 _____
 ISYS 303 Systems Analysis Methods 3 _____
 ISYS _____ Elective (Consult your advisor) 3 _____

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

**CURRICULUM REQUIREMENTS
COMPUTER NETWORKS AND SYSTEMS
BACHELOR OF SCIENCE DEGREE**

TECHNICAL	CREDIT HOURS	GENERAL EDUCATION	CREDIT HOURS
ECNS 221 PC Data Acquisition and Control	3	<u>Communication Competence</u>	
ECNS 310 C++ Programming Applications	1	ENGL 150 English 1	3
ECNS 311 High Level Programming	2	ENGL 250 English 2	3
ECNS 312 Control Networks	3	ENGL 311 Advanced Technical Writing	3
ECNS 321 Network Theory and Testing	3	COMM 121 Fundamentals of Public Speaking	3
ECNS 412 Real Time Operating Systems	4		
BEET 110 IBT Technical Prep	3	<u>Scientific Understanding</u>	
BEET 114 Electric Circuits 1	4	PHYS 211 Introductory Physics 1	4
BEET 121 Electronics 1	4	PHYS 212 Introductory Physics 2	4
BEET 122 Digital 1	4		
BEET 124 Electric Circuits 2	4	<u>Quantitative Skills</u>	
BEET 210 Communication Circuits	3	MATH 116 Int. Algebra & Num. Trigonometry	4
BEET 212 Digital 2	4	MATH 126 Algebra & Analytic Trigonometry	4
BEET 222 Microcomputer Applications	4	MATH 216 Applied Calculus	4
BEET 393 Internship	4	MATH 226 Fourier Series & Apl. Differential Eqns	4
BEET 412 Advanced Digital 1	4		
BEET 418 Project Management	2	<u>Cultural Enrichment</u>	
BEET 422 Advanced Digital 2	4	Elective	6
BEET 428 Senior Project	2	Elective (200+)	3
Track Courses	8/9		
		<u>Social Awareness</u>	
<u>Technical/Related</u>		Elective	6
ISYS 204 Visual Basic Programming	3	Elective (300/400)	3
ISYS 310 Networking Administration	3		
ISYS 312 Advanced C++ Programming	3	<u>ISYS ALLOWABLE ELECTIVES</u>	
ISYS -- See adjacent list	3	ISYS 200 Database Design & Implementation	3
		ISYS 202 Principles of Information Systems	3
<u>Track Courses</u>		ISYS 303 Systems Analysis Methods	3
ECNS 410 Digital Signal Processing	4	ISYS 304 Advanced Visual Basic Programming	3
ECNS 421 Embedded Computer Systems	4	ISYS 311 Information Systems in Business	3
BEET 411 Advanced Communications 1	4	ISYS 350 Telecommunications	3
BEET 413 Electrical Power and Machines	4	ISYS 369 Introduction to UNIX	3
BEET 421 Advanced Communications 2	4		
BEET 423 Industrial Automation Controls	4		
ISYS 315 JAVA for C++ Programmers	3		
ISYS 303 Systems Analysis Methods	3		

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FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

**INDUSTRIAL ELECTRONICS TECHNOLOGY
ASSOCIATE IN APPLIED SCIENCE DEGREE**

Curriculum Guide Sheet

NAME OF STUDENT _____ STUDENT I.D. _____

Total semester hours required for graduation: 67

NOTE: Meeting the requirements for graduation indicated on this sheet is the responsibility of the student. All general education requirements for this degree as outlined in the current university catalog must be satisfied (see catalog). The student's advisor must be consulted each semester before registering. ECNS & EET courses are offered and/or run based upon faculty availability and sufficient student sign up and/or enrollment. All prerequisites and corequisites, currently and cumulative, must be satisfied or have Department Chair waiver to take a course.

FIRSTYEAR-FALLSEMESTER		CREDITS	COMMENTS/GRADE
EET	110 IET Technical Preparation	3	
EET	114 Electric Circuits 1	4	
MATH	116 Intermediate Algebra & Numerical Trigonometry	4	
ENGL	150 English 1	3	
_____	_____ Cultural Enrichment Elective	3	
FIRST YEAR - WINTER SEMESTER			
EET	121 Electronics 1	4	
EET	122 Digital 1	4	
EET	124 Electric Circuits 2	4	
MATH	126 Algebra & Analytic Trigonometry	4	
SECOND YEAR - FALL SEMESTER			
EET	210 Communication Circuits	3	
EET	211 Electronics 2	3	
EET	212 Digital 2	4	
PHYS	211 Introductory Physics 1	4	
ENGL	250 English 2	3	
SECOND YEAR - WINTER SEMESTER			
EET	221 Troubleshooting	3	
EET	222 Microprocessor Applications	4	
ECNS	221 PC Data Acquisition and Control	3	
EET	224 Industrial Automation and Motors	4	
_____	_____ Social Awareness Elective	3	

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

**CURRICULUM REQUIREMENTS
INDUSTRIAL ELECTRONICS TECHNOLOGY
ASSOCIATE IN APPLIED TECHNOLOGY**

TECHNICAL	CREDITS HOURS	GENERAL EDUCATION	CREDITS HOURS
ECNS 221 PC Data Acquisition and Control	3	<u>Communication Competence</u>	
EEET 110 IET Technical Preparation	3	ENGL 150 English 1	3
EEET 114 Electric Circuits 1	4	ENGL 250 English 2	3
EEET 121 Electronics 1	4		
EEET 122 Digital 1	4	<u>Scientific Understanding</u>	
EEET 124 Electric Circuits 2	4	PHYS 211 Introductory Physics 1	4
EEET 210 Communication Circuits	3		
EEET 211 Electronics 2	3	<u>Quantitative Skills</u>	
EEET 212 Digital 2	4	MATH 116 Inter. Algebra & Num. Trig.	4
EEET 221 Troubleshooting	3	MATH 126 Algebra & Analytic Trigonometry	4
EEET 222 Microprocessor Applications	4		
EEET 224 Industrial Automation and Motors	4	<u>Cultural Enrichment</u>	
		Elective	3
		<u>Social Awareness</u>	
		Elective	3

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

**ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY
BACHELOR OF SCIENCE DEGREE
Curriculum Guide Sheet**

NAME OF STUDENT _____ STUDENT I.D. _____

Total semester hours required for graduation: 68 beyond A.A.S. degree

NOTE: Meeting the requirements for graduation indicated on this sheet is the responsibility of the student. All general education requirements for this degree as outlined in the current university catalog must be satisfied (see catalog). There must be at least 40 credits of courses with the 300 or above designator. The Industrial Automation track satisfies this requirement while the other tracks will require careful selection of courses. The student's advisor must be consulted each semester before registering. ECNS & EBET courses are offered and/or run based upon faculty availability and sufficient student signup and/or enrollment. The student may NOT be able to schedule some combinations of track electives. All prerequisites & corequisites, current and cumulative, must be satisfied or have Department Chair waiver to take a course.

THIRDYEAR-FALLSEMESTER		CREDITS	COMMENTS/GRADE
_____	EEET Track	4	
_____	CAD Elective	3	
MATH 216	Applied Calculus (C- in MATH 126 or equivalent)	4	
ENGL 311	Advanced Technical Writing	3	
_____	Chemistry or Physics Elective	4	
THIRDYEAR-WINTERSEMESTER			
_____	EEET Track	4	
EEET 321	Network Analysis (MATH 216; MATH 226; co-req)	3	
MATH 226	Fourier Series & Appl Differential Equations (MATH 126)	4	
COMM 121	Fundamentals of Public Speaking	3	
_____	Technical Science Elective	2-3	
THIRD YEAR - SUMMER SEMESTER			
EEET 393	Internship (Senior status & department approval)	4	
FOURTHYEAR-FALLSEMESTER			
_____	EEET Track	4	
EEET 418	Project Management	2	
ECNS 311	High Level Programming	2	
_____	Directed Elective	2-3	
_____	Cultural Enrichment Elective	3	
_____	Social Awareness Elective	3	
FOURTHYEAR-WINTERSEMESTER			
_____	EEET Track	4	
EEET 428	Senior Project	2	
_____	Technical Science Elective	2-3	
_____	Cultural Enrichment Elective (200 or above)	3	
_____	Social Awareness Elective (300-400)	3	

Students can fulfill the EEET Track requirements by choosing the Automation, Communications or Technology Integration, or mix.

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

CURRICULUM REQUIREMENTS
ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY
BACHELOR OF SCIENCE DEGREE

ENTRY CRITERIA:	CREDIT	HOURS
	GENERAL EDUCATION (30 credits)	
1. Associate Degree in electronics related area.	<u>Communication Competence</u>	
2. Meets requirement for Introductory Calculus.	COMM 121 Fundamentals of Public Speaking	3
3. 2.0 honor point average in Associate Degree work.	ENGL 311 Advanced Technical Writing	3
	<u>Scientific Understanding</u>	
BSEET CORE REQUIREMENTS (13 credits)	Chemistry or Physics Elective	4
	<u>Quantitative Skills</u>	
BCNS 310 High Level Programming	MATH 216 Applied Calculus	4
EEET 321 Network Analysis	MATH 226 Fourier Series & Appl. Differen. Equ.	4
EEET 393 Internship		4
EEET 418 Project Management		2
EEET 428 Senior Project		2
	<u>Cultural Enrichment</u>	
	Electives	6
	<u>Social Awareness</u>	
	Electives	6

Industrial Automation**	Communications**	Technology Integration**
Track Requirements (8 credits)	Track Requirements (8 credits)	Track Electives (16 credits):
EEET 413 Elect. Power & Machines 4	EEET 411 Adv. Communications 1 4	EEET 412 Advanced Digital 1 4
EEET 423 Ind. Auto Controls 4	EEET 421 Adv. Communications 2 4	EEET 422 Advanced Digital 2 4
		EEET 411 Adv. Communications 1 4
		EEET 421 Adv. Communications 2 4
Track Electives (8 credits)	Track Electives (8 credits)	EEET 413 Elect. Power & Machines 4
EEET 414 Ind. Process Comm. 4	EEET 413 Elect. Power & Machines 4	EEET 423 Ind. Auto Controls 4
EEET 424 Ind. Motion Control 4	EEET 423 Ind. Auto. Controls 4	ECNS 312 Control Networks 3
	EEET 412 Advanced Digital 1 4	ECNS 321 Network Theory & Test 3
	EEET 422 Advanced Digital 2 4	ECNS 310 C++ Programming Appl 1
	ECNS 410 Digital Signal Processing 4	ECNS 412 Real Time Op. Sys. 4
		ECNS 421 Embedded Comp. Sys. 4
		ECNS 410 Digital Signal Processing 4
		EEET 499 Special Topics varied
CAD Electives (3 credits)		
EETEC 140 Engineering Graphics 3	EETEC 140 Engineering Graphics 3	EETEC 140 Engineering Graphics 3
	EEET 312 Elec. Design Automation 3	EEET 312 Elec. Design Automation 3
Technical Science Electives (4-6 crs.)		
MECH 250 Fluid Power 2	MECH 250 Fluid Power w/Controls 2	MECH 250 Fluid Power 2
MFGE 353 Stat. Quality Control 3	MFGE 353 Stat. Qual. Control 3	MFGE 353 Stat. Quality Control 3
	MECH 340 Statics & Strengths 4	MECH 340 Statics & Strength 4
	MFGE 341 Quality Science Stat. 3	MFGE 341 Quality Science Stat. 3
	MFGE 342 Statistical Process Eng. 1-3	MFGE 342 Statistical Process Eng. 1-3
	MECH 211 Fluid Mechanics 4	MECH 211 Fluid Mechanics 4
	MECH 223 Thermodynamics 3	MECH 223 Thermodynamics 3
Directed Elective (2-3 credits)	Students should use this elective to enhance their background in a technical or scientific area. Good choices here would be an elective from the technical sciences, math, programming, manufacturing, EEET or ECNS.	
MFGE 423 Engineering Economics 2		

** There must be at least 40 credits of courses with the 300 or above designator. The Industrial Automation track satisfies this requirement while the other tracks will require careful selection of courses.

ADMINISTRATIVE PROGRAM REVIEW: 2000

Program/Department: Combination: CNS, BET & IET Date Submitted: _____

Dean. _____

Please provide the following information:

Cell entry format: CNS/EET/IET with combined items in parenthesis ().

Enrollment		See Note:	Fall 1996	Fall 1997	Fall 1998	Fall 1999	Fall 2000
Tenure Track FTE			9	8.5	8.5	9	9.25
Overload/Supplemental FTEF			0	1.67	2.84	1.95	0
Adjunct/Clinical FTEF (unpaid)			-	-	-	-	-
Enrollment on-campus total*			19/56/90	51/47/92	65/40/98	85/35/69	86/43/76
Freshman			7/2/32	17/0/37	18/1/33	24/1/18	16/0/30
Sophomore			4/1/17	10/1/18	16/1/26	13/2/20	6/3/13
Junior			2/6/6	4/3/6	12/11/8	11/6/13	17/10/9
Senior			2/38/5	9/27/5	14/26/7	22/24/3	25/29/3
Masters	TBD		2/7/3	3/14/10	-	-	-
Doctoral							
Pre-Professional Students			2/2/25	8/2/16	5/1/24	15/2/15	22/1/21
Enrollment off-campus*							
Traverse City							
Grand Rapids							
Southwest							
Southeast							

*Use official count (7-day)

If there has been a change in enrollment, explain why:

Capacity

Estimate program capacity considering current-number of faculty, laboratory capacity, current equipment, and current levels of S&E. What factors limit capacity?

60/60/120 students

What factors limit program capacity?

The number of faculty is the principle limit to capacity. Second is schedulability of our curriculum in conjunction with the our related technology courses. Thirdly is the facilities need 3 phase power to the labs.

Financial

Expenditures*	FY 96	FY 97	FY 98	FY 99	FY 00
Supply & Expense	na	23425	30407	30586	42617
Equipment					
Voc Ed. Funds					
General Fund 2-39xxx-7xxx	na	0	400	28275	32629
In-Kind					
Non-General Fund					
Revenues					
Net Clinic Revenue					
Scholarship Donations					
Gifts, Grants & Cash Donations	480	30,392	58,238	66,329	1,420
Endowment Earnings					

ADMINISTRATIVE PROGRAM REVIEW: 2000

Institute Programs/Services	-	-	-	-	-	-
-----------------------------	---	---	---	---	---	---

*Use end of fiscal year expenditures.

other

	AY 95/96	AY 96/97	AY 97/98	AY 98/99	AY 99/00
Number of Graduates* - Total	0/22/6	1/18/17	3/24/11	2/16/11	5/17/19
- On campus	0/22/6	1/18/17	3/24/11	2/16/11	5/17/19
- Off campus	-	-	-	-	-
Placement of Graduates	-/100/-	-/100/100	100/100/100	100/100/100	-/-
Average Starting Salary X \$1,000	-/34/-	-/40/30	34/36/41	38/39/30	-/-
Productivity - Academic Year Average	(361.2)	221/(319)	120/(313)	170/(343)	184/(324)
- Summer	(97)	0/(0)	34/(144)	0/(107)	0/(125)
Summer Enrollment in SCH	(32)	0/(0)	12/(144)	0/(72)	0/(84)

* Use total for full year (S, F, W)

1. a) Areas of Strength.

Committed leaders in program areas. Faculty have significant industrial and instructional backgrounds. Curriculum is staying current with the rapidly changing areas of automation, computer systems, and electronics. BSEET is TAC-ABET accredited

b) Areas of Concern and Proposed Action to Address Them

Preparedness of the applicants into IET & CNS is a concern. CNS needs additional faculty capable of teaching the subject matter within that area. Facilities are inadequate. Only 1 lab configured for 3 phase power causing instructional quality and scheduling difficulties. Faculty development & release time is essential to stay current in the fast paced fields of automation, computer networks and systems & electronics. The Academic Program review process will be used to evaluate the state of the curriculum, people, facilities, etc.

2 Future goals (please give time frame)

Replace anticipated retirement with person with greater CNS skills-2002 Obtain faculty development-2002+. Analyze what attributes in a student are necessary for success in our programs. Analyze current students, historical sources of our students, alternative sources of students with the desired attributes-2002+. Upgrade the laboratory facilities to necessary levels to stay viable-2002(planning), 2003(Infrastructure), 2004 (lab workstations). Update advanced digitals equipment-2002. Establishment of a Controls System Integrators Summer Institute-2002+ Develop and propose a networks track in the BSCNS degree -2002.

3. Other Recommendations.

A realistic workload, with practical education in how to do the work, and realistic timeframes need to be restored. Support resources for the chair and faculty are inadequate. The chair, faculty & staff are being required to do so much that the opportunity for poorer quality of work, reduced university-service, little or no UCEL activities, minimal social contact with coworkers exist. You can only push the workforce to over produce for so long before the University starts to come apart.

4 Does the program have an advisory committee? yes/(yes)

a) If yes, when did it last meet? Winter 1999/(Fall 1999)

b) If no, why not? By what other means do faculty receive advice from employers and outside professionals?

c) When were new members last appointed?

1999/(This year there will be a new appointment in the EET & IET committee)

ADMINISTRATIVE PROGRAM REVIEW: 2000

d) Are there non-alumni/ae on the committee? How many?

Unknown/Unknown/Unknown

5 Does the program have an internship or other cooperative or experiential learning course? yes/yes/no

a) If yes, is the internship required or recommended? required

b) If no, what is the reason for not requiring such an experience?

6 Does the program offer courses through the web? No/no/no

a) Please list the web-based (fully delivered through the internet) courses the program offered last year?

none/none/none

b) Please list the web-assisted (e.g., WebCT) courses the program offered last year.

none/none/none

7 Is this a program with state, regional, and/or national recognition? No/Yes: Tac-ABET/No

a) For what special strengths or characteristics is it recognized? hardware & realtime focus/industrial automaton/best source for BSEET

b) If not, what are some strategies that could lead to recognition?

Form Completed by Warren Klope, Chair

Name and Title

Reviewed by Dean am 11/30/10 EW

Date

Appendix B

Supporting Information for Section 2-Graduate Survey and Supporting Information for Section 4-Student Survey

Graduate Mailing List

Graduate Survey Instrument

Student Survey Instrument

BSCNS Graduate Survey Respondents

MonthYear	Name	Degr.	Company Address	Title
6/00	Brown,Jeffery	BSCNS	Steelcase Contractor - Alcatel	
6/98	Brown,Roy		Feyen-Zylstra Voice Data Systems Div. Grand Rapids, MI	Network Engineer
6/00	DeMott,Jared	BSCNS	National Security Agency Kenneth Rabenstein 840 Elkridge Landing Rd Lithicum MD 21090	Network Vulnerability Analyst
6/00	Dzialo,Roman	BSCNS	Alcatel	
6/97	Fetterley,Michael	BSCNS BSEET	Rowe International Grand Rapids, MI	Micro-Programmer?
6/98	Gala,Michael		Forrest Hills Public Schools Grand Rapids, MI	Network Tech?
6/00	Looy,Bradley	BSCNS	Logic Plus	Software Development Engineer
9/00	Smith,Robert	BSCNS	Mr. Peter Fisher AVL Information Systems, Inc. Corporate Headquarters Clinton Twp., Michigan Telephone: (800) 260-0060 Facsimile (810) 493-9325	Chief Technical Officer
8/99	Thatcher,Kevin	BSCNS		Systems Engineer
6/98	Tyler,Todd	BSCNS		
8/99	Youngs,Micheal	BSCNS		

Ferris State University
Computer Networks and Systems

Graduate Survey

Dear Computer Networks and Systems Graduate: This survey is being done for purposes of program evaluation and improvement. The survey also allows us to track how you are progressing in your career. As a past graduate, you are in the unique position of providing us feedback on this program. Your input is very important for us in determining areas of strengths as well as weaknesses. Since the CNS program is continuously evolving, we are including a recent check sheet for your information.

We are very proud of you and your achievements. Please take the time to tell us about them.

Personal Status:	Degree (s) / Year / School
Name _____	_____ / _____ / _____
Home Address: _____	_____ / _____ / _____
Home Phone: _____	_____ / _____ / _____
email: _____	_____ / _____ / _____

Career Status:	
Current Employment	Your Title:
Company Name: _____	_____
Company Address: _____	_____
	FSU Degree Year Graduated from FSU: _____
Work Phone: _____	
Work Fax: _____	
Work email: _____	
Which one area best describes your field of work.	a) networks b) software c) embedded systems d) system integration e) other (please state) _____

Which one best describes the work you perform.	a) network administration b) circuit/network design c) people management d) project management e) manufacturing support f) software design g) system/network design h) system integration i) other (please state): _____
Which one area best describes the industry you are employed in.	a) manufacturing b) instrumentation c) networks/communication d) education e) other (please state)
My starting salary at my 1 st CNS related position after graduation was:	a) < 30,000 b) 30K to 34K c) 36K to 39K d) 40K to 44K e) 45K to 49K f) 50K to 54K g) 55K to 59K h) 60K to 64K i) 65K to 70K j) > 70,000
My current salary range is:	a) < 30,000 b) 30K to 34K c) 36K to 39K d) 40K to 44K e) 45K to 49K f) 50K to 54K g) 55K to 59K h) 60K to 64K i) 65K to 70K j) > 70,000
I am currently taking classes for	a) certifications b) a Masters Degree c) a Bachelor Degree d) interest only e) other: _____ f) not taking classes
I plan to further my education by:	a) Pursuing a Masters Degree b) Seminars c) Internet based courses d) Certifications e) No Plans

Please answer these questions based on your experience from FSU - Computer Networks and Systems program. Your thoughtful answers will help us to evaluate and direct our program quality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
As a CNS graduate:					
1. I perform well overall compared to graduates from other colleges:					
2. I am able to use written and oral skills effectively:					
3. I have developed good critical thinking, problem solving, and decision making skills.					
4. I have a strong technical understanding:					
5. I have the ability to apply technical theory to practical situations.					
6. I have adequate mathematical skills.					
7. I am self-motivated and enthusiastic.					
8. I am ready and able to assume responsibility.					
9. I am able to plan effective use of available resources.					
10. I am able to participate as part of a team.					
11. I work well with individuals from diverse backgrounds.					
12. I have good ethical values.					
13. The courses provided a good mix of subjects for my career options.					
14. Courses challenged me intellectually.					
15. Courses motivated me to a higher level of performance.					
16. Overall CNS program developed my ability to reason and solve problems.					
17. Coursework provided a solid electronics foundation.					
18. Coursework provided a good understanding of digital/microprocessor electronics.					
19. Coursework provided good programming skills.					
20. Coursework provided a good foundation in network application, implementation, and operation.					
21. Experiences other than coursework (i.e. part time work, seminars, student groups etc.) were a valuable part of my education at Ferris.					
22. Internship experience was an important aspect of my education at Ferris.					
23. My overall campus experience at Ferris was satisfying.					
25. I would recommend the CNS program to others.					
26. I would be interested in working to advance the CNS program (i.e. Advisory Committee member, etc.)					

Please provide us with your comments regarding the CNS program curriculum.

IET/BSEET Graduate Survey Respondents

Personal Status: [“?” Indicates that student didn’t indicate if Associate degree was from FSU, “NO” indicates that student received Associates from another college]

<u>Names</u>	<u>IET</u>	<u>BSEET</u>	<u>Career Status/Title</u>	<u>Company</u>
Randy F. Jesberg	?	99	Automation Engineer	Meridian Automotive
David Forsman	97	98	Software Engineer	Logikos Systems
Bill Thrall	NO	97	Project Engineer	ESI/Clyde
David Cottrell	NO	95	Electrical Engineer	GM Powertrain
Ben McKenzie	97	99	Controls Engineer	Lamb Technicon
Stephen Hoffman	?	96	Customer Service Engineer	Avay Communication
Scott Fisher	?	97	Product Engineer	DaimlerChrysler
Joel Meekhof	?	98	Software Engineer	Challenge Machinery Co.
Kathy Becker	?	99	Electrical Engineer	LubeCon
David Howes	NO	92	Senior Software Engineer	Dunkley, Intd.
James Blyth	?	2000	Manufacturing Engineer	Saturn Electronics & Eng.
Joe Kleinsans	96	98	Electrical Project Engineer	Tennant Commercial
James Hills	?	96	Network Analyst	Dow Corning Corp.
Tricia Smith (Switzer)	?	97	Controls Project Engineer	Industrial Metal Products
Eric Smith	NO	96	Controls Engineer	General Motors Corp.
Rick Baker	NO	98		Jabil Circuit
Jerry McPherson	?	98	Electrical Design Engineer	Hooker/DeJong
Kyle Seaborn	?	99	Controls Engineer	DTI Peer
Steven Heim	?	96	Engineering Technician	Consumers Energy
Tom Cruttenden	93	95	Owner	Heartland Engineering
David Hollar	NO	2000	Electronic Engineer	Donnelly Corporation
Joe Fitzpatrick	?	2000	Electrical Engineer	Eckhart & Associates
Craig Roach	93	96	Telecommunications Technician	Ferris State University
Jeffery Bowen	95	97	Senior Installation Engineer	Fanuc Robotics N.A.
Jim Warner	?	2000	Electrical Engineer	Barke E. Porter Machine
John Little	?	2000	Controls Engineer	Speedfam-IPEC
Steve Sims	94	96	Manufacturing Engineer	Big Rapids Components
Kathryn Assenmacher	96	98	Junior Project Engineer	Mechanical Products. Co.
Richard Faber	?	98	Controls Engineer	AOK Controls Inc.
Victor P. Manske	95	97	Programmer/Analyst	Trilogy Consulting

Industrial Electronics Technology

Graduate Survey

Dear Computer IET Graduate: This survey is being done for purposes of program evaluation and improvement. The survey also allows us to track how you are progressing in your career. As a past graduate, you are in the unique position of providing us feedback on this program. Your input is very important for us in determining areas of strengths as well as weaknesses. Since the IET program is continuously evolving, we are including a recent check sheet for your information.

We are very proud of you and your achievements. Please take the time to tell us about them.

Personal Status:	Degree (s) / Year / School
Name: _____	_____ / _____ / _____
Home Address: _____	_____ / _____ / _____
Home Phone: _____	_____ / _____ / _____
email: _____	_____ / _____ / _____

Career Status: _____

Current Employment	Your Title:
Company Name: _____	_____
Company Address: _____	_____
	FSU Degree Year Graduated from FSU:

Work Phone: _____	
Work Fax: _____	
Work email: _____	
Which one area best describes the over-all business facility at your work location.	f) Manufacturing Plant g) OEM h) Administrative Office i) R & D Lab j) Parts/Equipment Warehouse k) Sales Office / Distributor l) Field Service Center m) Engineering Firm n) Other

<p>Which one area best describes the type of product /service produced by your employer.</p>	<ul style="list-style-type: none"> j) Construction of Production Equipment k) Sales / Distribution of Product l) Engineering of Product m) Engineering of Manufacturing Control Systems n) Engineering of Facilities o) Contract Maintenance p) Contract Engineering q) Other
<p>Which one area best describes the your primary work function.</p>	<ul style="list-style-type: none"> a) People management b) Project management c) Software design d) Industrial Control System Integration e) Circuit/network design f) Computer System/network design g) Sales h) Consultant i) Repair Technician j) Other
<p>My starting salary at my 1st IET related position after graduation was:</p>	<ul style="list-style-type: none"> k) <2 0,000 l) 20K to 24K m) 25K to 29K n) 30K to 34K o) 36K to 39K p) 40K to 44K q) 45K to 49K r) 50K to 54K s) 55K to 59K t) > 60,000
<p>My current salary range is:</p>	<ul style="list-style-type: none"> k) < 20,000 l) 20K to 24K m) 25K to 29K n) 30K to 34K o) 36K to 39K p) 40K to 44K q) 45K to 49K r) 50K to 54K s) 55K to 59K t) > 60,000
<p>I am currently taking classes for</p>	<ul style="list-style-type: none"> g) certifications h) a Masters Degree i) a Bachelor Degree j) interest only k) other: _____ l) not taking classes

Please answer these questions based on your experience from FSU - IET program. Your thoughtful answers will help us to evaluate and direct our program quality. As a IET graduate:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
29. I perform well overall compared to graduates from other colleges:					
30. I am able to use written and oral skills effectively:					
31. I have developed good critical thinking, problem solving, and decision-making skills.					
32. I have a strong technical understanding:					
33. I have the ability to apply technical theory to practical situations.					
34. I have adequate mathematical skills.					
35. I am self-motivated and enthusiastic.					
36. I am ready and able to assume responsibility.					
37. I am able to plan effective use of available resources.					
38. I am able to participate as part of a team.					
39. I work well with individuals from diverse backgrounds.					
40. I have good ethical values.					
41. The courses provided a good mix of subjects for my career options.					
42. Courses challenged me intellectually.					
43. Courses motivated me to a higher level of performance.					
44. Overall IET program developed my ability to reason and solve problems.					
45. Coursework provided a solid electronics foundation.					
46. Coursework provided a good understanding of digital/microprocessor electronics.					
47. Coursework provided good programming skills.					
48. Coursework provided a good foundation in Control Systems used in manufacturing					
49. Experiences other than coursework (i.e. part time work, seminars, student groups etc.) were a valuable part of my education at Ferris.					
50. Internship experience was an important aspect of my education at Ferris.					
51. My overall campus experience at Ferris was satisfying.					
31. I would recommend the IET program to others.					
32. I would be interested in working to advance the IET program (i.e. Advisory Committee member, etc.)					

Electrical/Electronics Engineering Technology

Graduate Survey

Dear Computer BSEET Graduate: This survey is being done for purposes of program evaluation and improvement. The survey also allows us to track how you are progressing in your career. As a past graduate, you are in the unique position of providing us feedback on this program. Your input is very important for us in determining areas of strengths as well as weaknesses. Since the BSEET program is continuously evolving, we are including a recent check sheet for your information.

We are very proud of you and your achievements. Please take the time to tell us about them.

Personal Status:	Degree (s) / Year / School
Name: _____	/ /
Home Address: _____	/ /
Home Phone: _____	/ /
email: _____	/ /

Career Status: _____

Current Employment	Your Title:
Company Name: _____	_____
Company Address: _____	_____
	FSU Degree Year Graduated from FSU:
Work Phone: _____	_____
Work Fax: _____	
Work email: _____	
Which one area best describes the over-all business facility at your work location.	<ul style="list-style-type: none">o) Manufacturing Plantp) OEMq) Administrative Officer) R & D Labs) Parts/Equipment Warehouset) Sales Office / Distributoru) Field Service Centerv) Engineering Firmw) Other

<p>Which one area best describes the type of product/service produced by your employer.</p>	<ul style="list-style-type: none"> r) Construction of Production Equipment s) Sales / Distribution of Product t) Engineering of Product u) Engineering of Manufacturing Control Systems v) Engineering of Facilities w) Contract Maintenance x) Contract Engineering y) Other
<p>Which one area best describes the your primary work function.</p>	<ul style="list-style-type: none"> k) People management l) Project management m) Software design n) Industrial Control System Integration o) Circuit/network design p) Computer System/network design q) Sales r) Consultant s) Other
<p>My starting salary at my 1st BSEET related position after graduation was:</p>	<ul style="list-style-type: none"> u) < 30,000 v) 30K to 34K w) 36K to 39K x) 40K to 44K y) 45K to 49K z) 50K to 54K aa) 55K to 59K bb) 60K to 64K cc) 65K to 70K dd) > 70,000
<p>My current salary range is:</p>	<ul style="list-style-type: none"> u) < 30,000 v) 30K to 34K w) 36K to 39K x) 40K to 44K y) 45K to 49K z) 50K to 54K aa) 55K to 59K bb) 60K to 64K cc) 65K to 70K dd) > 70,000
<p>I am currently taking classes for</p>	<ul style="list-style-type: none"> m) certifications n) a Masters Degree o) a Bachelor Degree p) interest only q) other: _____ r) not taking classes

Please answer these questions based on your experience from FSU - BSEET program. Your thoughtful answers will help us to evaluate and direct our program quality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
As a BSEET graduate:					
52. I perform well overall compared to graduates from other colleges:					
53. I am able to use written and oral skills effectively:					
54. I have developed good critical thinking, problem solving, and decision-making skills.					
55. I have a strong technical understanding:					
56. I have the ability to apply technical theory to practical situations.					
57. I have adequate mathematical skills.					
58. I am self-motivated and enthusiastic.					
59. I am ready and able to assume responsibility.					
60. I am able to plan effective use of available resources.					
61. I am able to participate as part of a team.					
62. I work well with individuals from diverse backgrounds.					
63. I have good ethical values.					
64. The courses provided a good mix of subjects for my career options.					
65. Courses challenged me intellectually.					
66. Courses motivated me to a higher level of performance.					
67. Overall BSEET program developed my ability to reason and solve problems.					
68. Coursework provided a solid electronics foundation.					
69. Coursework provided a good understanding of digital/microprocessor electronics.					
70. Coursework provided good programming skills.					
71. Coursework provided a good foundation in Control Systems used in manufacturing					
72. Experiences other than coursework (i.e. part time work, seminars, student groups etc.) were a valuable part of my education at Ferris.					
73. Internship experience was an important aspect of my education at Ferris.					
74. My overall campus experience at Ferris was satisfying.					
32. I would recommend the BSEET program to others.					
33. I would be interested in working to advance the BSEET program (i.e. Advisory Committee member, etc.)					

Current Student Survey Instrument for EET & CNS Department

2000-2001 Program Review

Please answer all of the following questions candidly to the best of your ability. The survey is intended to help evaluate the EET & CNS department. It is also used by the university to help plan for future needs and the direction of the department.

1. What is your major? a. CNS b. EET c. IET
2. What year are you in? a. Fresh b. Soph c. Junior d. Senior
3. Why did you select the EET & CNS programs at Ferris?
Please rate 1st reason, 2nd reason, etc for as many as apply.

<input type="checkbox"/> Friend suggested program	<input type="checkbox"/> Teacher suggested program
<input type="checkbox"/> Family suggested program	<input type="checkbox"/> School counselor
<input type="checkbox"/> Advertising	<input type="checkbox"/> Reputation and quality
<input type="checkbox"/> Other _____	
4. What could Ferris do to better promote the EET & CNS programs?
Please rate 1st, 2nd, etc for as many as apply.

<input type="checkbox"/> TV advertising	<input type="checkbox"/> Radio advertising
<input type="checkbox"/> Video sent to school	<input type="checkbox"/> Web page on Internet
<input type="checkbox"/> Visits from Ferris admission representative	
<input type="checkbox"/> Host field trips to Ferris to see facilities and talk to faculty	
<input type="checkbox"/> Brochures and materials sent to school counselors	
5. What percentage of educational time in the EET & CNS classes should be spent in laboratory "hands on" experience?
a. 30% to 40% b. 40% to 50% c. 50% to 60% d. 60% to 70%

Please indicate how you feel about statements 6 through 29.

- | | Strongly
Agree | B | neutral
C | D | Strongly
Disagree
E |
|--|-------------------|---|--------------|---|---------------------------|
| 6. Quality of material presented is high: | A | B | C | D | E |
| 7. Material presented meets current standards: | A | B | C | D | E |
| 8. Pace of material is appropriate: | A | B | C | D | E |
| 9. Instructors care about your learning: | A | B | C | D | E |
| 10. Material presented is relevant to the curriculum: | A | B | C | D | E |
| 11. Difficulty of material for level of course is appropriate: | A | B | C | D | E |
| 12. Assignment objectives are made clear to students: | A | B | C | D | E |
| 13. Use of media, white boards, overheads, video is appropriate and helpful: | A | B | C | D | E |
| 14. Lectures are well prepared and organized: | A | B | C | D | E |
| 15. Student expectations and grading are clearly explained: | A | B | C | D | E |

- | | | | | | |
|--|---|---|---|---|---|
| 16. Testing and evaluation procedures are fair: | A | B | C | D | E |
| 17. Graded materials are returned within reasonable time: | A | B | C | D | E |
| 18. Laboratory exercises are relevant to lecture material: | A | B | C | D | E |
| 19. Laboratory equipment is in good condition: | A | B | C | D | E |
| 20. Laboratory equipment is of high quality: | A | B | C | D | E |
| 21. Reference materials are available and relevant: | A | B | C | D | E |
| 22. Open lab hours are sufficient: | A | B | C | D | E |
| 23. Classroom lighting, heating, etc is good: | A | B | C | D | E |
| 24. Advising is available and helpful: | A | B | C | D | E |
| 25. General education courses are relevant to curriculum: | A | B | C | D | E |
| 26. General education instruction is of high quality: | A | B | C | D | E |
| 27. Technical electives are relevant: | A | B | C | D | E |
| 28. Technical electives instruction is of high quality: | A | B | C | D | E |
| 29. The curriculum provides knowledge and skills:
required by employers | A | B | C | D | E |
| 30. SLA labs in EEET were very worthwhile and helpful;
(answer only if you attended SLA labs) | A | B | C | D | E |

31. Comment on how the EET & CNS Department could improve the overall program?

Computer Networks + Systems,
Industrial Electronics Technology,
Electrical Engineering Technology

APRC 2001-2002

section 4 of 4

Appendix C

Supporting Information for Section 3 Employer Survey

Employer Respondent Lists

Employer Survey Instruments

Employers: for BSCNS

<u>Company Names</u>	<u>Address</u>	<u>Contact Person</u>	<u>Position/Title</u>
National Security Agency	Fort Meade, MD	K. Rabenstein	Division Manager
Logic Plus	Reed City, MI	Jody Zolman	Owner/CEO

Employers: for BSEET

<u>Company Names</u>	<u>Address</u>	<u>Contact Person</u>	<u>Position/Title</u>
Hooker/DeJong	Muskegon, MI	Ed DeJong	President
Saturn Electronics	Coopersville, MI	I. Urmercer	Unkown
Mechanical Products	Jackson, MI	James Allison	Engineering Manager
Challenge Machinery	Grand Haven, MI	Mike Westra	VP Engineering
IMPCO Machine Tool	Lansing, MI	Fred Doolittle	Controls Eng. Manager

Employer Survey Instruments

Ferris State University Computer Networks and Systems

Employer Survey

Company Name:	
Address:	FSU – CNS Graduate(s)/Year Hired
Evaluators Name:	Evaluators Position:
Phone:	email:

Dear Employer, Please answer these questions based on your perception and experience with FSU - Computer Networks and Systems graduate(s). Your thoughtful answers will help us to evaluate our program quality.					
CNS Graduates:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Perform well overall compared to graduates from other colleges:					
2. Use written and oral skills effectively:					
3. Use critical thinking, problem solving, and decision making skills:					
4. Demonstrate a strong technical understanding:					
5. Demonstrate the ability to apply technical theory to practical situations:					
6. Have adequate mathematical skills:					
7. Are self-motivated and enthusiastic:					
8. Are ready and able to assume responsibility:					
9. Plans effective use of available resources:					
10. Demonstrate ability to participate as part of a team:					
11. Work well with individuals from diverse backgrounds:					
12. Demonstrate good ethical values:					

Ferris State University
Electrical/Electronics Engineering Technology

Employer Survey

Company Name:	
Address:	FSU – BSEET Graduate(s)/Year Hired
Evaluators Name:	Evaluators Position:
Phone:	email:

Dear Employer, Please answer these questions based on your perception and experience with FSU – Electrical/Electronics Engineering Technology graduate(s). Your thoughtful answers will help us to evaluate our program quality.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
BSEET Graduates:					
1. Perform well overall compared to graduates from other colleges:					
2. Use written and oral skills effectively:					
3. Use critical thinking, problem solving, and decision making skills:					
4. Demonstrate the ability to apply technical theory to practical situations:					
5. Have adequate mathematical skills:					
6. Are self-motivated and enthusiastic:					
7. Are ready and able to assume responsibility:					
8. Plans effective use of available resources:					
9. Demonstrate ability to participate as part of a team:					
10. Work well with individuals from diverse backgrounds:					
I / my company would hire another FSU/BSEET graduate:					

Appendix D

Supporting Information for Faculty Perceptions

Departmental Faculty Perceptions
Non-Departmental Faculty Perceptions

Departmental Faculty Perceptions

FERRIS STATE UNIVERSITY

COMPUTER NETWORKS and SYSTEMS

FACULTY PERCEPTIONS

The Computer Networks and Systems Program is preparing for an academic program review within the university. The purpose of this survey is to obtain information from members of the program faculty on their perceptions of the program, and to identify areas of improvement within our program as it is currently defined.

After you have completed this survey, please return it to Jim VanDenBerghe ASAP.

Thank you in advance. Your assistance in this process is sincerely appreciated.

Directions:

When you are completing this survey, please consider just the area in question.

Please circle the number on this form that best describes your perceptions.

Also, record your responses on the bubble sheet : 1 = a , 2 = b , 3 = c , 4 = d , 5 = e .

Thank you.

Your Perception of the Administration:		Strongly		Neutral	Strongly	
		Disagree			Agree	
1.	The scheduling of courses is done at appropriate times of the day	1	2	3	4	5
2.	The scheduling is done in appropriate labs	1	2	3	4	5
3.	The appropriate instructors are assigned to courses	1	2	3	4	5
4.	Lecture class sizes are appropriate for facilities	1	2	3	4	5
5.	Laboratory class sizes are appropriate for facilities	1	2	3	4	5
6.	The department get its fair share of capital improvement moneys	1	2	3	4	5
7.	The department operating budget is adequate	1	2	3	4	5
8.	Adequate funds are allocated for faculty development	1	2	3	4	5
9.	Adequate release time is provided for faculty development	1	2	3	4	5
10.	Adequate provisions are made for release time for course development	1	2	3	4	5
11.	Adequate technical support is provided to the department	1	2	3	4	5
12.	Secretarial support is adequate	1	2	3	4	5
13.	Computer support from the BTC is adequate	1	2	3	4	5
14.	Adequate resources for program marketing activities are provided	1	2	3	4	5
15.	The faculty are encouraged to stay current in their field	1	2	3	4	5
16.	The advisory committee is adequately utilized by our program	1	2	3	4	5
17.	The advisory committee's suggestions are encouraged	1	2	3	4	5
18.	The advisory committee's suggestions are acted upon	1	2	3	4	5

Additional Comments concerning your perception of the Administration:

Your Perception of our Students:		Strongly		Neutral	Strongly	
		Disagree			Agree	
19.	The incoming students are academically prepared for the curriculum	1	2	3	4	5
20.	The incoming students possess good work ethics	1	2	3	4	5
21.	The students possess adequate study habits	1	2	3	4	5
22.	Adequate remedial electrical courses are offered	1	2	3	4	5
23.	The students are aware of available tutoring opportunities	1	2	3	4	5
24.	The students take advantage of available tutoring opportunities	1	2	3	4	5
25.	The graduates have attained an appropriate level of maturity	1	2	3	4	5
26.	The graduates have attained an appropriate level of competence	1	2	3	4	5
27.	The graduates leave with good critical thinking skills	1	2	3	4	5
28.	The graduates leave with a sense of professional identity	1	2	3	4	5
29.	Students take advantage of professional organization membership	1	2	3	4	5

Additional Comments concerning your perception of our students :

Your Perceptions of the Facilities and Equipment:		Strongly		Neutral	Strongly	
		Disagree			Agree	
30.	The facilities are kept neat and clean	1	2	3	4	5
31.	The facilities present a good image to students and visitors	1	2	3	4	5
32.	Lecture rooms are adequate for the number of students scheduled	1	2	3	4	5
33.	Laboratory rooms are adequate for the number of students scheduled	1	2	3	4	5
34.	Laboratory equipment is adequate for the number of students scheduled	1	2	3	4	5
35.	The instructional materials and supplies are adequate	1	2	3	4	5
36.	Laboratory equipment is adequately provided and maintained	1	2	3	4	5
37.	Adequate storage space is provided	1	2	3	4	5
38.	The HVACR system is adequate in lecture rooms	1	2	3	4	5
39.	The lighting system is adequate in lecture rooms	1	2	3	4	5
40.	The white boards are adequate in lecture rooms	1	2	3	4	5
41.	The noise level in lecture rooms is acceptable	1	2	3	4	5
42.	Audio visual equipment is up to date and adequate	1	2	3	4	5
43.	The lighting system is adequate in lab rooms	1	2	3	4	5
44.	The HVACR system is adequate in lab rooms	1	2	3	4	5

Additional Comments concerning your perceptions of the Facilities and Equipment:

Your Perceptions of the Curriculum:		Strongly		Neutral	Strongly	
		Disagree			Agree	
45.	The curriculum provides the proper mix of courses	1	2	3	4	5
46.	The academic level of the curriculum is appropriate to the mission	1	2	3	4	5
47.	There is adequate continuity among courses	1	2	3	4	5
48.	The curriculum has a path for students who progress at a slower pace	1	2	3	4	5

49.	The curriculum provides adequate choices of specialization	1	2	3	4	5
50.	The curriculum is relevant to the needs of industry	1	2	3	4	5

Additional Comments concerning your perception of the Curriculum:

Strongly Disagree Neutral Strongly Agree

Your Perceptions of the Faculty

51.	The faculty are technically competent	1	2	3	4	5
52.	The faculty know how to teach	1	2	3	4	5
53.	The faculty are well prepared for class	1	2	3	4	5
54.	The faculty are concerned with the educational needs of the students	1	2	3	4	5
55.	The faculty are active in committees	1	2	3	4	5
56.	The faculty are current in their field	1	2	3	4	5
57.	The faculty have adequate work experience	1	2	3	4	5

Additional Comments concerning your perception of the Faculty:

Strongly Disagree Neutral Strongly Agree

Your Perceptions of the Advisory Committee:

58.	The advisory committee is knowledgeable about the program	1	2	3	4	5
59.	The advisory committee consists of the appropriate mix of people	1	2	3	4	5
60.	The advisory committee is supportive of the program	1	2	3	4	5
61.	The Advisory Committee provides good guidance for the program	1	2	3	4	5

Additional Comments concerning your perception of the Advisory Committee:

**FERRIS STATE UNIVERSITY
ELECTRICAL/ELECTRONICS TECHNOLOGY**

FACULTY PERCEPTIONS

The Electrical/Electronics Program is preparing for an academic program review within the university. The purpose of this survey is to obtain information from members of the program faculty on their perceptions of the program, and to identify areas of improvement within our program as it is currently defined.

After you have completed this survey, please return it to Jim VanDenBerghe ASAP.

Thank you in advance. Your assistance in this process is sincerely appreciated.

Directions:

When you are completing this survey, please consider just the area in question.

Please circle the number on this form that best describes your perceptions.

Also, record your responses on the bubble sheet : 1= a , 2 = b , 3 = c , 4 = d , 5 = e .

Thank you.

Your Perception of the Administration:		Strongly Disagree		Neutral	Strongly Agree	
1.	The scheduling of courses is done at appropriate times of the day	1	2	3	4	5
2.	The scheduling is done in appropriate labs	1	2	3	4	5
3.	The appropriate instructors are assigned to courses	1	2	3	4	5
4.	Lecture class sizes are appropriate for facilities	1	2	3	4	5
5.	Laboratory class sizes are appropriate for facilities	1	2	3	4	5
6.	The department get its fair share of capital improvement moneys	1	2	3	4	5
7.	The department operating budget is adequate	1	2	3	4	5
8.	Adequate funds are allocated for faculty development	1	2	3	4	5
9.	Adequate release time is provided for faculty development	1	2	3	4	5
10.	Adequate provisions are made for release time for course development	1	2	3	4	5
11.	Adequate technical support is provided to the department	1	2	3	4	5
12.	Secretarial support is adequate	1	2	3	4	5
13.	Computer support from the BTC is adequate	1	2	3	4	5
14.	Adequate resources for program marketing activities are provided	1	2	3	4	5
15.	The faculty are encouraged to stay current in their field	1	2	3	4	5
16.	The advisory committee is adequately utilized by our program	1	2	3	4	5
17.	The advisory committee's suggestions are encouraged	1	2	3	4	5
18.	The advisory committee's suggestions are acted upon	1	2	3	4	5

Additional Comments concerning your perception of the Administration:

Your Perception of our Students:		Strongly Disagree		Neutral	Strongly Agree	
19.	The incoming students are academically prepared for the curriculum	1	2	3	4	5
20.	The incoming students possess good work ethics	1	2	3	4	5
21.	The students possess adequate study habits	1	2	3	4	5
22.	Adequate remedial electrical courses are offered	1	2	3	4	5
23.	The students are aware of available tutoring opportunities	1	2	3	4	5
24.	The students take advantage of available tutoring opportunities	1	2	3	4	5
25.	The graduates have attained an appropriate level of maturity	1	2	3	4	5
26.	The graduates have attained an appropriate level of competence	1	2	3	4	5
27.	The graduates leave with good critical thinking skills	1	2	3	4	5
28.	The graduates leave with a sense of professional identity	1	2	3	4	5
29.	Students take advantage of professional organization membership	1	2	3	4	5

Additional Comments concerning your perception of our students :

Your Perceptions of the Facilities and Equipment:		Strongly Disagree		Neutral	Strongly Agree	
30.	The facilities are kept neat and clean	1	2	3	4	5
31.	The facilities present a good image to students and visitors	1	2	3	4	5
32.	Lecture rooms are adequate for the number of students scheduled	1	2	3	4	5
33.	Laboratory rooms are adequate for the number of students scheduled	1	2	3	4	5
34.	Laboratory equipment is adequate for the number of students scheduled	1	2	3	4	5
35.	The instructional materials and supplies are adequate	1	2	3	4	5
36.	Laboratory equipment is adequately provided and maintained	1	2	3	4	5
37.	Adequate storage space is provided	1	2	3	4	5
38.	The HVACR system is adequate in lecture rooms	1	2	3	4	5
39.	The lighting system is adequate in lecture rooms	1	2	3	4	5
40.	The white boards are adequate in lecture rooms	1	2	3	4	5
41.	The noise level in lecture rooms is acceptable	1	2	3	4	5
42.	Audio visual equipment is up to date and adequate	1	2	3	4	5
43.	The lighting system is adequate in lab rooms	1	2	3	4	5
44.	The HVACR system is adequate in lab rooms	1	2	3	4	5

Additional Comments concerning your perception of the Facilities and Equipment:

Your Perceptions of the Curriculum:		Strongly Disagree		Neutral	Strongly Agree	
45.	The curriculum provides the proper mix of courses	1	2	3	4	5
46.	The academic level of the curriculum is appropriate to the mission	1	2	3	4	5
47.	There is adequate continuity among courses	1	2	3	4	5
48.	The curriculum has a path for students who progress at a slower pace	1	2	3	4	5
49.	The curriculum provides adequate choices of specialization	1	2	3	4	5
50.	The curriculum is relevant to the needs of industry	1	2	3	4	5

Additional Comments concerning your perception of the Curriculum:

		Strongly Disagree		Neutral	Strongly Agree
Your Perceptions of the Faculty					
51.	The faculty are technically competent	1	2	3	4 5
52.	The faculty know how to teach	1	2	3	4 5
53.	The faculty are well prepared for class	1	2	3	4 5
54.	The faculty are concerned with the educational needs of the students	1	2	3	4 5
55.	The faculty are active in committees	1	2	3	4 5
56.	The faculty are current in their field	1	2	3	4 5
57.	The faculty have adequate work experience	1	2	3	4 5

Additional Comments concerning your perception of the Faculty:

		Strongly Disagree		Neutral	Strongly Agree
Your Perceptions of the Advisory Committee:					
58.	The advisory committee is knowledgeable about the program	1	2	3	4 5
59.	The advisory committee consists of the appropriate mix of people	1	2	3	4 5
60.	The advisory committee is supportive of the program	1	2	3	4 5
61.	The Advisory Committee provides good guidance for the program	1	2	3	4 5

Additional Comments concerning your perception of the Advisory Committee:

Non-Departmental Faculty Perceptions

FACULTY PERCEPTIONS

2001 PROGRAM REVIEW SURVEY

COMPUTER NETWORKS and SYSTEMS

The Computer Networks and Systems (CNS) program is seeking your input for its 2001 Academic Program Review. This survey is being sent to a number of Ferris State University faculty who have had direct interaction with a large percentage of recent CNS students. The purpose of this survey is to help identify areas of improvement in our program here at FSU, as it is currently defined. It is recognized that your observations and suggestions may be quite limited due to a limited amount of contact with our students. It is, however, critically important that you complete this survey since the information provided will be used to update the current curriculum.

When you have completed this survey, please return it via campus mail to **Jim VanDenBerghe, Swan 405**. Your attention ASAP will be appreciated. Bob Willison, who is now on sick leave, originally had the responsibility for this task. I recently assumed responsibility and we have a March 15th deadline to complete our report.

Also, please record your responses on the "bubble sheet". 1 = a , 2 = b, etc. **Thank you.**

1. I would describe the preparation of the typical CNS student for my course as follows when compared to other members of the FSU student population.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

2. I would rate the written communication skills of the typical CNS student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

3. I would rate the verbal communications skills of the typical CNS student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

4. I would rate the reading skills of the typical CNS student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

5. I would rate the comprehension skills of the typical CNS student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

6. I would rate the quantitative skills of the typical CNS student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

7. I would rate the problem solving ability of the typical CNS student to those of other students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

8. I would rate the critical thinking skills of the typical CNS student to those of other students.

Better-Prepared

Average

Inadequately Prepared

1

2

3

4

5

Comments: _____

Please describe the extent of your experience with our CNS students:

Please suggest any courses/requirements, which you believe, should be added:

Please include any additional comments you may like to share concerning the CNS students:

**On behalf of the CNS Faculty, thank you for
contributing to this survey !!**

FACULTY PERCEPTIONS

2001 PROGRAM REVIEW SURVEY

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

The Electrical/Electronics Engineering Technology (EET) program is seeking your input for its 2001 Academic Program Review. This survey is being sent to a number of Ferris State University faculty who have had direct interaction with a large percentage of recent EET students. The purpose of this survey is to help identify areas of improvement in our program here at FSU, as it is currently defined. It is recognized that your observations and suggestions may be quite limited due to a limited amount of contact with our students. It is, however, critically important that you complete this survey since the information provided will be used to update the current curriculum.

When you have completed this survey, please return it via campus mail to **Jim VanDenBerghe, Swan 405**. Your attention ASAP will be appreciated. Bob Willison, who is now on sick leave, originally had the responsibility for this task. I recently assumed responsibility and we have a March 15th deadline to complete our report.

Also, please record your responses on the "bubble sheet". 1 = a, 2 = b, etc. **Thank you.**

1. I would describe the preparation of the typical EET student for my course as follows when compared to other members of the FSU student population.

Better-Prepared	Average	Inadequately Prepared
1	2	3
4	5	

Comments: _____

9. I would rate the written communication skills of the typical EET student relative to those of other FSU students.

Better-Prepared	Average	Inadequately Prepared
1	2	3
4	5	

Comments: _____

10. I would rate the verbal communications skills of the typical EET student relative to those of other FSU students.

Better-Prepared	Average	Inadequately Prepared
1	2	3
4	5	

Comments: _____

11. I would rate the reading skills of the typical EET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

12. I would rate the comprehension skills of the typical EET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

13. I would rate the quantitative skills of the typical EET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

14. I would rate the problem solving ability of the typical EET student to those of other students.

Better-Prepared		Average		Inadequately Prepared	
1	2	3	4	5	

Comments: _____

15. I would rate the critical thinking skills of the typical EET student to those of other students.

Better-Prepared

Average

Inadequately Prepared

1

2

3

4

5

Comments: _____

Please describe the extent of your experience with our EET students:

Please suggest any courses/requirements, which you believe, should be added:

Please include any additional comments you may like to share concerning the EET students:

**On behalf of the EET Faculty, thank you for
contributing to this survey !!**

FACULTY PERCEPTIONS

2001 PROGRAM REVIEW SURVEY

INDUSTRIAL ELECTRONICS TECHNOLOGY

The Industrial Electronics Technology (IET) program is seeking your input for its 2001 Academic Program Review. This survey is being sent to a number of Ferris State University faculty who have had direct interaction with a large percentage of recent IET students. The purpose of this survey is to help identify areas of improvement in our program here at FSU, as it is currently defined. It is recognized that your observations and suggestions may be quite limited due to a limited amount of contact with our students. It is, however, critically important that you complete this survey since the information provided will be used to update the current curriculum.

When you have completed this survey, please return it via campus mail to **Jim VanDenBerghe, Swan 405**. Your attention ASAP will be appreciated. Bob Willison, who is now on sick leave, originally had the responsibility for this task. I assumed responsibility recently and we have a March 15th deadline to complete our report.

Also, please record your responses on the "bubble sheet". 1 = a, 2 = b, etc. **Thank you.**

1. I would describe the preparation of the typical IET student for my course as follows when compared to other members of the FSU student population.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

16. I would rate the written communication skills of the typical IET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

17. I would rate the verbal communications skills of the typical IET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared
-----------------	--	---------	--	-----------------------

1 2 3 4 5

Comments: _____

18. I would rate the reading skills of the typical IET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

19. I would rate the comprehension skills of the typical IET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

20. I would rate the quantitative skills of the typical IET student relative to those of other FSU students.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

21. I would rate the problem solving ability of the typical IET student to those of other students.

Better-Prepared		Average		Inadequately Prepared
1	2	3	4	5

Comments: _____

22. I would rate the critical thinking skills of the typical IET student to those of other students.

Better-Prepared		Average		Inadequately Prepared
-----------------	--	---------	--	-----------------------

1

2

3

4

5

Comments: _____

Please describe the extent of your experience with our IET students:

Please suggest any courses/requirements, which you believe, should be added:

Please include any additional comments you may like to share concerning the IET students:

On behalf of the IET Faculty, thank you for contributing to this survey !!

Appendix E

Supporting Information for Advisory Board Perceptions

Advisory Board List Advisory Board Survey Instruments

FERRIS STATE UNIVERSITY
College of Technology
Computer Networks and Systems
Advisory Committee

Randy Carlson
Rockwell Automation – Allen-Bradley
1121 133 rd. Ave.
Whalen, MI 49348

Don Drury
Cisco Systems, Inc.
4690 E. Fulton Dr.
Bldg C, Ste 201
Ada, MI 49301

Steve Gutschow
Cisco Systems, Inc.
4690 E. Fulton Dr.
Bldg C., Ste 201
Ada, MI 49301

Don Hoogerhyde
Meijer, Inc.
2727 Walker, N.W.
Grand Rapids, MI 49544

Peter Liken
Thermotron Industries
291 Kollen Park Dr.
Holland, MI 49423

Steve London
Bekum American Corp.
1140 W. Grand River
P.O. Box 54
Williamston, MI 48895-0054

Don MacConnel
OmniTrack
1101 E. Elm
Big Rapids, MI 49307

Kevin Neugent
AVAYA Communication
Avaya Inc.
3260 Eagle Park Dr.
Ste 115
Grand Rapids, MI 49525

John Potts
Dow Corning Corp.
P.O. Box 994
Mail #WW1111
Midland, MI 48686-0994

Ed Rozanski
Nortel Networks
6000 28th St., Ste 210
Grand Rapids, MI 48546

John Urbanick
Ferris State University
330 Oak St., West 217
Big Rapids, MI 49307
Fall 2001

8/22/01

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY
IET/EEET
ADVISORY COMMITTEE

Eric Hoskinson
Engineered Protection Systems, Inc.
750 Front N.W.
Grand Rapids, MI 49504

Bob Kovacevich
Eaton Aerospace
P.O. Box 872
Grand Rapids, MI 49588-0872

Bob Lijewski
Consumers Power – Midland
2489 Wilder Rd.
Midland, MI 48642

Steve London
Bekum America Corporation
1140 W. Grand River
P.O. Box 54
Williamston, MI 48895-0054

Don MacConnel
OmniTrack
1101 E. Elm
Big Rapids, MI 49307

Charles Montpas
Allen-Bradley Company
1849 W. Maple Rd.
Troy, MI 48084-7151

Steve VanLente
B. F. Goodrich Avionics Systems
5353 52nd St.
Grand Rapids, MI 49508

Mike Wehrenberg
Kendall
131 Grand Trunk Ave.
Battle Creek, MI 49016

John Wilson
National Instruments
20255 Victory Pky.
Ste 195
Livonia, MI 48152

Ferris State University
 Industrial Electronics Technology
 Electrical/Electronic Engineering Technology
 Industrial Advisory Committee Evaluation

The Industrial Electronic Technology and the Electrical/Electronic Engineering Technology programs are going through academic program review within Ferris State University. The purpose of this survey is to obtain information from the members of the advisory committee regarding the curriculum, facilities, equipment, outcomes, graduates, micro and macro trends that might affect job placement (both positively and negatively). Please complete and email your responses by February 28, 2001. Your assistance in this project is sincerely appreciated.

	Excellent				Poor
1. How would you rate the curriculum of the IET program?	5	4	3	2	1

Comments:

2. How would you rate the curriculum of the BSEET program?	5	4	3	2	1
--	---	---	---	---	---

Comments:

3. How would you rate the quality of the equipment used in both programs?	5	4	3	2	1
---	---	---	---	---	---

Comments:

4. How would you rate the quality of the facilities for both programs?	5	4	3	2	1
--	---	---	---	---	---

Comments:

		Excellent			Poor	
5. How would you rate the graduates abilities in each program?						
	IET	5	4	3	2	1
	BSEET	5	4	3	2	1

Comments:

6. For both programs, are the outcomes appropriate for current industrial practice?	5	4	3	2	1
---	---	---	---	---	---

Comments:

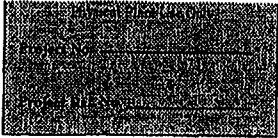
7. What micro or macro trends do you see in your industry that might affect job placement?

8. How might we improve the IET and BSEET programs?

Thank you for your time and feedback. Your input is valuable to us.

Appendix F

Supporting Information for Facilities and Equipment



Ferris State University
Minor Capital Improvement Project Request Form
FY 2001-2002

Division: Academic Affairs
College: Technology
Department: EET & CNS Dept.
Contact Person: Warren Klope Phone #: (231)-(591-2388) ext.
Office Location: Building: Swan Room # 405A

Section A: Project Description: (attach additional narrative if necessary and sketches/drawings if available)

Building: Swan Room #: Hallway

Maintenance and repair: Paint the lockers, metal door frames, and metal doors- to match the hallway.

Rationale: **Painting these will improve existing and potential student's and parent's perception of our facilities and thus our programs.**

This project directly affects: (Please check items as appropriate.)

- Classroom Instruction
- Student Recruitment
- Student Retention
- Student Advising
- Faculty Space
- Administrative Space
- Health/Safety
- Other: explain _____

X Department Heads Supporting Signature: _____ Date: 12 / 15 / 2000

Dean/Director Supporting Signature: _____ Date: / /

Section B: Project Costing: (To be completed by Physical Plant)

Preliminary Budget Estimate: \$ _____

Estimated By: _____ Date: / /

Section C: Project Approval:

Dean's Priority Ranking: (1) (2) (3)
High Low

Institutional Priority Ranking: (1) (2) (3)
High Low

Division Priority Ranking: (1) (2) (3)
High Low

Project Approved: Yes <input type="checkbox"/> No <input type="checkbox"/>
Date Approved: <u> / /</u>



Ferris State University
Minor Capital Improvement Project Request Form
FY 2001-2002

Division: Academic Affairs
College: Technology
Department: EET & CNS Dept.
Contact Person: Warren Klope Phone #: (231)-(591-2388) ext. _____
Office Location: Building: Swan Room # 405A

Section A: Project Description: (attach additional narrative if necessary and sketches/drawings if available)

Building: Swan Room #: (see attached table)

Maintenance and repair: (see attached table)

Rationale: (see attached table)

This project directly affects: (Please check items as appropriate.) (see attached table)

- Classroom Instruction
- Student Advising
- Health/Safety
- Student Recruitment
- Faculty Space
- Other: explain _____
- Student Retention
- Administrative Space

Department Heads Supporting Signature: _____ Date: 01/18/2001

Dean/Director Supporting Signature: _____ Date: / /

Section B: Project Costing: (To be completed by Physical Plant)

Preliminary Budget Estimate: \$ _____

Estimated By: _____ Date: / /

Section C: Project Approval:

Dean's Priority Ranking: (1) (2) (3)
High Low

Institutional Priority Ranking: (1) (2) (3)
High Low

Division Priority Ranking: (1) (2) (3)
High Low

Project Approved: Yes <input type="checkbox"/> No <input type="checkbox"/>
Date Approved: <u>/ /</u>

Ferris State University
 Minor Capital Improvement Project Request Form
 FY 2001-2002

Division: Academic Affairs Phone Number: (231) 591-2388
 College: Technology Room: 405A
 Department: EET & CNS Dept.
 Contact Person: Warren Klope
 Office Location: Swan

Item #:	Description:	Maintenance and Repair Priority													Project directly affects						
		Swm 401 Lab	Swm 402 Tek	Swm 403 Lab	Swm 404 Lec	Swm 405 Ofc	Swm 406 Lab	Swm 408 Lab	Swm 409 Wrk	Swm 411 Lab	Swm 413 Lab	Swm 415 Lec	Swm 416 Lab	Classroom Instruction	Student Advising	Health/Safety	Student Recruitment	Faculty Space	Student Retention	Administrative	Other
1	Service existing air conditioner(s).	1	1	1	1	1								X	X	X	X	X	X		
2	Install a wall air conditioner.						3	3	2	3	3	3	3	X		X	X	X			
3	Replace door holder/stop(s) with magnetic or latching door holder/ stop.	1	1	1	1	1	1	1	1	1	1	1	1	X	X		X			X	
4	Replace damaged/broken/stained ceiling tile(s).	1	1		1	1							1			X	X	X	X	X	
5	Replace fraying carpet.				1	1							1	X	X	X	X	X	X		
6	Replace blinds on outside wall (verticle preferred)	1	1	1	1	1	1	1	1	1	1	1	1	X	X	X	X	X	X		
7	Re-edge tables where edging is coming off.	1			1											X	X	X			
8	Replace overhead electrical buss with Square D (found in all other rooms) and drop three phase power to benches						1							X		X	X	X			
9	Upgrade the power drop to benches from single phase to three phase.							1		1			1	X		X	X	X			
10	Paint ceilings (verify leaks were repaired)						2	1		2	1		1			X	X	X			
11	Paint walls										1		1			X	X	X			
12	Paint heat register						1	2		2	1	2	2			X	X	X			
13	Replace/repair lab chairs, especially the broken ones.						1	1		1	1		1	X	X	X	X	X			

Rationale:

Item #:	Rationale
1	Serviceing the air conditioner will reduce operating cost and increase employee efficiency on warmer/hot days.
2	Installing the air conditioner in the labs will increase employee efficiency on warmer/hot days and increase student satisfaction of facilities.
3	Installing the magnetic/latching door stops will allow easier ingress/egress for the technician, faculty, and custodial staff with equipment and carts - a common occurrence in our area. The hallways will be safer with doors either fully open or closed. Current floor and door damage will be reduced or eliminated.
4	Replacing the cut/broken/damaged/stained ceiling tiles will improve existing and potential student's and parent's perception of our facilities and thus our programs.
5	Replacing the frayed carpet will improve safety and the existing and potential student's and parent's perception of our facilities and thus our programs.
6	Replacing the missing/broken/damaged/stained blinds with verticle blinds will darken the rooms better for projector based instruction and will improve existing and potential student's and parent's perception of our facilities and thus our programs. Also, the custodial staff (Karen) would appreciate it too.
7	Replacing the broken table laminates or tables will improve existing and potential student's and parent's perception of our facilities and thus our programs.
8	Installing a electrical buss that is the same as the other rooms means we are not keeping spare parts, manuals, etc. for 2 different manufacturers. Deliver three phase power to the benches for increased instruction quality and greatly improved scheduling ability of the labs.
9	Deliver three phase power to the benches for increased instruction quality and greatly improved scheduling ability of the labs.
10-12	Painting the ceilings, walls and heat registers will improve existing and potential student's and parent's perception of our facilities and thus our programs.
13	Replacing/repairing the lab chairs will reduce safety concerns, damage to the floors from scratching of tile, damage to clothing, and will improve existing and potential student's and parent's perception of our facilities and thus our programs.

Ferris State University					
Academic Affairs					
Academic Equipment Request List (PARTIAL PRINTOUT)					
2001-2002					
Priority	College	Department/Priority	Program(s)	Description	Cost
1	TECH	Mechanical Design 1	CDTD, PDET, MECH	Computer projection system SWN 105A	\$ 6,000
2	TECH	Manufacturing 1	MFGE	Industrial engineering lab equipment	\$ 24,000
3	TECH	EEET/CNS 1		Mobile computer projection system (2)	\$ 14,200
4	TECH	Arch Tech & Facilities Mgt 1		Faculty computers (5)	\$ 6,000
5	TECH	Plastics and Rubber 1		Plastics injection mold with slides & core pulls	\$ 50,000
6	TECH	Welding 1		Testing (2) and automation lab (2) computers	\$ 4,800
7	TECH	Mechanical Design 2	MECH	Hydraulics lab bench	\$ 30,000
8	TECH	Manufacturing 2	Tooling	Vertical mills (4)	\$ 41,900
9	TECH	Welding 2		Production band saw	\$ 15,000
10	TECH	Construction Management 2		Laptop computer (student team use)	\$ 2,000
11	TECH	Printing 1	Technology	Replace software licenses	\$ 7,500
12	TECH	Surveying 1		Total stations (5)	\$ 60,000
13	TECH	Auto 1	Service	Equipment	\$ 9,000
14	TECH	Surveying 2		Multimedia projectors (2)	\$ 8,000
15	TECH	Plastics and Rubber 2		Plastics injection molding machine	\$ 75,000
16	TECH	Heavy Equipment 2		Scissor lift	\$ 33,000
17	TECH	Auto 2	Service	High performance/machining certificates	\$ 7,000
18	TECH	Construction Management 1		Laptop computers (3, faculty use)	\$ 6,000
19	TECH	Heavy Equipment 1		Update facilities (furniture, lab equipment)	\$ 12,000
20	TECH	Arch Tech & Facilities Mgt 2		Computer furniture SWN 205 and 212	\$ 29,000
21	TECH	EEET/CNS 2		Fixed computer projection system SWN 404	\$ 8,500
22	TECH	HVACR 1		Cuber (ice machine)	\$ 4,200
23	TECH	HVACR 2		Air to air heat pumps (3)	\$ 2,400
	TECH	Arch Tech & Facilities Mgt 3		Sit/stand teaching stations (4)	\$ 1,000
	TECH	Arch Tech & Facilities Mgt 4		High resolution LCDE projector	\$ 4,800
	TECH	Arch Tech & Facilities Mgt 5		64 MEG RAM for 20 computers	\$ 1,300
	TECH	Arch Tech & Facilities Mgt 6		128 MEG RAM for 42 computers	\$ 5,400

Priority	College	Department/Priority	Program(s)	Description	Cost
	TECH	Arch Tech & Facilities Mgt 7		Student chairs (20) SWN 111	\$ 2,000
	TECH	Arch Tech & Facilities Mgt 8		VCRs (2) SWN 203 and 208	\$ 500
	TECH	Arch Tech & Facilities Mgt 9		Teaching monitor accessories (2 sets)	\$ 1,000
	TECH	Auto 3	Service	Rottler F5M boring system	\$ 26,000
	TECH	Auto 4	Service	Ford scanner	\$ 2,200
	TECH	Auto 5	Service	Battery charger	\$ 350
	TECH	Auto 6	Service, Body	Frame repair equipment	\$ 6,000
	TECH	Auto 7	Service	Cruise control tester	\$ 250
	TECH	Auto 8	Service	Brake caliper piston compressor	\$ 109
	TECH	Auto 9	Service	Diagnostic software	\$ 1,350
	TECH	Auto 10	Service	ALM above ground hoist	\$ 3,000
	TECH	Auto 11	Service	Superflow chassis dynamometer	\$ 50,000
	TECH	Construction Management 3		Computer projection system	\$ 5,000
	TECH	Construction Management 4		Display unit	\$ 2,000
	TECH	Construction Management 5		Marshal recorder	\$ 4,000
	TECH	EEET/CNS 3		Faculty computers (3)	\$ 3,600
	TECH	EEET/CNS 4		CNS lab computers (12)	\$ 14,400
	TECH	EEET/CNS 5		Relay trainers (11)	\$ 7,000
	TECH	EEET/CNS 6		DAQ hardware (2)	\$ 2,500
	TECH	EEET/CNS 7		Micrologic PLC trainers (5)	\$ 12,500
	TECH	EEET/CNS 8		Analog/digital trainers (8)	\$ 6,000
	TECH	EEET/CNS 9		Lab computers SWN 416 (10)	\$ 12,000
	TECH	EEET/CNS 10		Simpson 260xp VOM's (10)	\$ 3,100
	TECH	EEET/CNS 11		Motorola M68HC11EVBU2 boards (10)	\$ 3,100
	TECH	EEET/CNS 12		Microprocessor trainer, 32 bit based (12)	\$ 5,500
	TECH	EEET/CNS 13		Logic analyzer 32 channel (12)	\$ 29,700
	TECH	EEET/CNS 14		Xilinx programming tools	\$ 4,300
	TECH	EEET/CNS 15		MultiSIM VHD module (10)	\$ 830

Response to.

 George Waldheim

11/13/00 09:31 AM

To: Gary L Ovans/FSU@Ferris, Warren A Klope/FSU@Ferris, Kenneth
A Kuk/FSU@Ferris

cc:

Subject: Lab Costs

Each of you has a high priority Goal on the Strategic Plan list and I need to know a ball park figure as to how much it will cost to implement your Goal.

Gary: MET lab for BS program. A ball park figure for initial start up, assuming we can find a facility, or labs space somewhere. A price to establish the equipment part of the lab for at least 2 to 3 years.

Warren: Reconfigure the ET lab Swan 4th floor. Ball park as to how much, including lab physical facility renovation if necessary.

Ken: Enclose and Roof the remaining Welding yard. Ball park as to how much.

I may be able to get some funding for these initiatives from Academic Affairs. Even if we split costs between physical plant parts and equipment parts. Give me what your best guess is today or tomorrow. I will use in my negotiations. Thanks



Warren A Klope
11/14/00 09:21 AM

To: George Waldheim/FSU@Ferris
cc: (bcc: Warren A Klope/FSU)
Subject: Re: Lab Costs

Greetings George,

Sorry, I forgot to put the headers on the rows of the table I sent you early this morning. Following is the corrected email.

The renovation of Swan 4th floor would cost a very rough estimate of \$350,000.

This cost covers the upgrading of the lab to three phase power, replace antiquated benches and chairs, exchange technician's location (Swn 402) with Swn 411 and put an pull down window in the hallway wall.

Room	# of stallions	Total Room Cost	Priority of room	
401	10	\$2,000		
402	12	\$49,800	3	Swn 402 & 411 are coupled
403	12	\$2,400	6	
404	0	\$0		
405	0	\$0		
406	8	\$35,200	1	
407	0	\$0		
408	18	\$74,700	5	
409	0	\$0		
410	0	\$0		
411	4	\$33,800	3	Swn 402 & 411 are coupled
412	0	\$0		
413	9	\$28,350	4	
414	0	\$5,000	7	
415	0	\$0		
416	12	\$49,800	2	
SubTotal	85	\$281,050		

Misc. Assembly of benches, installation of equipment, Power Connections on Benches,
+unforeseen Misc.=25%
Total = about \$350,000

Thanks,

Warren Klope, Chair
EET & CNS Dept.

PS: if details are desired the spreadsheet used is attached:



Plan-r4th Floor Upgrade-FEET & CNS Dept-d'2000'11'13.

George Waldheim

George Waldheim
11/13/00 09:31 AM

To: Gary L.Ovans/FSU@Ferris, Warren A.Klope/FSU@Ferris, Kenneth
A.Kuk/FSU@Ferris
cc:
Subject: Lab Costs

Each of you has a high priority Goal on the Strategic Plan list and I need to know a ball park figure as to how much it will cost to implement your Goal.

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Ken: Enclose and Roof the remaining Welding yard. Ball park as to how much.

I may be able to get some funding for these initiatives from Academic Affairs. Even if we split costs between physical plant parts and equipment parts. Give me what your best guess is today or tomorrow. I will use in my negotiations. Thanks

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



Darryl of Electrical #5939

Rex Electrician

403: Network \$200/bench * 12 benches

406: Bus Replacement to Spr D.
\$2000

Varia Net Power
\$600 + \$200 + \$600/drop * 8 drops

408 [\$200 + \$600/drop] * 18 drops

411 [\$700 + \$600/drop] * 12 drops

413 9 drops

416 [\$200 + \$600/drop] * 12 drops

Common Pulling extra wire \$4,000
to labs for 3φ

Benches 6' x 4' bench with riser
\$2,500/bench (Dale & Ron McKean

Ferris State University FY 2002 to 2004 Planning Form

BET & CNS Dept

Technology

AA

Swan 4th Floor Lab Facilities Update

4

0

0

2002

Develop plans for the floor update in conjunction with the campus architect, engineer, and faculty in 2002.

Redo the floor infrastructure: electrical, communications, etc in 2003.

Install new workstations in summer 2003.

They are mostly a collection of various old benches designed for the electrical electronics work ~~update use of open workspace; electric work; and more benches~~ of a greater variety-including the need for a computer at benches, etc. The seats are frequently needing repair and even causing a safety problem. Those that are a hazard and beyond reasonable repair are being removed from service. Computer monitors & cables hang precariously past the back of some benches. Power strips are inadequate for the number of pieces of equipment needed on a bench requiring too frequent plugging and unplugging of equipment.

Replace old stools that are becoming unsafe, unattractive, and unusable. Rewire rooms and benches to be 3 phase power and computer networking compatible. Upgrade benches to modern circuit breaker protection.

This is a carry over item from 2001-2003

Bring our labs up to current industry standards of workspace for the electrical electronics professional. Make labs safer, more comfortable, and remove a hindrance to programmatic marketing.

Strategic Plan: Issue 5: Goal Objective: #2 be part of the coordinated master plan ..

VPAA Priorities: 1.8 Identify and meet academic facilities needs in the program.

0

Yes
 No
 Further Information

Appendix G

Support for Recommendations

PRP Evaluation Form

PRP Evaluation Form

Program Review Panel Evaluation Form

(PRP: complete this form and include with your report)

Program: _____

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

1. Student Perception of Instruction Average Score _____

5	4	3	2	1
---	---	---	---	---

Currently enrolled students rate instructional effectiveness as extremely high.

Currently enrolled students rate the instructional effectiveness as below average.

2. Student Satisfaction with Program Average Score _____

5	4	3	2	1
---	---	---	---	---

Currently enrolled students 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 _____

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 _____

5	4	3	2	1
---	---	---	---	---

Graduates easily find employment in field.

Graduates are sometimes forced to find positions out of their field.

5	4	3	2	1
---	---	---	---	---

5. Use of Information on Labor Market Average Score _____

The faculty and administrators use current data on labor market needs and emerging trends in job openings to systematically develop program and evaluate the program.

The faculty and administrators do not use labor market data in planning or evaluating the program.

**Program Review
Panel Evaluation
Form (page 2)**

6. Use of Profession/Industry Standards

Average Score _____

5	4	3	2	1
---	---	---	---	---

Profession/industry standards (such as licensing, certification, accreditation) are consistently used in planning and evaluating this program and content of its courses.

Little or no recognition is given to specific profession/industry standards in planning and evaluating this program.

7. Use of Student Follow-up Information

Average Score _____

5	4	3	2	1
---	---	---	---	---

Current follow-up data on completers and leavers are consistently and systematically used in evaluating this program.

Student follow-up information has not been collected for use in evaluating this program.

8. Relevance of Supportive Courses

Average Score _____

5	4	3	2	1
---	---	---	---	---

Applicable supportive courses are closely coordinated with this program and are kept relevant to program goals and current to the needs of students.

Supportive course content reflects no planned approach to meeting needs of students in this program.

9. Qualifications of Administrators and Supervisors

Average Score _____

5	4	3	2	1
---	---	---	---	---

All persons responsible for directing and coordinating 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 _____

5	4	3	2	1
---	---	---	---	---

Instructional staffing for this program is sufficient to permit optimum program effectiveness.

Staffing is inadequate to meet the needs of this program effectively.

**Program Review
Panel Evaluation
Form (page 3)**

11. Facilities Average Score _____

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 _____

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 are significantly under-or-over scheduled.

13. Equipment Average Score _____

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.

14. Adaption of Instruction Average Score _____

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 no consider individual student differences.

15. Adequate and Availability of Instructional Materials and Supplies Average Score _____

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.