

New Jersey Institute of Technology  
Newark College of Engineering

MS AND PhD IN ELECTRICAL AND COMPUTER ENGINEERING  
Program Review  
Last Update: Nov. 23, 2005  
MISSION STATEMENTS

**DOCTOR OF PHILOSOPHY IN ELECTRICAL AND COMPUTER ENGINEERING**

The primary mission of the Ph.D. programs in Electrical and Computer Engineering is to produce graduates that possess advanced theoretical, practical, and professional knowledge to enhance the theory and practice of electrical and computer engineering and are qualified for entry level academic positions.

**PhD Program Goals<sup>1</sup>**

- (1) Graduate at least 15 PhD students a year for the next five years
- (2) All PhD graduates will complete their requirements in 4 years or less

**PhD Program Objectives**

- (1) Each PhD graduate will publish at least 2 research articles in the refereed journals
- (2) At least half of the PhD students will be involved in externally sponsored research
- (3) At least 20 percent of the graduates will go into academia

**MASTER OF SCIENCE IN ELECTRICAL ENGINEERING**

The mission of the Master of Science program in Electrical Engineering is to prepare highly demanded professionals and life-long learners through state-of-the-art interactive education, industry-university partnerships, cutting-edge research with real-world experience and innovation in several technical areas such as Communications, Signal Processing and Microwave; Computer Networking; Computer Architecture and Systems; Solid State, VLSI and Electrooptics Systems; and Intelligent Systems.

**MASTER OF SCIENCE IN COMPUTER ENGINEERING**

The mission of the Master of Science in Computer Engineering program at the New Jersey Institute of Technology is to create a challenging research and educational environment to train and graduate engineers with the skills needed to meet the increasingly complex demands of the 21st century workforce and create solutions to future problems that require integrated, multidisciplinary knowledge.

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<sup>1</sup> Enrollment of Ph.D. students is highly correlated with funding. As the cost for supporting a Ph.D. student is increasing, the enrollment may not be sustained without matching as supporting post-doctoral students is becoming a more attractive option.

### **MASTER OF SCIENCE IN TELECOMMUNICATIONS**

The MS in Telecommunications program will graduate successful engineers for banking, reservation and office information systems, corporate networks, homeland security and the Internet with the skills in high speed networks, multimedia communications, information assurance, and wireless network access.

### **MASTER OF SCIENCE IN INTERNET ENGINEERING**

The MS in Internet Engineering will produce highly demanded engineers with skills in internetworking analysis, design and applications.

#### **Masters' Programs' Goal:**

Each year maintain steady increase in ECE enrollment; in 2010 the total enrollment in the program should be at least 5 percent higher than in 2001, mostly due to the enrollment in the Internet Engineering program.

#### **Masters' Programs' Objectives**

- (1) The average Master's student will spend three semesters to complete the degree requirements.
- (2) At least seven percent of the MS students will apply for PhD program, of those five percent will apply for NJIT PhD program.
- (3) At least 10 percent of the MS students will be involved in practical research conducted at NJIT.
- (4) Every MS graduate will be employed according to her/his major within 6 months.

#### **Program longitudinal data**

##### **Enrollment Trend:**

Except for the Spring 2004, the enrollments in all ECE programs have been relatively steady, averaging 363 students per semester. Total number of individual students in ECE MS program from Fall 2001 to Fall 2004 was 831.

Table 1A: Student Quality: GPA for Graduate Admissions for Applicants, Admitted and Enrolled Students (COE+EE+IENG+TELC)<sup>2</sup>

Degree Type	Applicants						Admitted						Enrolled					
	2002F		2003F		2004F		2002F		2003F		2004F		2002F		2003F		2004F	
	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N
MS	3.17	107	3.24	92	3.18	87	3.20	95	3.26	72	3.23	63	3.18	62	3.12	28	3.19	38
PHD	3.63	24	3.67	33	3.77	26	3.72	17	3.69	48	3.74	20	3.68	6	3.67	11	3.91	6
<b>Total</b>	<b>3.25</b>	<b>131</b>	<b>3.36</b>	<b>125</b>	<b>3.32</b>	<b>113</b>	<b>3.28</b>	<b>112</b>	<b>3.35</b>	<b>90</b>	<b>3.36</b>	<b>83</b>	<b>3.23</b>	<b>68</b>	<b>3.27</b>	<b>39</b>	<b>3.29</b>	<b>44</b>

<sup>2</sup> GPA for PhD applicants and enrollees was calculated only from the students who hold Master's degree. Note that applicants whose home institutions do not use the GPA system are not included in this table.

Table 1B: Student Quality: GPA for Graduate Admissions for Applicants, Admitted and Enrolled EE Students<sup>3</sup>

Degree Type	Applicants						Admitted						Enrolled					
	2002F		2003F		2004F		2002F		2003F		2004F		2002F		2003F		2004F	
	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N
MS	3.13	43	3.23	49	3.19	46	3.16	41	3.23	42	3.25	36	3.10	27	3.04	18	3.23	21
PHD	3.59	18	3.68	21	3.82	18	3.71	12	3.77	9	3.82	13	3.61	4	3.74	5	3.91	5
<b>Total</b>	<b>3.26</b>	<b>61</b>	<b>3.37</b>	<b>70</b>	<b>3.37</b>	<b>64</b>	<b>3.27</b>	<b>53</b>	<b>3.33</b>	<b>51</b>	<b>3.40</b>	<b>49</b>	<b>3.35</b>	<b>31</b>	<b>3.19</b>	<b>23</b>	<b>3.36</b>	<b>26</b>

Table 1C: Student Quality: GPA for Graduate Admissions for Applicants, Admitted and Enrolled COE Students<sup>4</sup>

Degree Type	Applicants						Admitted						Enrolled					
	2002F		2003F		2004F		2002F		2003F		2004F		2002F		2003F		2004F	
	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N
MS	3.19	30	3.26	24	3.18	24	3.28	21	3.31	15	3.19	18	3.29	15	3.24	6	3.14	12
PHD	3.76	6	3.65	12	3.64	8	3.76	5	3.61	9	3.59	7	3.83	2	3.60	6	3.93	1
<b>Total</b>	<b>3.29</b>	<b>36</b>	<b>3.39</b>	<b>36</b>	<b>3.30</b>	<b>32</b>	<b>3.38</b>	<b>26</b>	<b>3.42</b>	<b>24</b>	<b>3.30</b>	<b>25</b>	<b>3.56</b>	<b>17</b>	<b>3.42</b>	<b>12</b>	<b>3.20</b>	<b>13</b>

Table 1D: Student Quality: GPA for Graduate Admissions for Applicants, Admitted and Enrolled IE Students<sup>5</sup>

Degree Type	Applicants						Admitted						Enrolled					
	2002F		2003F		2004F		2002F		2003F		2004F		2002F		2003F		2004F	
	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N
MS	3.09	13	3.41	9	2.83	5	3.18	9	3.45	8	2.84	4	3.31	3	3.42	5		
<b>Total</b>	<b>3.16</b>	<b>15</b>	<b>3.45</b>	<b>10</b>	<b>3.36</b>	<b>14</b>	<b>3.27</b>	<b>11</b>	<b>3.45</b>	<b>8</b>	<b>3.35</b>	<b>10</b>	<b>3.31</b>	<b>3</b>	<b>3.42</b>	<b>5</b>	<b>4.00</b>	<b>1</b>

Table 1E: Student Quality: GPA for Graduate Admissions for Applicants, Admitted and Enrolled TELC Students<sup>6</sup>

Degree Type	Applicants						Admitted						Enrolled					
	2002F		2003F		2004F		2002F		2003F		2004F		2002F		2003F		2004F	
	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N	GPA	N
MS	3.22	18	3.32	14	3.14	11	3.21	17	3.38	11	3.30	6	3.17	10	3.44	3	3.24	3
<b>Total</b>	<b>3.22</b>	<b>18</b>	<b>3.32</b>	<b>14</b>	<b>3.14</b>	<b>11</b>	<b>3.21</b>	<b>17</b>	<b>3.38</b>	<b>11</b>	<b>3.30</b>	<b>6</b>	<b>3.17</b>	<b>10</b>	<b>3.44</b>	<b>3</b>	<b>3.24</b>	<b>3</b>

<sup>3</sup> GPA for PhD applicants and enrollees was calculated only from the students who hold Master's degree. Note that applicants whose home institutions do not use the GPA system are not included in this table.

<sup>4</sup> GPA for PhD applicants and enrollees was calculated only from the students who hold Master's degree. Note that applicants whose home institutions do not use the GPA system are not included in this table.

<sup>5</sup> Note that applicants whose home institutions do not use the GPA system are not included in this table.

<sup>6</sup> Note that applicants whose home institutions do not use the GPA system are not included in this table.

Table 1F: [APPLICANTS/ADMITTED/ENROLLED by Year](#)

Degree Type	Applicants			Admitted			Enrolled		
	2002F	2003F	2004F	2002F	2003F	2004F	2002F	2003F	2004F
MS	1,061	1,050	679	696	439	446	135	92	137
PHD	237	219	147	132	39	109	8	12	18
<b>Total</b>	<b>1,298</b>	<b>1,269</b>	<b>826</b>	<b>828</b>	<b>478</b>	<b>555</b>	<b>143</b>	<b>104</b>	<b>155</b>

Table 1: ECE program enrollment by Degree Type by Year.

Degree Type	Program	F2001	F2002	F2003	F2004
PhD	COE	10	18	27	25
	EE	82	84	75	76
	<b>Total</b>	<b>92</b>	<b>102</b>	<b>102</b>	<b>101</b>
MS	COE	96	86	51	66
	EE	157	178	190	197
	IENG	3	19	8	9
	TELC	62	73	52	42
	<b>Total</b>	<b>318</b>	<b>356</b>	<b>301</b>	<b>314</b>
<b>Total</b>		<b>410</b>	<b>458</b>	<b>403</b>	<b>415</b>

Table 1A: Student Enrollment by Semester by Attendance Status by Semester

Term	FT	PT	Total
<b>F2002</b>	288	169	457
<b>S2003</b>	266	152	418
<b>F2003</b>	251	152	403
<b>S2004</b>	224	117	341
<b>F2004</b>	232	183	415
<b>S2005</b>	267	125	392
<b>Average</b>	<b>255</b>	<b>150</b>	<b>404</b>

**Distribution by race and by gender.**

Around 20 percent of students in ECE MS programs and 18 percent in ECE PhD programs are females. Of all the females, 83 percent are Asian students; four percent are Black and one percent Hispanic. Sixty percent ECE MS male students are Asian, seven percent Black and four percent Hispanic (Tables 2-7).

Table 2: ECE Enrollment Distribution by Student Gender by Year By Degree Type

Degree Type	Gender	F2001		F2002		F2003		F2004	
		Count	Pct.	Count	Pct.	Count	Pct.	Count	Pct.
PhD	Male	77	84%	87	85%	84	82%	79	78%
	Female	15	16%	15	15%	18	18%	22	22%
	<b>Total</b>	<b>92</b>	<b>100%</b>	<b>102</b>	<b>100%</b>	<b>102</b>	<b>100%</b>	<b>101</b>	<b>100%</b>
MS	Male	268	84%	291	82%	228	76%	243	77%
	Female	50	16%	65	18%	73	24%	71	23%
	<b>Total</b>	<b>318</b>	<b>100%</b>	<b>356</b>	<b>100%</b>	<b>301</b>	<b>100%</b>	<b>314</b>	<b>100%</b>

Table 3: ECE Enrollment by Race by Year

Degree Type	Race	F2001	F2002	F2003	F2004
PhD	Black		1	1	
	Native				
	Asian	2	4	6	7
	Hispanic				
	White	3	4	1	3
	Unknown	8	8	4	4
	Foreign	79	85	90	87
	<b>Total</b>	<b>92</b>	<b>102</b>	<b>102</b>	<b>101</b>
MS	Black	29	20	20	15
	Native				
	Asian	49	61	52	59
	Hispanic	18	18	19	14
	White	53	38	40	33
	Unknown	17	20	9	13
	Foreign	152	199	161	180
	<b>Total</b>	<b>318</b>	<b>356</b>	<b>301</b>	<b>314</b>

Table 4: MS Total Enrollment by Gender and Race in F2002~F2004

Race	F2002		F2003		F2004		02-04 Average			
	Female	Male	Female	Male	Female	Male	Female	%	Male	%
Black	2	18	2	18	2	13	2	3%	16	6%
Native							0	0%	0	0%
Asian	15	46	11	41	10	49	12	17%	45	18%
Hispanic	1	17	1	18	2	12	1	2%	16	6%
White		38	1	39	2	31	1	1%	36	14%
Unknown	5	15	4	5	2	11	4	5%	10	4%
Foreign	42	157	54	107	53	127	50	71%	130	51%
<b>Total</b>	<b>65</b>	<b>291</b>	<b>73</b>	<b>228</b>	<b>71</b>	<b>243</b>	<b>70</b>	<b>100%</b>	<b>254</b>	<b>100%</b>

Table 5: Number of students in B.S./M.S. program

<b>Semester</b>	<b>Full-time</b>	<b>Part-time</b>	<b>Total</b>	<b>Admitted but not enrolled</b>
Fall 2003	38	16	54	9
Fall 2004	20	14	34	4

ECE Department has 27 students supported through NJIT TA program, so about 50 Ph.D. students are supported through research grants and contracts including match. .

Table 6: Student Retained for Advanced Degree at ECE Department in F2001~F2004

<b>Degree Change</b>	<b>Major Change</b>	<b>F2001-F2002</b>	<b>F2002-F2003</b>	<b>F2003-F2004</b>
<b>BS to MS</b>	COE to COE	8	4	4
	COE to EE	0	1	2
	COE to TELC	4	1	0
	EE to EE	7	4	14
	<b>Total</b>	<b>19</b>	<b>10</b>	<b>20</b>
<b>BS to PhD</b>	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>MS to PhD</b>	COE to COE	2	4	0
	COE to EE	1	1	0
	EE to EE	3	3	7
	TELC to COE	0	0	1
	TELC to EE	0	1	0
	<b>Total</b>	<b>6</b>	<b>9</b>	<b>8</b>

**Average GRE scores, GPA, passing rates and ratio of the attempted and earned credit hours.**

GRE scores

ECE students have higher average analytical and Math GRE scores than the rest of NJIT. Their verbal GRE scores are lower than NJIT average.

Table 7: Student GRE Scores by Degree Type

Degree Type	Program	GRE Verbal	GRE Quantitative	GRE Analytical
PhD	COE	488	753	656
	EE	499	755	681
	<b>Total</b>	<b>496</b>	<b>757</b>	<b>679</b>
MS	COE	461	744	625
	EE	428	726	625
	IENG	418	733	703
	TELC	441	727	580
	<b>Total</b>	<b>436</b>	<b>729</b>	<b>617</b>

Table 8: Student Average GPA by Degree Type

Degree Type	Program	F2002	F2003	F2004	Average
PhD	COE	3.80	3.79	3.36	3.65
	EE	3.70	3.78	3.56	3.68
	<b>Total</b>	<b>3.73</b>	<b>3.78</b>	<b>3.50</b>	<b>3.67</b>
MS	COE	2.95	3.30	3.30	3.18
	EE	3.14	3.14	3.08	3.12
	IENG	3.48	2.70	3.35	3.18
	TELC	3.24	3.35	3.36	3.32
	<b>Total</b>	<b>3.11</b>	<b>3.20</b>	<b>3.18</b>	<b>3.16</b>

### Passing Rates

For the letter grade A to F courses: 89%

For the letter grade S, U and P courses: 95%

Combined: 90%

Ratio of Attempted to Earned Credits: 0.91 (based on course credit hours)

### **PhD and MS degrees awarded by ECE department in 2001-2004.**

The number of awarded PhD degrees which decreased in 2002-2003 as compared to 2001, is mostly restored by 2004. The number of MS degrees after 50 percent increase in 2003, remains steady. The decline in COE enrollment and awarded degrees was mostly caused by economic reasons (nationwide drop in demand for computer scientists).

Table 9: Total Number of Graduate Degrees Awarded by Degree Type by Year

Degree Type	Program	FY 2001	FY 2002	FY 2003	FY 2004
PhD	COE				5
	EE	19	7	11	17
	<b>Total</b>	<b>19</b>	<b>7</b>	<b>11</b>	<b>22</b>
MS	COE	42	25	47	28
	EE	33	56	78	91
	IENG			3	5
	TELC	9	15	22	25
	<b>Total</b>	<b>84</b>	<b>96</b>	<b>150</b>	<b>149</b>
<b>Total</b>		<b>103</b>	<b>103</b>	<b>161</b>	<b>171</b>

Table 10: Degrees Awarded by Gender by Degree Type by Year

Degree Type	Gender	FY 2001		FY 2002		FY 2003		FY 2004	
		Count	Pct.	Count	Pct.	Count	Pct.	Count	Pct.
PhD	Male	12	63%	6	86%	10	91%	18	82%
	Female	7	37%	1	14%	1	9%	4	18%
	<b>Total</b>	<b>19</b>	<b>100%</b>	<b>7</b>	<b>100%</b>	<b>11</b>	<b>100%</b>	<b>22</b>	<b>100%</b>
MS	Male	69	82%	76	79%	129	86%	106	71%
	Female	15	18%	20	21%	21	14%	43	29%
	<b>Total</b>	<b>84</b>	<b>100%</b>	<b>96</b>	<b>100%</b>	<b>150</b>	<b>100%</b>	<b>149</b>	<b>100%</b>

Table 11: Degrees Awarded from 2001 to 2004 by Race by Degree Type by Year

Degree Type	Race	FY 2001	FY 2002	FY 2003	FY 2004
PhD	Black				
	Native				
	Asian	1			
	Hispanic		1		
	White				
	Unknown		1	2	1
	Foreign	18	5	9	21
	<b>Total</b>	<b>19</b>	<b>7</b>	<b>11</b>	<b>22</b>
MS	Black	1	6	11	6
	Native				
	Asian	11	15	21	25
	Hispanic	1	4	5	4
	White	5	17	13	10
	Unknown	8	4	9	5
	Foreign	58	50	91	99
	<b>Total</b>	<b>84</b>	<b>96</b>	<b>150</b>	<b>149</b>



### Time to degree

It takes little more than 4.5 years for the ECE PhD students and little more than two years for the MS students to complete the degree requirements. It usually takes EE students less time to obtain the degree than for the rest of the department's programs (Table 12).

Table 12: Time to Degree in ECE by Degree Type by Year

<b>Degree Type</b>	<b>Program</b>	<b>FY 2001</b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>
<b>PhD</b>	COE				4.40
	EE	3.89	5.17	5.27	4.65
	<b>Total</b>	<b>3.89</b>	<b>5.17</b>	<b>5.27</b>	<b>4.59</b>
<b>MS</b>	COE	1.90	2.57	1.85	2.58
	EE	2.10	2.28	2.14	2.08
	IENG			2.67	2.20
	TELC	2.00	2.47	2.05	2.00
	<b>Total</b>	<b>1.99</b>	<b>2.38</b>	<b>2.04</b>	<b>2.16</b>

Table 13: Student Graduation Rates by Program by Degree Type

<b>Degree Type</b>	<b>Program</b>	<b>New Enrollees *</b>	<b>Graduated **</b>	<b>Grad Rate</b>
<b>PhD</b>	EE	10	6	60%
<b>MS</b>	COE	28	23	82%
	EE	54	41	76%
	IENG	3	1	33%
	TELC	27	18	67%
	<b>Total</b>	112	83	74%

\* F1996 for PhD and F2001 for MS

\*\* Graduated in 8 years from PhD and in 3 years from the MS program

Table 14: Student Retention Rates

<b>Degree Type</b>	<b>Program</b>	<b>New Enrollees F03</b>	<b>Retained in F04</b>	<b>Grad Rate</b>
<b>PhD</b>	COE	27	22	81%
	EE	75	52	69%
	<b>Total</b>	102	74	73%
<b>MS</b>	COE	51	24	47%
	EE	190	86	45%
	IENG	8	3	38%
	TELC	52	20	38%
	<b>Total</b>	301	133	44%

**ECE faculty**

Five percent of ECE faculty are women, none of them are minority.

Table 15: Faculty rank distribution in the ECE department

Distinguished Professor	3
Professor	17
Associate Professor	10
Assistant Professor	6
Special Lecturer	2
Research Professor	1
Visiting Professor	0
Professional Staff	1
<b>Total</b>	<b>40</b>

**Faculty Tenure Status**

Tenured 30

On Track 6

Table 16: Faculty Diversity

	Male	Female
Asian	8	1
Black	0	0
Hispanic	0	0
White	20	1
Unknown	7	0
Non-US	3	0
Total	38	2

**Faculty Promotions in 2001-2004**

From Assistant Professor to Associate Professor – 3.

From Associate Professor to Professor – 3.

**Faculty Research in 2004**

Seventy three percent of the faculty are involved in externally funded research, which is one of the highest indicators at NJIT.

Number of faculty In the department	Number of grantees	Total research grant amount	Average amount per grantee	Average amount per each faculty
36	29	\$5,698,368	\$196,495	\$158,288

### **Student Employments after graduation**

Lucent Technologies, in the good time, used to hire most of our graduates. Recent graduates have been employed by Siemens Research Inc., Panasonic, VPI Systems, Interdigital, Johnson & Johnson, ....

Vladimir, could you please help gather more information on this aspect?

### **Interdisciplinary Activities:**

- MS Telecommunications was developed with Computer Science Department. Students in the program take approximately the same number of CIS and ECE courses.
- MS Internet Engineering and MS Computer Engineering Programs require courses from Computer Science.
- Some ECE courses are cross-listed with Computer Science and Material Science.
- Common courses and student supervision with Material Science, Physics, Chemistry, Mechanical Engineering and Biomedical Engineering for Solid State, VLSI, and Electro-Optics Focus area of M.S. EE, M.S. CoE, and Ph.D. EE programs with collaborative research activities in nanotechnology and microelectronics areas.
- Sharing CIS courses in M.S. CoE and Ph.D. CoE programs in focus areas: Computer Networking, Computer Architecture and Digital Systems, and Intelligent Systems:
- Faculty joint appointments with CS.

### **Industrial Partnership:**

The ECE Department has been very successful in establishing industry-university partnerships in UG and Graduate academic and research programs. The collaborative synergy and direct contact with industry provide students a great opportunity to work on real-world data and problems of interest to industries. Various research centers in the Department including Center for Communications and Signal Processing Research, Center for Electronic Imaging, and Center for Wireless networking and Internet Security have their own Industry Advisory Boards to advise and mentor the research activities involving graduate students and faculty. The ECE Department Industry Advisory Board actively participates in advising and supporting Department initiatives to strengthen academic and research programs. There are ongoing partnerships and collaborative synergies with leading industries including IBM, Spirent Comm, Telcordia, Lucent-Bell Labs, Agilent Technologies, Mitre, Panasonic, Mitsubishi, BAE Systems, L-3 Communications, Inter-Digital, Exxon-Mobile and ASCO Power Technologies.

## Recommendations

1. Continue to build and develop the faculty. Develop strategies to make the academic instruction attractive to women and minorities. Increase the number of minority and female professors by at least 5 percent by 2010.
2. Continue to improve the quality and maintain the size of the graduate student cohort, against the national downward trend, through more vigorous and effective recruiting. By 2010, overall graduate enrollment will maintain at the current level with 10% deviation depending on the market outlook of the respective fields; special attention should be paid to the increase in enrollment to the Internet Engineering program by placing ads to targeted audience such as the IEEE.
3. Continue and expand interaction with companies that can provide more real-world internship for the ECE graduate students.
4. Aggressively pursue research opportunities and external funding. By 2010, increase the number of grantees to 80 percent, and the average amount of research dollars per each faculty to \$130,000.

**Table 17: Enrollment projection for the next five years<sup>7</sup>**

Degree Type	F2001	F2002	F2003	F2004	Projected Annual Enrollment for the next five years
Ph.D.	92	102	102	101	90±10%
MS	318	356	301	314	300±10%

**Table 18: Enrollment projection of MS Internet Engineering for the next five years**

Degree Type	F2001	F2002	F2003	F2004	Projected Annual Enrollment for the next five years
MS INENG	3	19	8	9	15±10%

<sup>7</sup> Enrollment of Ph.D. students is highly correlated with funding. As the cost for supporting a Ph.D. student is increasing, the enrollment may not be sustained without matching as supporting post-doctoral students is becoming a more attractive option. This projection is optimistically conservative.

## **Appendices**

1. Student Awards and Honors
2. Awards and Honors for the Faculty
3. Publications
  - Books and Book Chapters
  - Refereed Journal Articles