WICHITA STATE UNIVERSITY

Program Review Self-Study Template

Academic unit: Electrical Engineering and Computer Science

[redacted]

Date of last accreditation report (if relevant) 2007

[redacted]

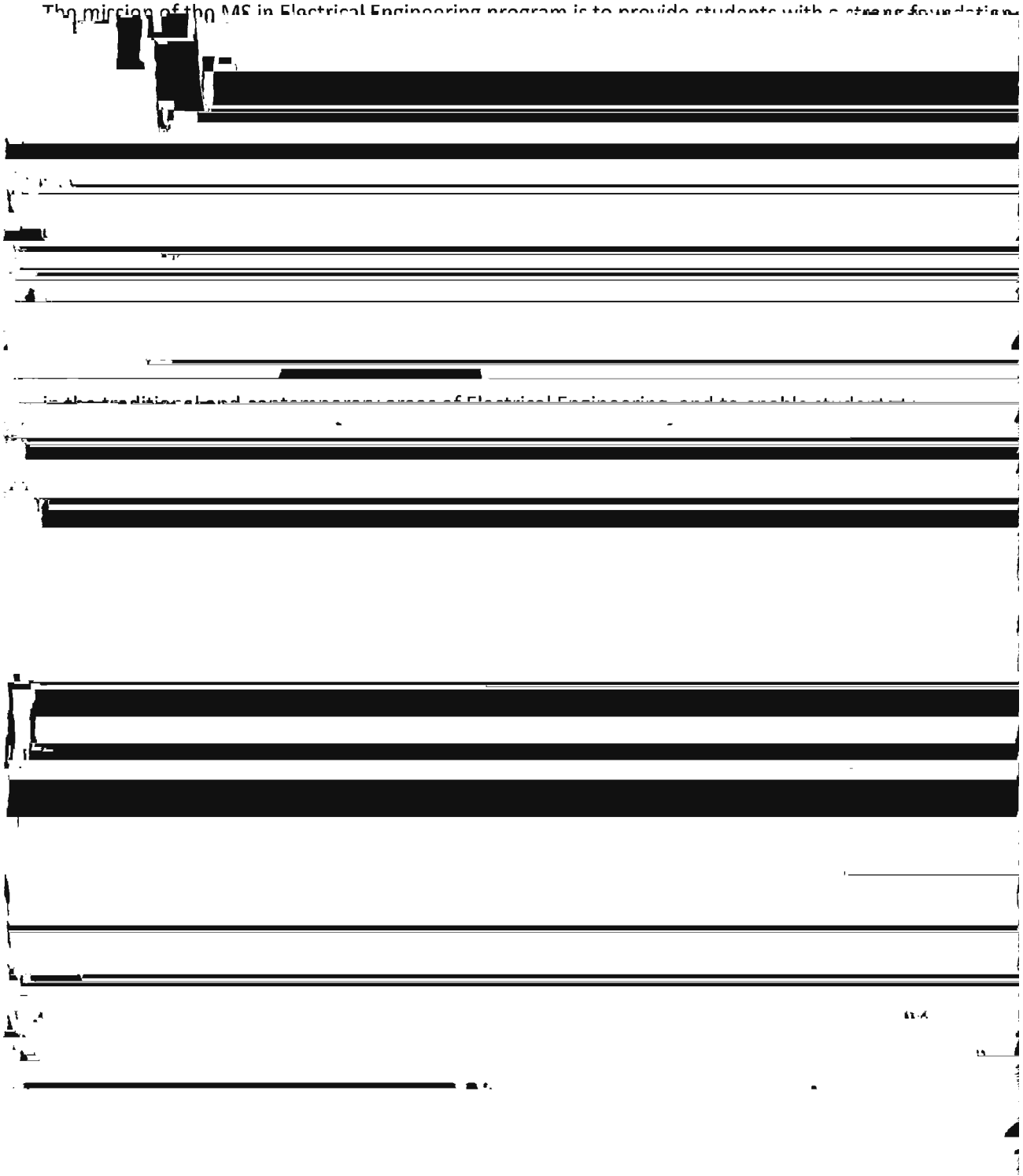
Hyuck Kwon, Professor, Professor

[redacted]

[redacted]

synthesize, interpret, and apply research and other forms of knowledge for the advancement of the discipline.

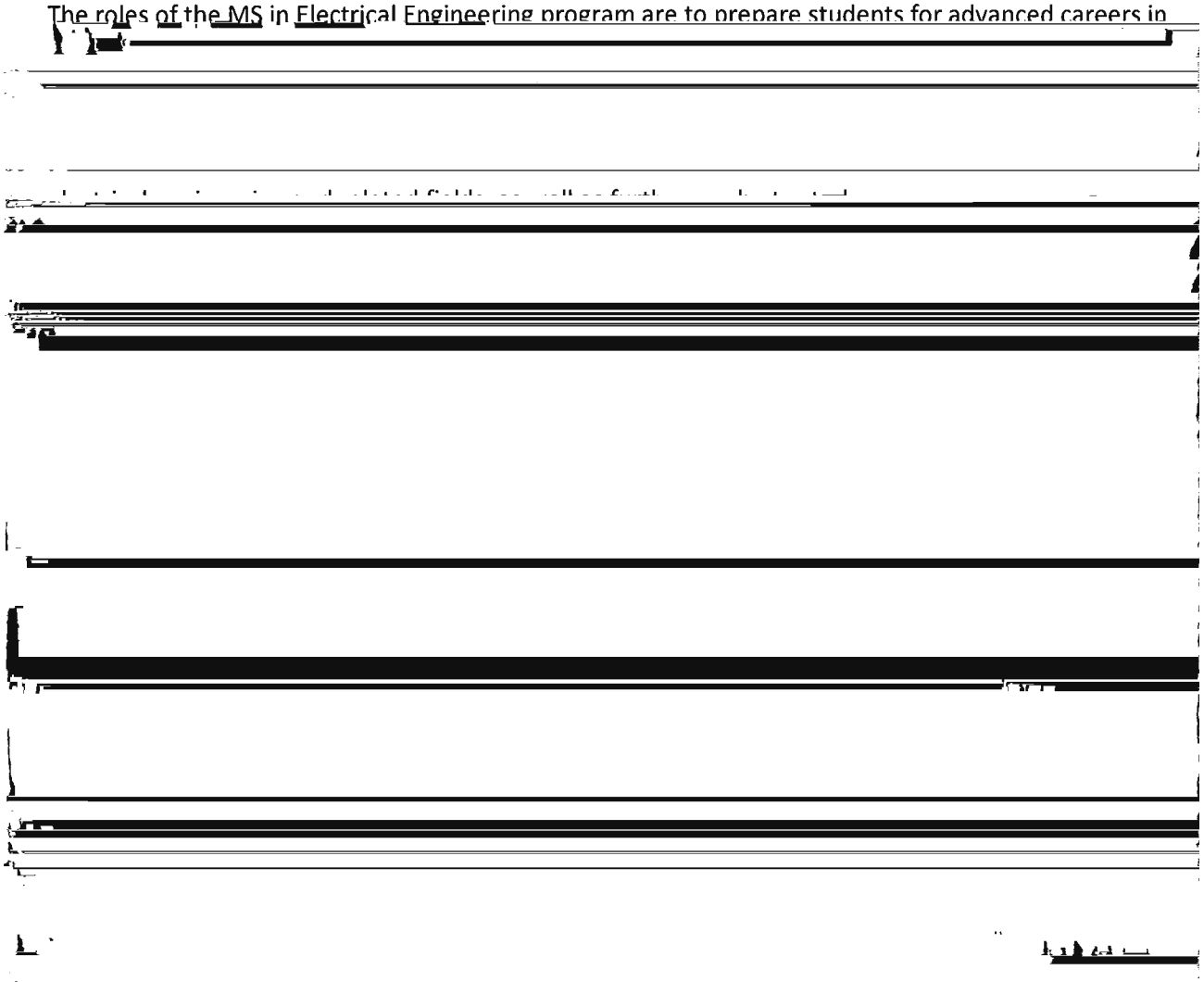
The mission of the MS in Electrical Engineering program is to provide students with a strong foundation



synthesize, interpret, and apply research and other forms of knowledge for the advancement of the discipline.

The roles of the MS in Computer Networking program are to prepare students for advanced careers in computer networking and related fields, as well as further graduate study.

The roles of the MS in Electrical Engineering program are to prepare students for advanced careers in

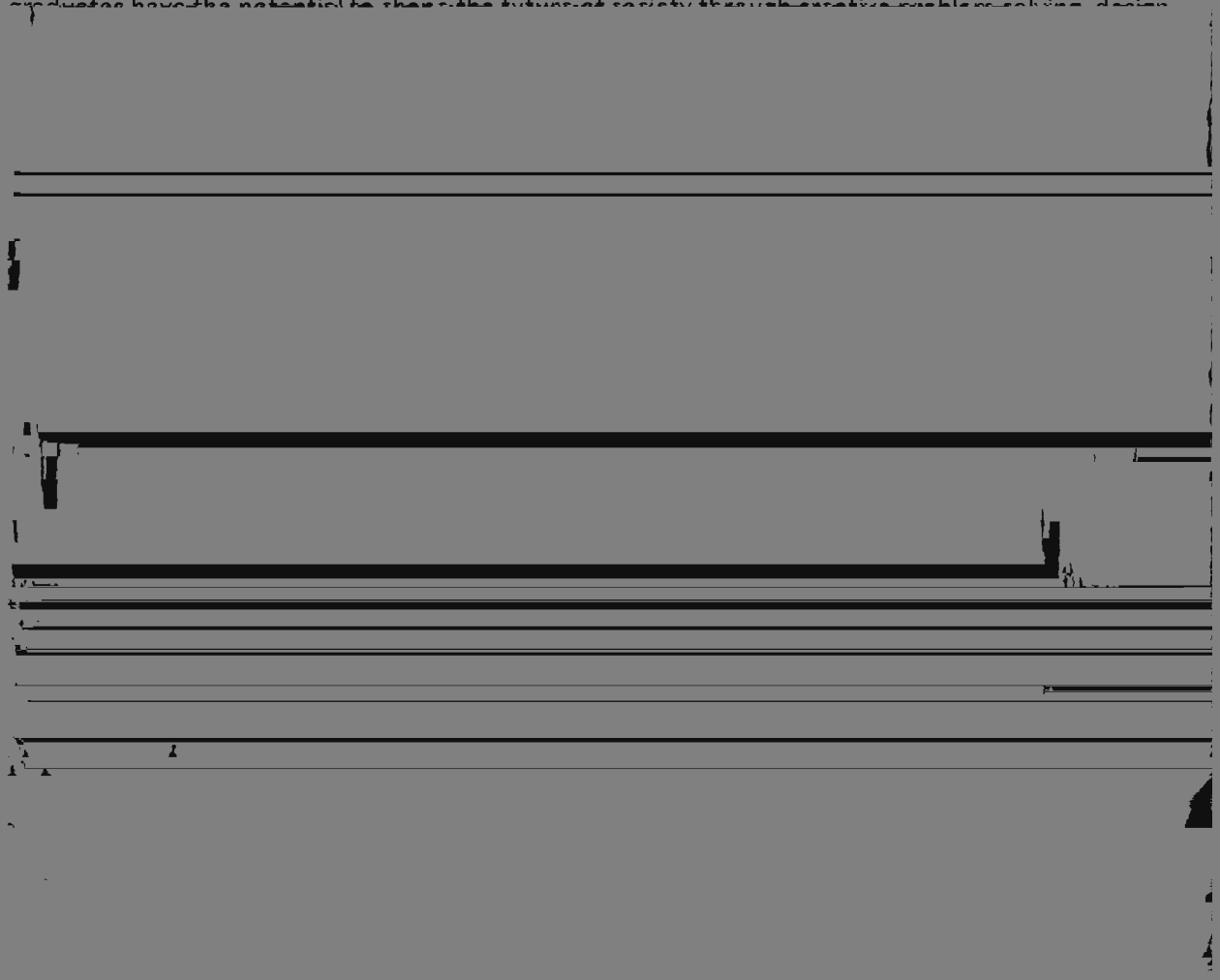


The role of the PhD in Electrical Engineering program is to prepare students for the highest-level careers

problem solving, design, innovation, and discovery.

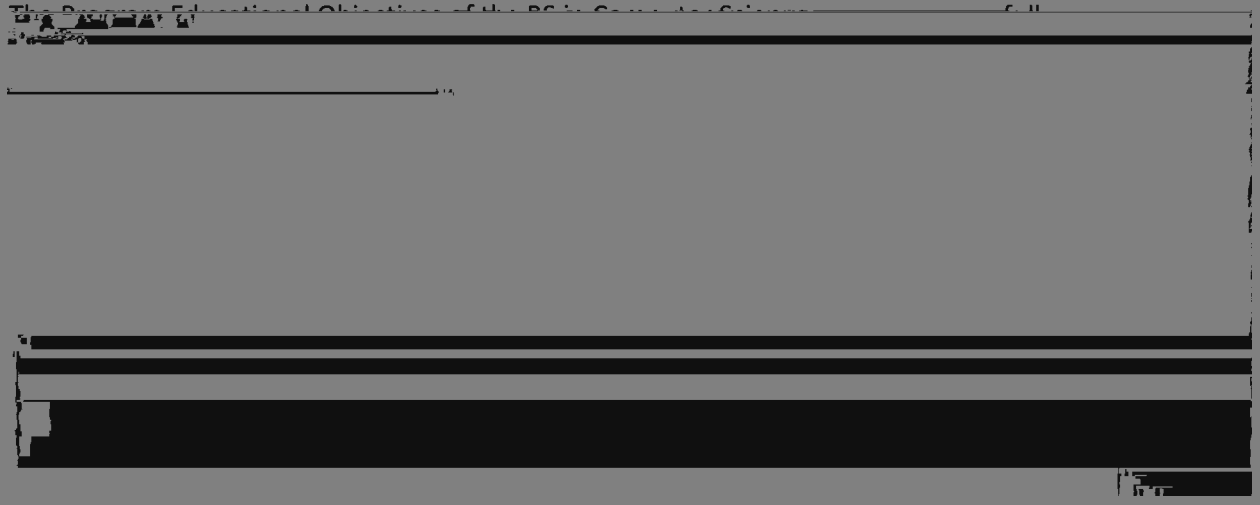
The Program Educational Objectives of the BS in Electrical Engineering program are as follows:

business, industry, education, and government as a result of the graduate's broad technical background A computer science degree opens the door to a satisfying and rewarding career. Computer science graduates have the potential to shape the future of society through creative problem-solving, design



innovation, and discovery

The Program Educational Objectives of the BS in Computer Science full



[redacted]

14	14	16.9	2 0	5.0	11,188	58	15
12	12	12 9	2.9	4 3	11 604	78	14
14	14	14 4	2.0	4.0		86	12

[redacted]

23.9 468
23.5 493
28.3

14
18

7 26 1,458,492

[redacted]

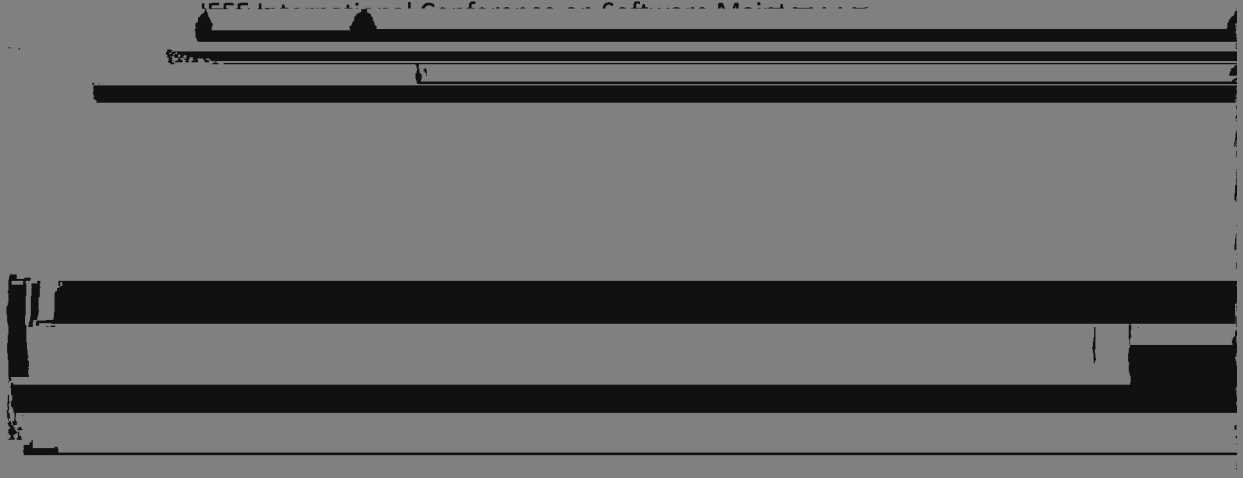
The strengths, productivity, and qualifications of the faculty can first be determined by their scholarly

[redacted]

publications, conference proceedings and presentations, and grant activity. As seen in the table, the

[redacted]

- IEEE Vehicular Technology Conference
- IEEE International Conference on Communications
- [redacted]



*	*	*	*	*	N/A	126	22
*	*	*	*	*	N/A	122	17
*	*	*	*	*	N/A	101	19

N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

* Winning by competitive audition. **Professional attainment (e.g., commercial recording). ***Principal role in a performance. ****Commissioned or included in a collection. KBOR data minima for UG programs: Majors=25; Graduates=10; Faculty=3; KBOR data minima for master programs: Majors=20; Graduates=5;

*From the table on page 3, indicate number of faculty (and instructional FTE) teaching in the undergraduate program.

*	*	*	*	*	N/A	115	29
*	*	*	*	*	N/A	142	47
*	*	*	*	*	N/A	148	40

N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

*From the table on page 3, indicate number of faculty (and instructional FTE) teaching in the undergraduate program

the faculty in terms of SCH, majors, graduates and scholarly productivity (refer to instructions in the

*	*	*	*	*	N/A	66	16
*	*	*	*	*	N/A	105	18
*	*	*	*	*	N/A	119	34

N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

*From the table on page 3, indicate number of faculty (and instructional FTE) teaching in the graduate program.

*	*	*	*	*	N/A	208	90
*	*	*	*	*	N/A	221	61
*	*	*	*	*	N/A	195	114

N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

*From the table on page 3, indicate number of faculty (and instructional FTE) teaching in the graduate program.

2f. Describe the quality of the program as assessed by the strengths, productivity, and qualifications of

*	*	*	*	*	N/A	28	4
*	*	*	*	*	N/A	37	2
*	*	*	*	*	N/A	40	2

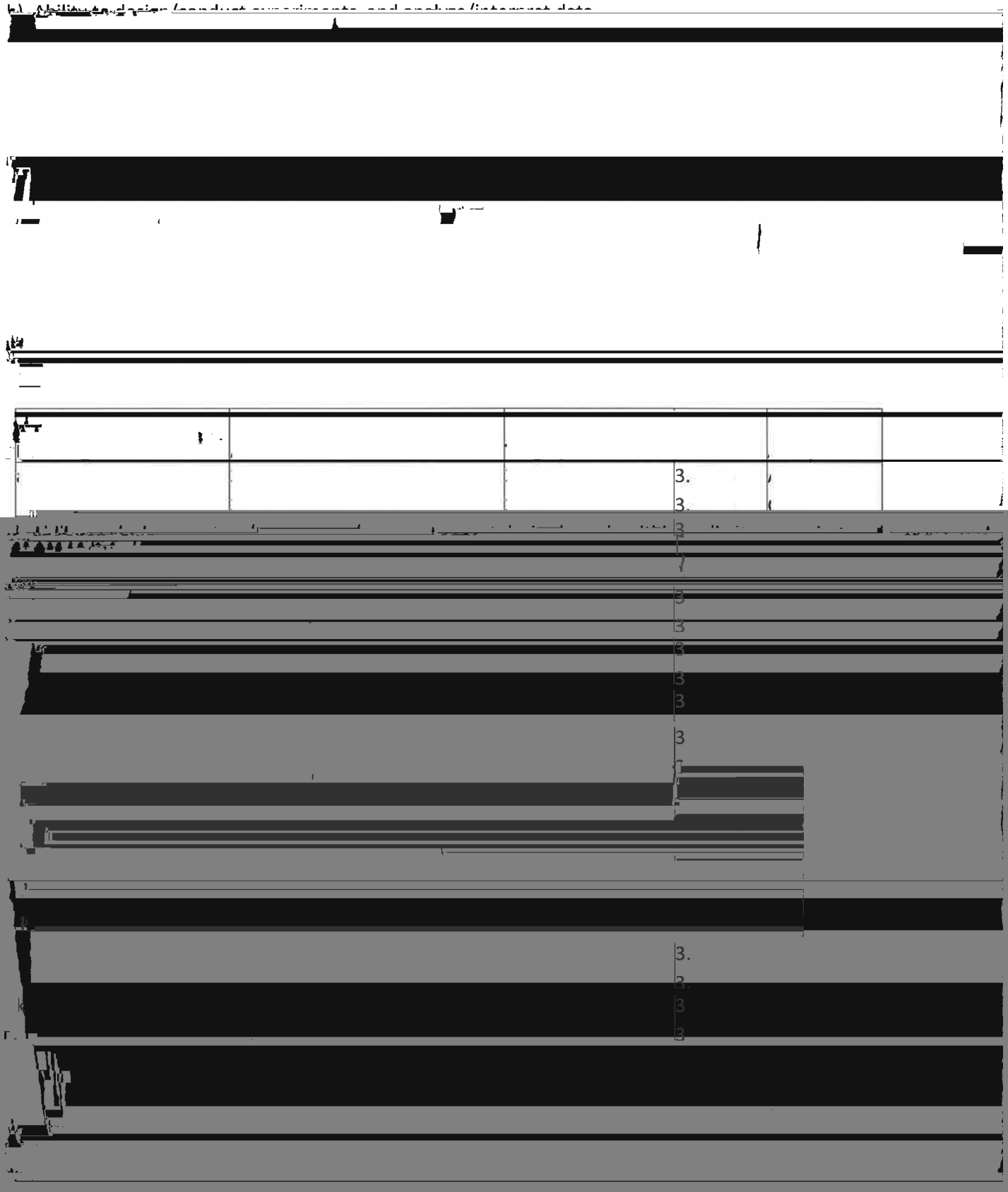
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

WSU Program Review document for more information on completing this section). Complete a

*From the table on page 3, indicate number of faculty (and instructional FTE) teaching in the graduate program.

58	126	115	26.0	23.5	23.4	22.66
78	122	142	25.0	24.3	24.0	22.72
86	101	195	25.2	25.4	24.4	22.81

129	343	5	14	3.35	3.27	3.26	3.53	3.33	3.51	3.48	3.62
131	245	67	21	3.31	3.32	3.40	3.64	3.36	3.57	3.48	3.62
77	174	100	15	3.44	3.35	3.47	3.58	3.40	3.60	3.48	3.67



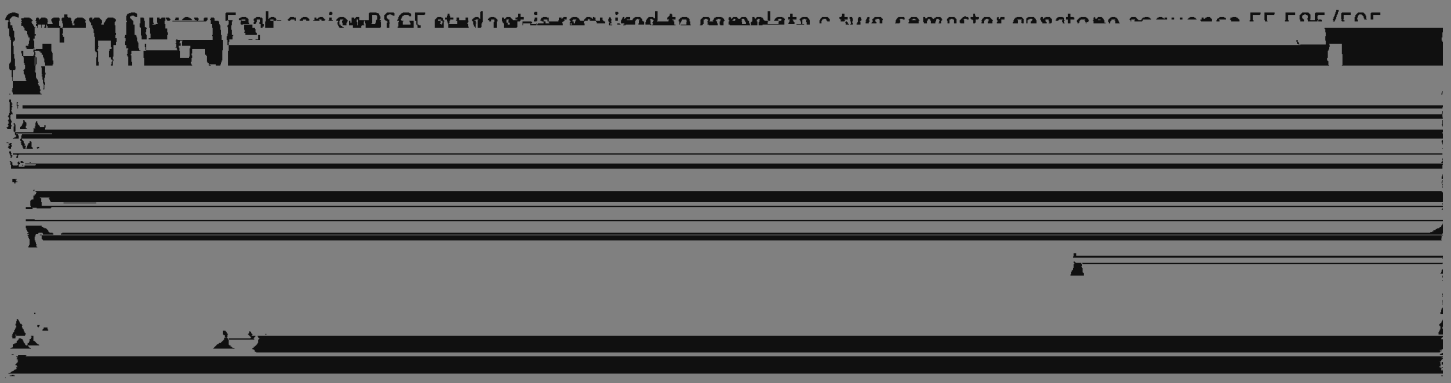
j	"	8.0/10	5.5/10	Very Low
		90%		
3			90%	Good

Description:

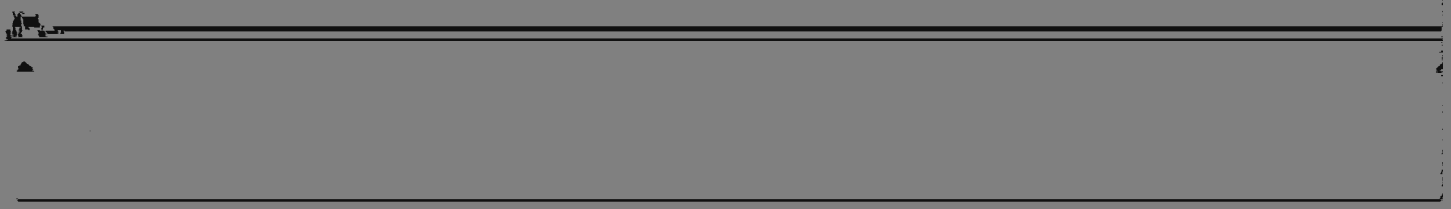
Co-op Survey: The Co-op survey covered 38 EECS students of all three bachelor degrees who were enrolled in co-op

a	38 Co-op Students' Self Evaln	3.5/4.0	3.5/4.0	Acceptable
	38 Employers' Evaln	3.5/4.0	3.7/4.0	Good
b			3.4/4.0	Acceptable
	"	"	3.6/4.0	Acceptable
c			3.1/4.0	Low
	"	"	3.6/4.0	Acceptable
				Good
				Good
				Acceptable
				Good
				Low
				Acceptable
				Low
				Acceptable
e			3.6/4.0	Acceptable
			3.5/4.0	Acceptable
			3.8/4.0	
		8.	3.8/4.0	
3		8	3.5/4.0	
			3.7/4.0	
1			3.2/4.0	Low
	"		3.5/4.0	
			3.6/4.0	Acceptable
			3.5/4.0	Acceptable
g		90%	3.3/4.0	
			3.5/4.0	
			3.6/4.0	Acceptable
	"			
f	Exit Interview: 34 Students			
	Importance of Ethics	0/10	8.9/10	
	Ethics of Peers	0/10	7.3/10	
h	Exit Interview: 34 Students			
	Chair's Evaluation	8.0/10	6.7/10	
		8.0/10	7.4/10	Acceptable

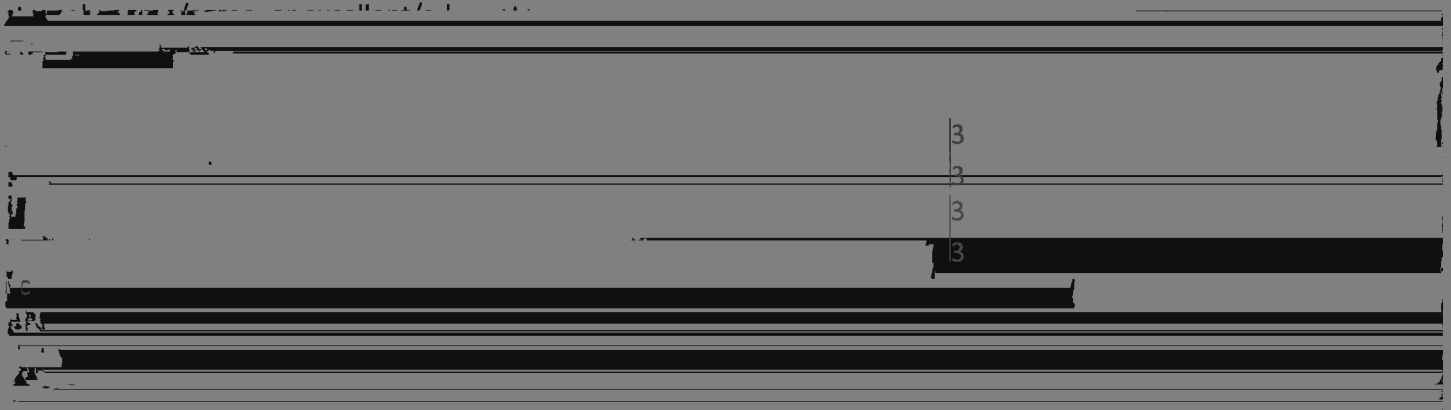
contemporary issues. It also allows the chair to evaluate their oral communication abilities. Each evaluation is on a scale of 1 to 10, with 10 being the best.



Capstone survey is a survey of the students enrolled in EE 595, during spring 2010–fall 2011. The percentages



correspond to students who chose the two most positive answers (out of 4 or 5 answers), such as very-well/well,



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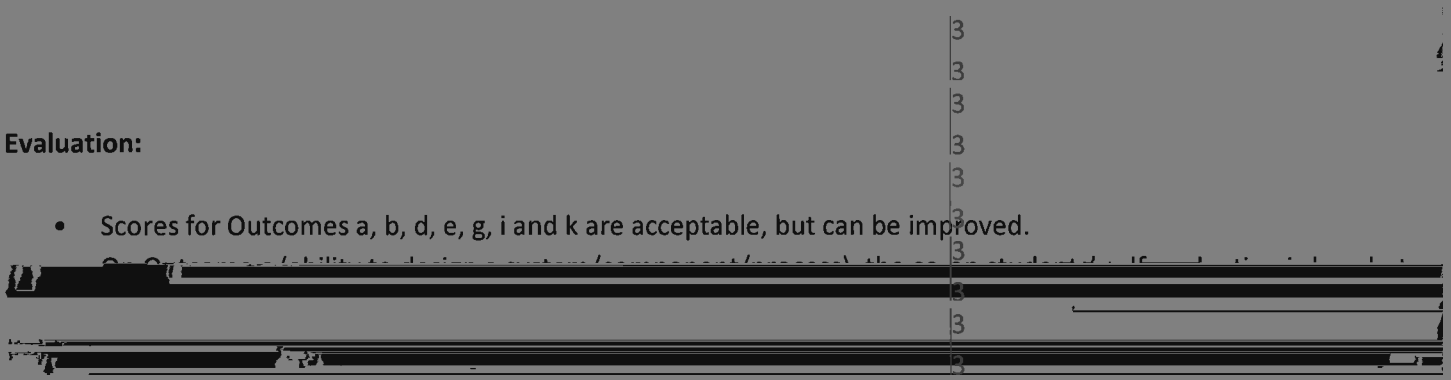

3
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3

Evaluation:

- Scores for Outcomes a, b, d, e, g, i and k are acceptable, but can be improved.

j			3.3/4.0	Low
	"	"	3.5/4.0	Acceptable
k			3.6/4.0	Acceptable
	"	"	[illegible]	[illegible]

[redacted]

			9	
			7	

[redacted]

f	Exit Interview: 36 Students			

[redacted]

[redacted]

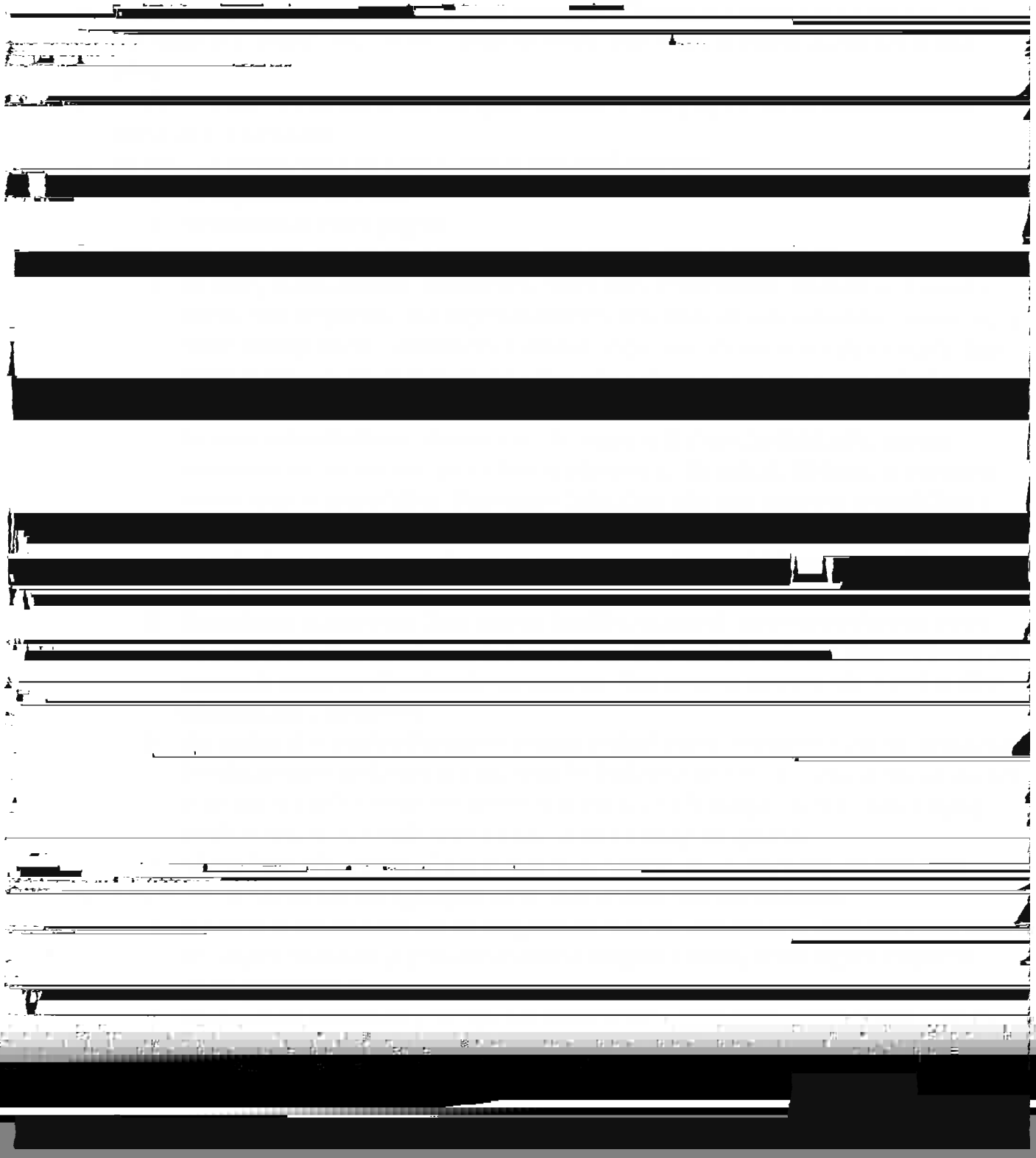
[redacted]

h	Exit Interview: 36 Students			
	Chair's Evaluation	8.0/10	7.6/10	Acceptable
	"	[illegible]	[illegible]	[illegible]

[redacted]

i	"	8.0/10	6.8/10	Low

At the May 25, 2012 Graduate Coordinator meeting, the following objectives, outcomes, and assessment methods were adopted for all the graduate programs in the College of Engineering. Data will be collected annually and included in our next program review.



iv. **The design of an engineering system to meet desired needs** - Assessment: Average scores from

[redacted]

Year	N		Year	N	Name of Exam	National Comparison±
2			2			

[redacted]

Year		Year	N	Name of Exam	Program Result	National Comparison±
2		2				
	22 3.27/5					

teach courses with a design component to report score of a design problem. Each program needs to ensure each student takes a course with a design component.

Year	N	Result (e.g., 4.5 on scale of 1-5, where 5 highest)	Year	N	Name of Exam	Program Result	National Comparison±

[redacted]

Student satisfaction for the undergraduate programs in the department is lower than we would like. As is this the first

[redacted]

Student Satisfaction (e.g., exit survey data on overall program satisfaction).* If available, report by year, for the last 3 years

Year	N	Result (e.g., 4.5 on scale of 1-5, where 5 highest)
3(12)	38	4.13/5

Learner Outcomes (e.g., capstone, licensing/certification exam pass-rates) by year, for the last three years

Year	N	Name of Exam	Program Result	National Comparison±
3				

[redacted]

Year	N	Result (e.g., 4.5 on scale of 1-5, where 5 highest)
2		
3(12)		4.1/5

Year	N	Name of Exam	Program Result	National Comparison±
2				
3				

[redacted]

Learner Outcomes (e.g., capstone, licensing/certification exam pass-rates) by year, for the last three years

Year	N	Result (e.g., 4.5 on scale of 1-5, where 5 highest)	Year	N	Name of	Program	National

longitudinal data that we need to determine if this is a trend. While the department plans to conduct more analysis to better understand these results, one clear problem is the high student-to-faculty ratio in the department. Fortunately, we have been given permission by the College of Engineering and the Provost's office to conduct five tenure track faculty searches and two engineering educator searches during the 2011-2012 academic year. This should serve to improve the quality of education that we will be able to offer the students in the department.

[redacted]

-Oral and written communication — Majors — Non-Majors
-Numerical literacy
-Critical thinking and problem solving
-Collaboration and teamwork
-Library research skills
-Diversity and globalization

Note: Not all programs evaluate every goal/skill. Programs may choose to use assessment rubrics for this purpose. Sample forms available at: http://www.aacu.org/value/rubrics/

currently not assessing library research skills directly. See Section 3b for an assessment of EECS undergraduate majors

Program Concern

The program criteria for computer engineering require that graduates have knowledge of discrete mathematics. Currently, there is minimal coverage of discrete mathematics, however, several course modifications are planned to increase discrete math topics in the curriculum. If the proposed

modifications are not implemented, there is a potential for the coverage of discrete mathematics to degrade.

Response

The ABET editor got the impression that the curriculum changes to include elements of Discrete Mathematics in our computer engineering program were only proposed and not implemented. This is incorrect.

15

14

12

10	3	0	2	6	0	32	0	5	5	0	0	0	0	0	8	0	2
17	3	1	4	4	0	44	0	5	4	0	1	0	0	0	9	0	0

* May not be collected every year

** Go to the U.S. Bureau of Labor Statistics Website: http://www.bls.gov/oco/ and view job outlook data and salary information (if the Program has information available from professional associations or alumni surveys, enter that data)

*** NRA=Non-resident alien; H=Hispanic; AI/AN=American Indian/ Alaskan Native; A=Asian; B=Black; NH/PI=Native Hawaiian/Pacific Islander; C=Caucasian;

Table 1 Data from the Bureau of Labor & Statistics

	Median Pay	Jobs in 2010	Job Outlook 2010-2020	Entry Level Education
Computer Programmers	$71,380	363,100	12% (About as fast as average)	Bachelor
Computer System Analysts	$77,740	544,400	22% (Faster than average)	Bachelor
[redacted]				
Security Analysts, Web Developers, and Computer			than average)	
Network Architects				
Network and [redacted]	$69,160	347,200	28% (Faster [redacted]	Bachelor
[redacted]				

[redacted]

22

17

19

(refer to instructions in the WSU Program Review document for more information on completing this section).

16 4 3 10 7 0 73 0 13 6 0 0 4 0 0 10 0 2

a Utilize the table below to provide data that demonstrates student need and demand for the

15 5 0 76 0 12 6 0 0 1 0 0 10 0 0 program.

Undergraduate – CS

Majors					Employment of Majors*					
Last 3* FYs	No. new Majors	No. Majors	1 Year Attri.	Total No. of Grads	Average Salary	Employ-ment	Employment in the field	Employment: Part-time	Employment: Full-time	No. Projected

* May not be collected every year

** Go to the U.S. Bureau of Labor Statistics Website: http://www.bls.gov/oco/ and view job outlook data and salary information (if the Program has information)

[redacted]

29

47

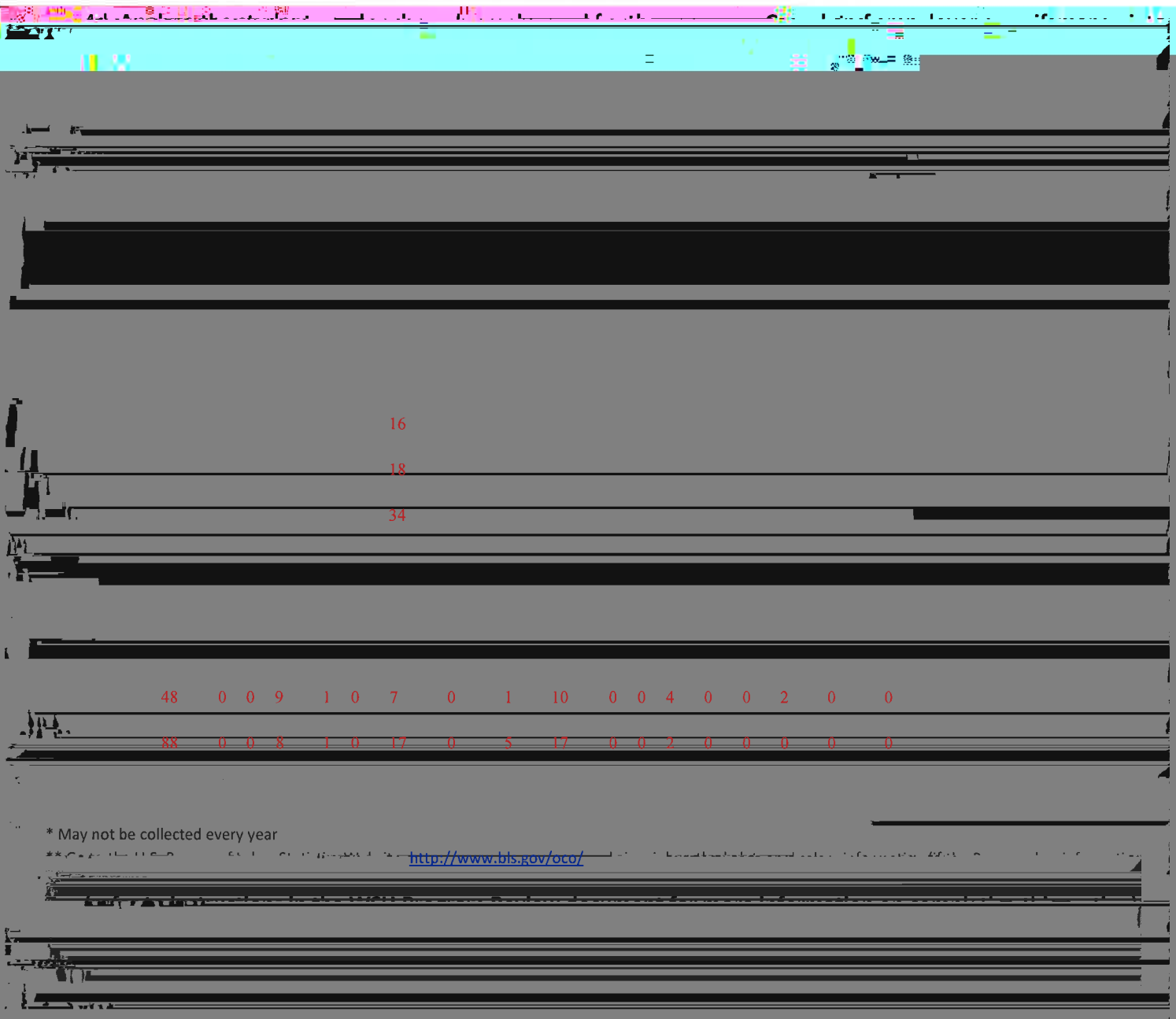
40

* May not be collected every year

** Go to the U.S. Bureau of Labor Statistics Website: http://www.bls.gov/oco/ and view job outlook data and salary information (if the Program has information available from professional associations or alumni surveys, enter that data)

*** NRA=Non-resident alien; H=Hispanic; AI/AN=American Indian/ Alaskan Native; A=Asian; B=Black; NH/PI=Native Hawaiian/Pacific Islander; C=Caucasian; MR=Multirace; UNK=Unknown

KBOR data minima for UG programs: Majors=25; Graduates=10; Faculty=3; KBOR data minima for master programs: Majors=20; Graduates=5; Faculty=3



* May not be collected every year

http://www.bls.gov/oco/

[redacted]

90

61

114

175 0 0 10 4 0 14 0 5 83 1 0 4 0 0 0 0 2

194 0 0 8 4 0 13 0 2 56 0 0 5 0 0 0 0 0

[redacted]

4f. Analyze the student need and employer demand for the program. Complete for each program if a new major.

Employment of Majors*

Last 3 FYs → Su, Fa and Sp	No. new applications or declared majors	No. who enter or are admitted in the major	No. enrolled one year later	1 Year Attrition %	Total no. of grads	Average Salary	Employment % In state	Employment % in the field	Employment % related to the field	Employment % outside the field	No. pursuing graduate or professional education	Projected growth from BLS**
Year 1→					4							Current year only
Year 2→					2							
Year 3→					2							

	Race/Ethnicity by Major***									Race/Ethnicity by Graduate***								
	NRA	H	AI/AN	A	B	NH/PI	C	MR	UNK	NRA	H	AI/AN	A	B	NH/PI	C	MR	UNK
Year 1→	20	0	0	2	0	0	6	0	0	4	0	0	0	0	0	0	0	0
Year 2→	26	0	0	3	1	0	7	0	0	1	0	0	1	0	0		0	0
Year 3→	28	0	0	3	0	0	8	0	1	2	0	0	0	0	0	0	0	0

* May not be collected every year

** Go to the U.S. Bureau of Labor Statistics Website: http://www.bls.gov/oco/ and view job outlook data and salary information (if the Program has information available from professional associations or alumni surveys, enter that data)

*** NRA - Non-resident alien; H - Hispanic; AI/AN - American Indian/Alaskan Native; A - Asian; B - Black; NH/PI - Native Hawaiian/Pacific Islander; C - Caucasian; MR - Multiple Race; UNK - Unknown

(refer to instructions in the WSU Program Review document for more information on completing this section).

a. Utilize the table below to provide data that demonstrates student need and demand for the program.

Graduate – PhD

Majors

5. Analyze the cost of the program and service the Program provides to the discipline, other programs at the

	36.6	46.5	50.7
	28.4	39.1	35.8
	35.0	14.4	13.5

Program Review document for more information on completing this section).

	Percentage of SCH Taken By (last 3 years)		
Fall Semester	Year 1 (2008)	Year 2 (2009)	Year 3 (2010)
UG Majors			
Gr Majors			

Table 2 – FY2011 comparison of degrees awarded per faculty

		WSU	KSU	KU
BS Degrees Awarded:	EE	40	34	25
	CE	12	19	7
	CS	19	22	31
	IS	NA	9	NA
Total BS Degrees Awarded		71	83	63
MS Degrees Awarded:	EE	105	20	14
	CE	NA	NA	10
	CS	26	21	13
	CN	19	NA	NA
	SE	NA	8	NA

NA
NA
NA

support the goal, and the outcome. Complete for each program if appropriate (refer to instructions in the WSU Program Review document for more information on completing this section).

(For Last 3 FYs)	Goal (s)	Assessment Data Analyzed	Outcome

College: Engineering

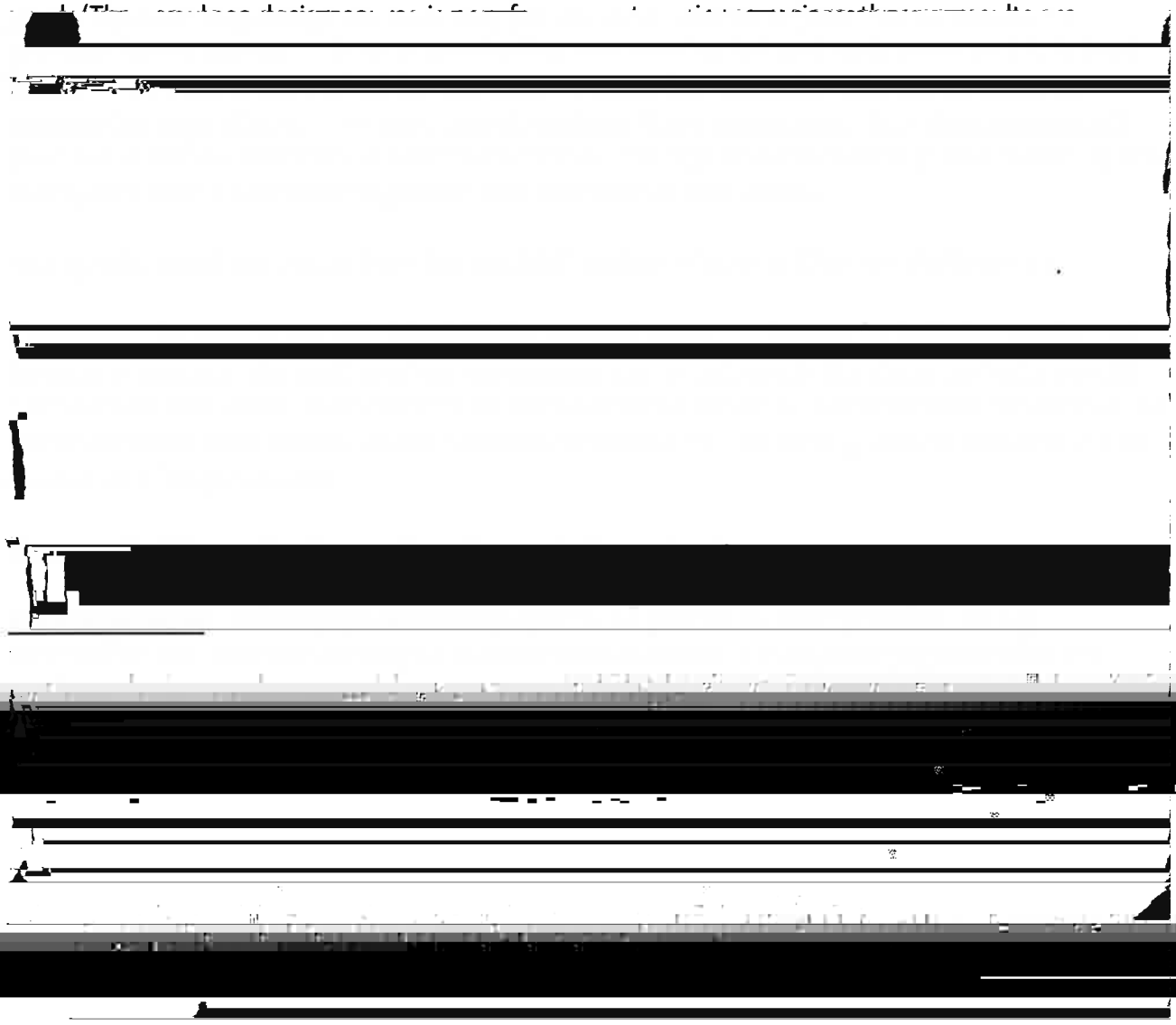
[redacted]

Bachelor, Master and Doctorate (PhD) in Electrical Engineering
Bachelor and Master in Computer Science
[redacted]

Bachelor in Computer Engineering

[redacted]

employer surveys, exit interview by the department chair, and the survey of students following the year-long capstone course. Detailed results of the surveys are listed for each program separately with means provided and summary analyses of the findings ranging from low to very



provided for the course.) Student satisfaction data are also included with scores at 3.6, 3.3 and 3.6 with a maximum score of 5.0 for computer engineering, computer science and electrical