

PROGRAM REVIEW

February 7, 2011

UNIT Physics DEPARTMENT Physics/Eng Physics COLLEGE College of Science & Math

GRADUATE X UNDERGRADUATE X

UNIT CONTACT PERSON _____

CHAIRPERSON SIGNATURE _____

DEAN SIGNATURE _____

EXECUTIVE SUMMARY UNDERGRADUATE

We have had sustained growth since 2001 when the Engineering Physics (EP) program was accredited by the Engineering Accreditation Commission (EAC) of ABET (see www.abet.org). We attract some of the best-prepared students to Southeast. Even if they change majors, most remain to contribute to the intellectual climate on campus. Our majors obtain competitive summer internships and perform well after graduation by entering prestigious graduate programs or by obtaining high-paying jobs in their field. The cost-revenue trends for our department are such that a profit was realized in AY09. Program growth and faculty profile changes over the next few years should increase that profit.

We have grown an average of 4 majors per year since F01 (see http://cstl-csm.semo.edu/probst/assessment/Physics_Enrollment_Trends.htm). These graphs show that the EP program has grown from 9 majors in F01 to 52 in F09 while our other programs have held steady. As of Sp10, we have 53 EP, 18 Phys, 2 Phys Ed, and 34 Pre-engr majors for a total of 107. Since 3 students graduate in May, 20 freshmen have registered in our BS programs (record high) for F10, and 5 First STEPS remain, we expect continued growth. Our average of 6 graduates puts us in the top 25% of all physics departments offering only BS degrees. 70% of such institutions graduate fewer than 6 students per year (see <http://www.aip.org/statistics/trends/reports/ugprogramsizedata.pdf>, Table 2).

The existence of our programs attracts highly qualified students to Southeast. This clearly supports Southeast's Strategic Priority One. The average ACT score for our freshmen typically exceeds 25 compared to Southeast's average of about 22.5. As of the May 7th First STEP, we have registered 14 EP, 5 Phys, 1 Phys Ed, and 7 Pre-engr students. Their average ACT score is 28.5. Over half of our freshmen receive a merit scholarship. Although our yr1-yr2 retention rate is lower than the University average, most of the students we lose remain at Southeast and contribute to the overall intellectual climate on campus.

Our graduates enter their graduate program of choice or obtain jobs in their field. Please see <http://www6.semo.edu/pep/deptinfo/grads/epgrads.asp> and <http://www6.semo.edu/pep/deptinfo/grads/phygrads.asp>).

In AY09 our revenue exceeded costs. While our cost per student credit hour (SCH) is higher than Southeast's average, it is at the average in the Delaware data. Our SCH ratio is 92% of target. Because we expect continued growth along with changes in our faculty profile over the next few years, we believe that the profit margin will grow.

EXECUTIVE SUMMARY GRADUATE

Program Review Final University Committee Chair Comments

I. SIZE, SCOPE, AND PRODUCTIVITY OF THE PROGRAM

Briefly describe the depth and breadth of your unit's offerings (Undergraduate).

We offer degrees in Engineering Physics (EP), Physics, and Physics Education. The Engineering Physics program is unique in Missouri by being ABET/EAC accredited. We also offer a Pre-engineering program where students transfer to an engineering school after two years.

The EP program is the only engineering program at Southeast. It is accredited by the EAC of ABET (see www.abet.org). It has three options: Computer Applications, Electrical Applications, and Mechanical Applications. Seniors take the Fundamentals of Engineering (FE) Exam, which only students in ABET/EAC accredited engineering programs may take. After four years of qualifying experience, they may take the Principles and Practice (PE) Exam to become a Registered Professional Engineer.

The Physics program is a traditional one. The Physics Education program has two options: Physics and Unified Science.

Briefly describe the depth and breadth of your unit's offerings (Graduate).

SIZE and SCOPE DATA UNDERGRADUATE

Measure	Minimum	Aspirational Target	Year				
			AY07	AY08	AY09	4	5
Majors UNIT Total	40	150	107	95	111		
Engineering Physics: Appl Phys [BS/BS/EPAP]			22	29	13		
Engineering Physics: Comp Appl [BS/BS/EPCP]			12	9	9		
Engineering Physics: Elect App [BS/BS/EPEA]			0	0	12		
Engineering Physics: Mech Appl [BS/BS/EPMA]			0	0	18		
Geoscience [BS/BS/GEOI]			1	0	0		
Physics [BS/BS/PHYS]			18	15	17		
Physics Education [BSE-HS/BSEHS/PHED]			1	0	1		
Physics Education [PRE EDUC/BSE/PHED]			3	3	1		
Physics Education: Unified Sci [BSE-HS/BSEHS/PUSE]			1	1	1		
Physics Education: Unified Sci [PRE EDUC/BSE/PUSE]			1	3	0		
Pre-Engineering [PREPROF/PPROF/PREG]			48	35	39		
Minors UNIT Total			85	87	89		
Engineering Physics Minor			1	1	1		
Geoscience (Minor)			4	2	0		
Geoscience Minor			0	0	1		
Physics Minor			8	7	6		
Science Concentration-21 hour			38	45	48		
Science Concentration-30 hour			4	2	1		

Science Specialization			30	30	32		
Completers UNIT Total	1	10	7	4	7		
Engineering Physics: Appl Phys [BS/BS/EPAP]			0	1	0		
Engineering Physics: Comp Appl [BS/BS/EPCP]			2	0	1		
Geoscience [BS/BS/GEOI]			1	0	0		
Physics [BS/BS/PHYS]			4	3	5		
Physics Education: Unified Sci [BSE-HS/BSEHS/PUSE]			0	0	1		
% Completion Rate 6 YR	10	24	53	40	29		
Unit - % Retention FS YR 1 -- F YR 2	40	40	42	48	58		
Unit - % Retention FS YR 3 -- F YR 4	15	37	50	60	55		
UNIV - % Retention FS YR 1 -- F YR 2			58	66	79		
UNIV - % Retention FS YR 3 -- F YR 4			67	70	73		
SCH On Campus FS			3,255	3,339	3,463		
SCH Off Campus FS			173	246	218		
SCH Total FS			3,428	3,585	3,681		
SCH Summer On and Off Campus			272	222	216		
SCHR (SCH ratios) On Campus Fall/Spring	162	255	216	202	223		
SCHR (SCH ratios) Off Campus Fall/Spring	162	209	133	615	251		
SCHR (SCH ratios) Total	0	232	209	212	224		
Delaware SCHR			230	221			
% of Sections with Enrollment < 10 (GR < 8)	10	5	25	26	34		

Area of Concern for Size and Scope Data (Undergraduate)

A possible area of concern in data seems to be the 6-Year % Completion Rate. These data show that the trend from AY07 to AY09 is negative moving from 53% to 40 % to 29%. Several factors influence this number.

Since about a third of our majors are pre-engineers who do not graduate from Southeast, we expect the completion rate to be low compared to other departments at Southeast, perhaps 65% at most. Since our junior-senior retention rate is 55%, the graduation rate of 29% seems reasonable.

Most of the students in our BS majors complete their degrees in 5 or fewer years. Many of those who stay the 5th year are completing a second major in an allied discipline such as Applied Mathematics. As we attract more freshmen initially, a larger fraction of them are less certain of their majors or lack the motivation required to succeed in engineering or physics. Some decide to change their major but most remain at Southeast. The yr1-yr2 retention data show that about 67% have remained at Southeast over the last three years with an upward trend. Another factor that influences our retention and completion rates is that our programs are very structured, and many courses are offered only annually or biannually. Students may be classified as sophomores or juniors by the University, while not being that far along in their majors. However, the trend for the yr1-yr2 retention rate in the department has improved from 42% to 48% to 58% over the last three years, and the yr3-yr4 retention rate has fluctuated from 50% to 60% to 55%. The freshman-sophomore retention data is actually rather encouraging. We hope to see improvement in the junior-senior retention data as well, so we would expect the 6-year completion rate to improve in the near future.

SIZE and SCOPE DATA GRADUATE

Measure	Minimum	Aspirational Target	Year				
			AY07	AY08	AY09	4	5
Majors UNIT Total			0	1	0		
Geoscience-CIP [MNS/MNS/GOMI]			0	1	0		
Completers UNIT Total			0	0	0		
UNIV - % Retention FS YR 1 -- F YR 2			0	0	0		
UNIV - % Retention FS YR3 -- F YR 4			0	0	0		
SCH On Campus FS			0	0	0		
SCH Off Campus FS			0	0	0		
SCH Total FS			0	0	0		
SCH Summer On and Off Campus			0	0	0		
SCHR (SCH ratios) On Campus Fall/Spring			0	0	0		
SCHR (SCH ratios) Off Campus Fall/Spring			0	0	0		
SCHR (SCH ratios) Total			0	0	0		
Delaware SCHR							
% of Sections with Enrollment < 10 (GR < 8)			0	0	0		

TEACHING PERSONNEL DATA UNDERGRADUATE

	Minimum	Aspirational Target	AY07	AY08	AY09	Year 4	Year 5
Unit Full Time Faculty Number	10.00	12.00	7.00	8.00	8.00		
Unit Full Time Faculty Adjusted for Release	9.25	11.25	6.16	7.25	7.25		
Unit Full Time Faculty UG FTE			14.06	15.65	15.54		
Unit Regional Campus Faculty Number					0.00		
GO Special Full Time Faculty Minor or Special Prefix			2.75	2.05	4.00		
Other Teaching Personnel UG Number	4.00	7.00	2.00	4.00	7.00		
Other Teaching Personnel UG PTFTE	0.40	1.00	2.33	1.27	0.87		
GO Other Teaching Personnel MP NUMBER			3.00	2.00	2.00		
GO Other Teaching Personnel MP PTFTE			0.50	0.30	0.70		

Area of Concern for Teaching Personnel Data (Undergraduate)

We have the breadth of expertise to cover the curriculum, but our total teaching resources are barely adequate. We added a lab section for PH030 in Sp10 for the first time in 20 years. We anticipate program growth, but with every faculty member at or slightly over their target teaching load of 12 contact hours, it is a challenge to staff this additional lab section. We previously added additional lab sections of PH020 and PH021 due to the overall increased enrollment at Southeast. The lecture portions of these and other (PH106, PH109) service courses is already delivered in large lecture format (120 students).

We have offered upper-level courses on a two-year cycle for many years. Of the 26 courses required for our majors, only 2 (PH230/030 and PH231/031) are offered every semester, 14 are offered every year, and 10 are offered every other year. Few of these classes now have fewer than 10 students enrolled.

Potential exists for moving some additional service courses to non-traditional delivery formats. We already offer most Geoscience courses online or blended and we offer PH109 online.

Overloads are not a viable option because most of our faculty members already work with students in PH478/PH479 Undergraduate Research off load. Providing opportunities for undergraduate research is a critical part of our programs, and obviously supports the University's goal of experiential learning. Our faculty profile likely will change over the next few years, so an opportunity to replace a tenured faculty member with a non-tenure track faculty member will provide more teaching resources for service courses, and relieve tenured faculty to teach upper-level courses and to support undergraduate research to a greater extent.

TEACHING PERSONNEL DATA GRADUATE							
	Minimum	Aspirational Target	AY07	AY08	AY09	Year 4	Year 5
Unit Regional Campus Faculty Number							

COMPARISONS UNDERGRADUATE										
	AY07		AY08		AY09		Year 4		Year 5	
	COLL	UNIV	COLL	UNIV	COLL	UNIV	COLL	UNIV	COLL	UNIV
% Completion Rate 6 YR	50.94	50.77	49.74	50.82	43.70	47.04				
Unit - % Retention FS YR 1 -- F YR 2	46.37	62.68	45.72	63.69	57.56	66.03				
Unit - % Retention FS YR 3 -- F YR 4	74.73	82.78	76.79	83.34	70.52	82.34				
UNIV - % Retention FS YR 1 -- F YR 2	64.73	62.81	64.95	63.69	73.06	66.13				
UNIV - % Retention FS YR 3 -- F YR 4	83.33	83.02	85.63	83.73	82.08	82.40				
SCHR (SCH ratios) On Campus Fall/Spring	269.00	262.00	275.00	261.00	273.00	248.00				
SCHR (SCH ratios) Off Campus Fall/Spring	215.00	227.00	183.00	290.00	203.00	213.00				
SCHR (SCH ratios) Total	258.00	242.00	279.00	265.00	253.00	242.00				
% of Sections with Enrollment < 10 (GR < 8)	19.22	17.54	18.56	17.42	16.85	22.70				

COMPARISONS GRADUATE										
	AY07		AY08		AY09		Year 4		Year 5	
	COLL	UNIV	COLL	UNIV	COLL	UNIV	COLL	UNIV	COLL	UNIV
UNIV - % Retention FS YR 1 -- F YR 2	64.73	62.81	64.95	63.69	73.06	66.13				
UNIV - % Retention FS YR 3 -- F YR 4	83.33	83.02	85.63	83.73	82.08	82.40				
SCHR (SCH ratios) On Campus Fall/Spring	269.00	262.00	275.00	261.00	273.00	248.00				
SCHR (SCH ratios) Off Campus Fall/Spring	215.00	227.00	183.00	290.00	203.00	213.00				

SCHR (SCH ratios) Total	258.00	242.00	279.00	265.00	253.00	242.00				
% of Sections with Enrollment < 10 (GR < 8)	19.22	17.54	18.56	17.42	16.85	22.70				

SIZE and SCOPE DATA SUMMARY UNDERGRADUATE

Measure	Mean	5 year Outcome	% of Aspiration Target	Trend
Majors UNIT Total	104.3	Needs Improvement	69.55	Irregular
Engineering Physics: Appl Phys [BS/BS/EPAP]	21.3			Irregular
Engineering Physics: Comp Appl [BS/BS/EPCP]	10.0			Irregular
Engineering Physics: Elect App [BS/BS/EPEA]	4.0			Improving
Engineering Physics: Mech Appl [BS/BS/EPMA]	6.0			Improving
Geoscience [BS/BS/GEOI]	0.3			Irregular
Physics [BS/BS/PHYS]	16.7			Irregular
Physics Education [BSE-HS/BSEHS/PHED]	0.7			Irregular
Physics Education [PRE EDUC/BSE/PHED]	2.3			Declining
Physics Education: Unified Sci [BSE-HS/BSEHS/PUSE]	1.0			Static
Physics Education: Unified Sci [PRE EDUC/BSE/PUSE]	1.3			Irregular
Pre-Engineering [PREPROF/P/PROF/PREG]	40.7			Irregular
Minors UNIT Total	87.0			Improving
Engineering Physics Minor	1.0			Static
Geoscience (Minor)	2.0			Declining
Geoscience Minor	0.3			Improving
Physics Minor	7.0			Declining
Science Concentration-21 hour	43.7			Improving
Science Concentration-30 hour	2.3			Declining
Science Specialization	30.7			Improving
Completers UNIT Total	6.0	Needs Improvement	60	Irregular
Engineering Physics: Appl Phys [BS/BS/EPAP]	0.3			Irregular
Engineering Physics: Comp Appl [BS/BS/EPCP]	1.0			Irregular
Geoscience [BS/BS/GEOI]	0.3			Irregular
Physics [BS/BS/PHYS]	4.0			Irregular
Physics Education: Unified Sci [BSE-HS/BSEHS/PUSE]	0.3			Improving
% Completion Rate 6 YR	40.7	Aspiration	169.41	Declining
Unit - % Retention FS YR 1 -- F YR 2	49.3	Aspiration	123.32	Improving
Unit - % Retention FS YR 3 -- F YR 4	55.0	Aspiration	148.64	Irregular
UNIV - % Retention FS YR 1 -- F YR 2	67.7			Improving
UNIV - % Retention FS YR 3 -- F YR 4	70.0			Improving
SCH On Campus FS	3,352.3			Improving
SCH Off Campus FS	212.3			Irregular
SCH Total FS	3,564.7			Improving

SCH Summer On and Off Campus	236.7			Declining
SCHR (SCH ratios) On Campus Fall/Spring	213.7	Needs Improvement	83.78	Irregular
SCHR (SCH ratios) Off Campus Fall/Spring	333.0	Aspiration	159.33	Irregular
SCHR (SCH ratios) Total	215.0	Needs Improvement	92.67	Improving
% of Sections with Enrollment < 10 (GR < 8)	28.3	Aspiration	566.6	Improving

SIZE and SCOPE DATA SUMMARY GRADUATE				
Measure	Mean	5 year Outcome	% of Aspiration Target	Trend
Majors UNIT Total	0.3			Irregular
Geoscience-CIP [MNS/MNS/GOMI]	0.3			Irregular
Completers UNIT Total	0.0			Static
UNIV - % Retention FS YR 1 -- F YR 2	0.0			Static
UNIV - % Retention FS YR3 -- F YR 4	0.0			Static
SCH On Campus FS	0.0			Static
SCH Off Campus FS	0.0			Static
SCH Total FS	0.0			Static
SCH Summer On and Off Campus	0.0			Static
SCHR (SCH ratios) On Campus Fall/Spring	0.0			Static
SCHR (SCH ratios) Off Campus Fall/Spring	0.0			Static
SCHR (SCH ratios) Total	0.0			Static
% of Sections with Enrollment < 10 (GR < 8)	0.0			Static

UNDERGRADUATE

Brief Conclusion from Data

We are very encouraged by the trend of increasing numbers of majors in our BS programs from 58 to 60 to 70 over the last three years. Most of the growth has come from the Engineering Physics Program. In fact, the Engineering Physics program has grown from 9 majors at 4th-week census in Fall 2001 just after ABET accreditation was achieved to 53 as of the Spring 2010 10th-week census. A least-squares fit of the enrollment data indicates an average growth rate of 4 Engineering Physics majors per year since Fall 2001. Graphs showing enrollment trends for all our programs can be viewed at http://cstl-csm.semo.edu/probst/assessment/Physics_Enrollment_Trends.htm.

Since we will graduate 3 students in May 2010 and have already registered 20 new incoming freshman majors in our BS programs for Fall 2010 with 5 First STEPS still to occur, we expect the growth in the number of majors to continue. Since 70% of all physics departments offering only bachelor's degrees graduate 5 or fewer students per year (please see <http://www.aip.org/statistics/trends/reports/ugprogramsiz.pdf>, Table 2), our average through AY2009 of 6 puts us in the top 25% of such institutions in terms of number of graduates. In addition to these BS-seeking students, the number of Pre-engineering majors remains healthy at 49, 35, and 41 over the last three years. We suspect that in addition to attracting more students to our programs in general, a higher percentage of pre-engineering students are choosing to complete their engineering degree at Southeast rather than transfer as they may have done in the past. All indicators point to continued program growth.

Additional Data or Comments

Another encouraging piece of data is that our student credit hour ratio (SCHR) has a three-year average of over 92% of our target, and over 95% of the average for the Delaware data. Given that many of our lower-level majors, service courses, and University Studies courses begin the semester at capacity and given that all our faculty have full teaching loads, and given that there is very limited opportunity to deliver our courses more efficiently, our target SCHR may well be too high. Changes in faculty profile and growth in the number of majors will definitely help improve this percent of target SCHR somewhat, but the target may simply be out of reach.

Another recent development that may help improve our SCHR is that Glenn Auditorium will be available for teaching beginning in Fall 2010. Since Glenn Auditorium seats up to 400, we can add one or two 40-person lab sections to PH109 and/or GO150 and add the corresponding seats to the large lecture, which has been limited to 120 students. This will require additional use of undergraduate lab assistants. We have also recently learned that we will have a GA assigned to us from the new Environmental Science MS program for teaching as well.

Plan to Address

We will continue the aggressive recruitment efforts of the past several years and develop new recruitment and marketing strategies in order to continue to grow our programs. Our goals are an average of 150 majors in our programs including pre-engineering and an average of 10 graduates per year. Graduating 10 or more students per year would put us in the top 11% of physics departments in the United States offering only bachelor's degrees. Since 70% of physics departments offering only bachelor's degrees graduate 5 or fewer students per year, our average of 6 puts us well above average. (please see <http://www.aip.org/statistics/trends/reports/ugprogramsiz.pdf>, Table 2)

While our freshman-sophomore and junior-senior retention rates are less than the College or University, they are comparable to programs in Engineering and Physics elsewhere. However, we will monitor these rates and make certain that we are doing all we can to promote student success in our programs while maintaining high expectations for performance.

Brief Follow Up on Outcomes of Plans to Address from Last Review

The primary issues from the last program review were to increase the number of majors and to increase the number of graduates. We have expended considerable effort to raise these numbers, and the data show a reasonable measure of success. We would like to increase the average number of graduates per year from 6 to 10. Since many of our students double major in Applied Mathematics, they often take an extra semester or two in order to complete their degrees. Also, since our retention rates, though reasonable for our programs, are below the average of the College and the University, we need to increase the number of B.S. degree-seeking majors from about 70 to about 100 to consistently reach our goal of an average of 10 graduates per year. We will continue to aggressively promote our programs.

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

Additional Data or Comments

Plan to Address

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

II. REVENUE AND OTHER RESOURCES GENERATED BY THE PROGRAM

REVENUE DATA UNDERGRADUATE					
Measure	AY07	AY08	AY09	Year 4	Year 5
All Courses - SCH Revenue					
On Campus FS	643,611.15	721,151.22	802,307.84		
Off Campus FS	22,512.74	36,606.90	35,847.12		
Summer On and Off Campus	50,511.33	48,609.24	50,867.88		
Subtotal Revenue SCH	716,635.22	806,367.36	889,022.84		
All Courses - Fees Revenue					
On Campus FS	7,580.00	8,240.00	8,730.00		
Off Campus FS	290.00	670.00	530.00		
Summer On and Off Campus	720.00	570.00	550.00		
Subtotal Revenue FeeS	8,590.00	9,480.00	9,810.00		
All Courses - Total SCH and Fees	725,225.22	815,847.36	898,832.84		
Univ Studies Crses - SCH Revenue					
On Campus FS	436,192.38	491,865.76	547,923.20		
Off Campus FS	22,512.74	36,606.90	35,847.12		
Summer On and Off Campus	50,511.33	47,961.48	48,782.76		
Subtotal Revenue SCH	509,216.45	576,434.14	632,553.08		
Univ Studies Crses - Fees Revenue					
On Campus FS	5,950.00	5,720.00	6,650.00		
Off Campus FS	290.00	670.00	530.00		
Summer On and Off Campus	720.00	570.00	550.00		
Subtotal Revenue FeeS	6,960.00	6,960.00	7,730.00		
Univ Studies - Total SCH and Fees	516,176.45	583,394.14	640,283.08		
SER/BC/ROM Crses - SCH Revenue					
On Campus FS	133,467.75	143,586.80	176,076.80		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue SCH	133,467.75	143,586.80	176,076.80		
SER/BC/ROM Crses - Fees Revenue					
On Campus FS	1,350.00	1,330.00	1,520.00		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue Fees	1,350.00	1,330.00	1,520.00		
SER/BC/ROM - Total SCH and Fees	134,817.75	144,916.80	177,596.80		
Major Courses - SCH Revenue					

On Campus FS	73,951.02	85,698.65	78,307.84		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	647.75	2,085.12		
Subtotal Revenue SCH	73,951.02	86,346.42	80,392.96		
Major Courses - Fees Revenue					
On Campus FS	280.00	1,190.00	560.00		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue FeeS	280.00	1,190.00	560.00		
Major Courses - Total SCH and Fees	74,231.02	87,536.42	80,952.96		
Unit Revenue External Grants	0.00	0.00	0.00		

REVENUE DATA GRADUATE

Measure	AY07	AY08	AY09	Year 4	Year 5
All Courses - SCH Revenue					
On Campus FS	0.00	0.00	0.00		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue SCH	0.00	0.00	0.00		
All Courses - Fees Revenue					
On Campus FS	0.00	0.00	0.00		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue FeeS	0.00	0.00	0.00		
All Courses - Total SCH and Fees	0.00	0.00	0.00		
Major Courses - SCH Revenue					
On Campus FS	0.00	0.00	0.00		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue SCH	0.00	0.00	0.00		
Major Courses - Fees Revenue					
On Campus FS	0.00	0.00	0.00		
Off Campus FS	0.00	0.00	0.00		
Summer On and Off Campus	0.00	0.00	0.00		
Subtotal Revenue FeeS	0.00	0.00	0.00		
Major Courses - Total SCH and Fees	0.00	0.00	0.00		
Unit Revenue External Grants	0.00	0.00	0.00		

REVENUE DATA BY COURSE PREFIX UNDERGRADUATE

Measure	AY07	AY08	AY09	Year 4	Year 5
GO Course Prefix					
GO SCH (Student Credit Hours)	1,368.00	1,278.00	1,248.00		
GO Revenue SCH - On Campus FS	188,764.33	184,283.18	212,208.40		
GO Revenue SCH - Off Campus FS	36,649.56	41,894.78	35,311.70		
GO Revenue SCH - Summer	26,291.59	22,285.26	13,747.02		
GO Subtotal Revenue SCH	251,705.48	248,463.22	261,267.12		
GO Revenue Fees - On Campus FS	5,620.00	5,300.00	5,220.00		
GO Revenue Fees - Off Campus FS	1,260.00	1,800.00	1,680.00		
GO Revenue Fees - Summer	920.00	760.00	480.00		
GO Subtotal Revenue Fees	7,800.00	7,860.00	7,380.00		

SUMMARY UNDERGRADUATE

Measure	Mean	Trend
All Courses - SCH Revenue		
On Campus FS	722,356.74	Improving
Off Campus FS	31,655.59	Irregular
Summer On and Off Campus	49,996.15	Irregular
Subtotal Revenue SCH	804,008.47	Improving
All Courses - Fees Revenue		
On Campus FS	8,183.33	Improving
Off Campus FS	496.67	Irregular
Summer On and Off Campus	613.33	Declining
Subtotal Revenue FeeS	9,293.33	Improving
All Courses - Total SCH and Fees	813,301.81	Improving
Univ Studies Crses - SCH Revenue		
On Campus FS	491,993.78	Improving
Off Campus FS	31,655.59	Irregular
Summer On and Off Campus	49,085.19	Irregular
Subtotal Revenue SCH	572,734.56	Improving
Univ Studies Crses - Fees Revenue		
On Campus FS	6,106.67	Irregular
Off Campus FS	496.67	Irregular
Summer On and Off Campus	613.33	Declining
Subtotal Revenue FeeS	7,216.67	Improving
Univ Studies - Total SCH and Fees	579,951.22	Improving
SER/BC/ROM Crses - SCH Revenue		

On Campus FS	151,043.78	Improving
Off Campus FS	0.00	Static
Summer On and Off Campus	0.00	Static
Subtotal Revenue SCH	151,043.78	Improving
SER/BC/ROM Crses - Fees Revenue		
On Campus FS	1,400.00	Irregular
Off Campus FS	0.00	Static
Summer On and Off Campus	0.00	Static
Subtotal Revenue Fees	1,400.00	Irregular
SER/BC/ROM - Total SCH and Fees	152,443.78	Improving
Major Courses - SCH Revenue		
On Campus FS	79,319.17	Irregular
Off Campus FS	0.00	Static
Summer On and Off Campus	910.96	Improving
Subtotal Revenue SCH	80,230.13	Irregular
Major Courses - Fees Revenue		
On Campus FS	676.67	Irregular
Off Campus FS	0.00	Static
Summer On and Off Campus	0.00	Static
Subtotal Revenue FeeS	676.67	Irregular
Major Courses - Total SCH and Fees	80,906.80	Irregular
Unit Revenue External Grants	0.00	Static

SUMMARY GRADUATE

Measure	Mean	Trend
All Courses - SCH Revenue		
On Campus FS	0.00	Static
Off Campus FS	0.00	Static
Summer On and Off Campus	0.00	Static
Subtotal Revenue SCH	0.00	Static
All Courses - Fees Revenue		
On Campus FS	0.00	Static
Off Campus FS	0.00	Static
Summer On and Off Campus	0.00	Static
Subtotal Revenue FeeS	0.00	Static
All Courses - Total SCH and Fees	0.00	Static
Major Courses - SCH Revenue		
On Campus FS	0.00	Static
Off Campus FS	0.00	Static

Summer On and Off Campus	0.00	Static
Subtotal Revenue SCH	0.00	Static
Major Courses - Fees Revenue		
On Campus FS	0.00	Static
Off Campus FS	0.00	Static
Summer On and Off Campus	0.00	Static
Subtotal Revenue FeeS	0.00	Static
Major Courses - Total SCH and Fees	0.00	Static
Unit Revenue External Grants	0.00	Static

COURSE PREFIX SUMMARY UNDERGRADUATE		
Measure	Mean	Trend
GO Course Prefix		
GO SCH (Student Credit Hours)	1,298.00	Declining
GO Revenue SCH - On Campus FS	195,085.30	Irregular
GO Revenue SCH - Off Campus FS	37,952.01	Irregular
GO Revenue SCH - Summer	20,774.62	Declining
GO Subtotal Revenue SCH	253,811.94	Irregular
GO Revenue Fees - On Campus FS	5,380.00	Declining
GO Revenue Fees - Off Campus FS	1,580.00	Irregular
GO Revenue Fees - Summer	720.00	Declining
GO Subtotal Revenue Fees	7,680.00	Irregular

UNDERGRADUATE

Brief Conclusion from Data

The total revenue for all courses including special course fees has increased over the last three years from \$725K to \$816K to \$899K. Of this, the revenue for University Studies courses has increased from \$516K to \$583K to \$640K; the revenue from service courses has increased from \$135K to \$145K to \$178K; the revenue for courses for our majors has varied from \$74K to \$87K to \$81K. Clearly, the majority of the department's revenue comes from supplying courses for constituencies other than our majors, which is typical of physics departments in the United States.

Additional Data or Comments

Plan to Address

We will continue to aggressively market our programs in order to continue to grow our number of majors.

We will keep our service courses attractive choices for non-majors to select in order to fulfill their University Studies Physical Systems requirement. Some potential

exists for increasing our capacity to offer service courses through changes in our faculty profile and offering more online and blended courses.

Although not under our direct control, we think the special course fee for lab courses is much too low and does not truly reflect the additional cost of providing courses that use expensive equipment and consumables. Increasing the lab fee from \$10 per course to \$20 per course would add another \$8-\$10K in revenue for our department.

Our activity in pursuit of external funding for research has increased in recent years, and we will continue it. External funding primarily supports obtaining research-grade equipment to enhance faculty research and thereby enhances opportunities for high-quality undergraduate research experiences.

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Brief Conclusion from Data

Additional Data or Comments

Plan to Address

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III. COSTS AND OTHER EXPENSES ASSOCIATED WITH THE PROGRAM

COSTS DATA UNDERGRADUATE					
	AY07	AY08	AY09	Year 4	Year 5
Cost Per Major	2,239.00	3,497.00	3,513.00		
Unit Costs per Major SCH - On campus FS	425.00	610.00	838.00		
Unit Costs per Major SCH - Off campus FS	0.00	0.00	0.00		
Unit Costs per Major SCH - Summer	421.00	0.00	425.00		
Unit Costs per Major SCH - Overall	425.00	610.00	831.00		
Unit Costs for Major Crses - On campus FS	231,961.00	332,243.00	386,097.00		
Unit Costs for Major Crses - Off campus FS	0.00	0.00	0.00		
Unit Costs for Major Crses - Summer	7,576.00	0.00	3,829.00		
Unit Costs for Major Crses - Overall	239,538.00	332,243.00	389,926.00		
Unit Costs per Univ Studies SCH - On campus FS	160.00	151.00	131.00		
Unit Costs per Univ Studies SCH - Off campus FS	225.00	88.00	89.00		
Unit Costs per Univ Studies SCH - Summer	153.00	162.00	152.00		
Unit Costs per Univ Studies SCH - Overall	163.00	146.00	129.00		
Unit Costs for Univ Studies Crses - On campus FS	352,817.00	339,279.00	308,971.00		
Unit Costs for Univ Studies Crses - Off campus FS	38,985.00	21,705.00	19,320.00		
Unit Costs for Univ Studies Crses - Summer	41,522.00	35,375.00	31,530.00		
Unit Costs for Univ Studies Crses - Overall	433,323.00	396,359.00	359,821.00		
Unit Costs per SER/BC/ROM SCH - On campus FS	201.00	205.00	182.00		
Unit Costs per SER/BC/ROM SCH - Off campus FS	0.00	0.00	0.00		
Unit Costs per SER/BC/ROM SCH - Summer	0.00	0.00	0.00		
Unit Costs per SER/BC/ROM SCH - Overall	201.00	205.00	182.00		
Unit Costs for SER/BC/ROM Crses - On campus FS	99,514.00	110,931.00	116,044.00		
Unit Costs for SER/BC/ROM Crses - Off campus FS	0.00	0.00	0.00		
Unit Costs for SER/BC/ROM Crses - Summer	0.00	0.00	0.00		
Unit Costs for SER/BC/ROM Crses - Overall	99,514.00	110,931.00	116,044.00		
Unit Costs per All SCH - On campus FS	211.00	235.00	234.00		
Unit Costs per All SCH - Off campus FS	225.00	88.00	89.00		
Unit Costs per All SCH - Summer	169.00	162.00	164.00		
Unit Costs per All SCH - Overall	208.00	221.00	222.00		
Unit Costs for All Crses - On campus FS	684,293.00	782,452.00	811,112.00		
Unit Costs for All Crses - Off campus FS	38,985.00	21,705.00	19,320.00		
Unit Costs for All Crses - Summer	49,098.00	35,375.00	35,358.00		
Unit Costs for All Crses - Overall	772,376.00	839,532.00	865,791.00		

COSTS DATA GRADUATE

	AY07	AY08	AY09	Year 4	Year 5
Cost Per Major	0.00	0.00	0.00		
Unit Costs per Major SCH - On campus FS	0.00	0.00	0.00		
Unit Costs per Major SCH - Off campus FS	0.00	0.00	0.00		
Unit Costs per Major SCH - Summer	0.00	0.00	0.00		
Unit Costs per Major SCH - Overall	0.00	0.00	0.00		
Unit Costs for Major Crses - On campus FS	0.00	0.00	0.00		
Unit Costs for Major Crses - Off campus FS	0.00	0.00	0.00		
Unit Costs for Major Crses - Summer	0.00	0.00	0.00		
Unit Costs for Major Crses - Overall	0.00	0.00	0.00		
Unit Costs per Univ Studies SCH - On campus FS	0.00	0.00	0.00		
Unit Costs per Univ Studies SCH - Off campus FS	0.00	0.00	0.00		
Unit Costs per Univ Studies SCH - Summer	0.00	0.00	0.00		
Unit Costs per Univ Studies SCH - Overall	0.00	0.00	0.00		
Unit Costs for Univ Studies Crses - On campus FS	0.00	0.00	0.00		
Unit Costs for Univ Studies Crses - Off campus FS	0.00	0.00	0.00		
Unit Costs for Univ Studies Crses - Summer	0.00	0.00	0.00		
Unit Costs for Univ Studies Crses - Overall	0.00	0.00	0.00		
Unit Costs per SER/BC/ROM SCH - On campus FS	0.00	0.00	0.00		
Unit Costs per SER/BC/ROM SCH - Off campus FS	0.00	0.00	0.00		
Unit Costs per SER/BC/ROM SCH - Summer	0.00	0.00	0.00		
Unit Costs per SER/BC/ROM SCH - Overall	0.00	0.00	0.00		
Unit Costs for SER/BC/ROM Crses - On campus FS	0.00	0.00	0.00		
Unit Costs for SER/BC/ROM Crses - Off campus FS	0.00	0.00	0.00		
Unit Costs for SER/BC/ROM Crses - Summer	0.00	0.00	0.00		
Unit Costs for SER/BC/ROM Crses - Overall	0.00	0.00	0.00		
Unit Costs per All SCH - On campus FS	0.00	0.00	0.00		
Unit Costs per All SCH - Off campus FS	0.00	0.00	0.00		
Unit Costs per All SCH - Summer	0.00	0.00	0.00		
Unit Costs per All SCH - Overall	0.00	0.00	0.00		
Unit Costs for All Crses - On campus FS	0.00	0.00	0.00		
Unit Costs for All Crses - Off campus FS	0.00	0.00	0.00		
Unit Costs for All Crses - Summer	0.00	0.00	0.00		
Unit Costs for All Crses - Overall	0.00	0.00	0.00		

COSTS FOR SUBJECTS UNDERGRADUATE

	AY07		AY08		AY09		Year 4		Year 5	
	SCH	ALL COURSES	SCH	ALL COURSES	SCH	ALL COURSES	SCH	ALL COURSES	SCH	ALL COURSES
GO Crse Prefix Cost SCH - On campus FS	103.00	218,627.00	118.00	214,946.00	111.00	206,514.00				
GO Crse Prefix Cost SCH - Off campus FS	118.00	48,807.00	94.00	51,692.00	119.00	76,143.00				
GO Crse Prefix Cost SCH - Summer	124.00	50,766.00	110.00	33,427.00	107.00	32,144.00				
GO Crse Prefix Cost SCH - Overall	108.00	318,200.00	112.00	300,065.00	112.00	314,800.00				

COSTS COMPARISONS UNDERGRADUATE

	AY07	AY08	AY09	Year 4	Year 5
College Cost per Major	4,816.00	5,019.00	1,911.00		
University Cost per Major	3,297.00	3,345.00	2,083.00		
Delaware Study Cost/SCH Unit	208.00	221.00	0.00		
GO Course Prefix	199.00	207.00	0.00		
College Cost per Major SCHR	282.00	322.00	325.00		
University Cost per Major SCHR	204.00	214.00	231.00		
College Cost per Univ Studies SCHR	142.00	116.00	107.00		
University Cost per Univ Studies SCHR	153.00	108.00	106.00		
College Cost per SER/BC/ROM SCHR	103.00	106.00	109.00		
University Cost per SER/BC/ROM SCHR	121.00	130.00	117.00		
College Cost per all SCHR	142.00	147.00	143.00		
University Cost per all SCHR	153.00	155.00	161.00		

COSTS COMPARISONS GRADUATE

	AY07	AY08	AY09	Year 4	Year 5
College Cost per Major	4,816.00	5,019.00	1,911.00		
University Cost per Major	3,297.00	3,345.00	2,083.00		
Delaware Study Cost per SCH Unit	0.00	0.00	0.00		
College Cost per Major SCHR	282.00	322.00	325.00		
University Cost per Major SCHR	204.00	214.00	231.00		
College Cost per Univ Studies SCHR	142.00	116.00	107.00		
University Cost per Univ Studies SCHR	153.00	108.00	106.00		
College Cost per SER/BC/ROM SCHR	103.00	106.00	109.00		
University Cost per SER/BC/ROM SCHR	121.00	130.00	117.00		
College Cost per all SCHR	142.00	147.00	143.00		
University Cost per all SCHR	153.00	155.00	161.00		

SUMMARY UNDERGRADUATE		
	Mean	Trend
Cost Per Major	3,083.00	Improving
Unit Costs per Major SCH - On campus FS	624.33	Improving
Unit Costs per Major SCH - Off campus FS	0.00	Static
Unit Costs per Major SCH - Summer	282.00	Irregular
Unit Costs per Major SCH - Overall	622.00	Improving
Unit Costs for Major Crses - On campus FS	316,767.00	Improving
Unit Costs for Major Crses - Off campus FS	0.00	Static
Unit Costs for Major Crses - Summer	3,801.66	Irregular
Unit Costs for Major Crses - Overall	320,569.00	Improving
Unit Costs per Univ Studies SCH - On campus FS	147.33	Declining
Unit Costs per Univ Studies SCH - Off campus FS	134.00	Irregular
Unit Costs per Univ Studies SCH - Summer	155.66	Irregular
Unit Costs per Univ Studies SCH - Overall	146.00	Declining
Unit Costs for Univ Studies Crses - On campus FS	333,689.00	Declining
Unit Costs for Univ Studies Crses - Off campus FS	26,670.00	Declining
Unit Costs for Univ Studies Crses - Summer	36,142.33	Declining
Unit Costs for Univ Studies Crses - Overall	396,501.00	Declining
Unit Costs per SER/BC/ROM SCH - On campus FS	196.00	Irregular
Unit Costs per SER/BC/ROM SCH - Off campus FS	0.00	Static
Unit Costs per SER/BC/ROM SCH - Summer	0.00	Static
Unit Costs per SER/BC/ROM SCH - Overall	196.00	Irregular
Unit Costs for SER/BC/ROM Crses - On campus FS	108,829.66	Improving
Unit Costs for SER/BC/ROM Crses - Off campus FS	0.00	Static
Unit Costs for SER/BC/ROM Crses - Summer	0.00	Static
Unit Costs for SER/BC/ROM Crses - Overall	108,829.66	Improving
Unit Costs per All SCH - On campus FS	226.66	Irregular
Unit Costs per All SCH - Off campus FS	134.00	Irregular
Unit Costs per All SCH - Summer	165.00	Irregular
Unit Costs per All SCH - Overall	217.00	Improving
Unit Costs for All Crses - On campus FS	759,285.66	Improving
Unit Costs for All Crses - Off campus FS	26,670.00	Declining
Unit Costs for All Crses - Summer	39,943.66	Declining
Unit Costs for All Crses - Overall	825,899.66	Improving

SUMMARY GRADUATE		
	Mean	Trend

Cost Per Major	0.00	Static
Unit Costs per Major SCH - On campus FS	0.00	Static
Unit Costs per Major SCH - Off campus FS	0.00	Static
Unit Costs per Major SCH - Summer	0.00	Static
Unit Costs per Major SCH - Overall	0.00	Static
Unit Costs for Major Crses - On campus FS	0.00	Static
Unit Costs for Major Crses - Off campus FS	0.00	Static
Unit Costs for Major Crses - Summer	0.00	Static
Unit Costs for Major Crses - Overall	0.00	Static
Unit Costs per Univ Studies SCH - On campus FS	0.00	Static
Unit Costs per Univ Studies SCH - Off campus FS	0.00	Static
Unit Costs per Univ Studies SCH - Summer	0.00	Static
Unit Costs per Univ Studies SCH - Overall	0.00	Static
Unit Costs for Univ Studies Crses - On campus FS	0.00	Static
Unit Costs for Univ Studies Crses - Off campus FS	0.00	Static
Unit Costs for Univ Studies Crses - Summer	0.00	Static
Unit Costs for Univ Studies Crses - Overall	0.00	Static
Unit Costs per SER/BC/ROM SCH - On campus FS	0.00	Static
Unit Costs per SER/BC/ROM SCH - Off campus FS	0.00	Static
Unit Costs per SER/BC/ROM SCH - Summer	0.00	Static
Unit Costs per SER/BC/ROM SCH - Overall	0.00	Static
Unit Costs for SER/BC/ROM Crses - On campus FS	0.00	Static
Unit Costs for SER/BC/ROM Crses - Off campus FS	0.00	Static
Unit Costs for SER/BC/ROM Crses - Summer	0.00	Static
Unit Costs for SER/BC/ROM Crses - Overall	0.00	Static
Unit Costs per All SCH - On campus FS	0.00	Static
Unit Costs per All SCH - Off campus FS	0.00	Static
Unit Costs per All SCH - Summer	0.00	Static
Unit Costs per All SCH - Overall	0.00	Static
Unit Costs for All Crses - On campus FS	0.00	Static
Unit Costs for All Crses - Off campus FS	0.00	Static
Unit Costs for All Crses - Summer	0.00	Static
Unit Costs for All Crses - Overall	0.00	Static

SUBJECT SUMMARY UNDERGRADUATE

	SCH Mean	SCH Trend	ALL COURSES Mean	ALL COURSES Trend
GO Crse Prefix Cost SCH - On campus FS	110.67	Irregular	213,362.33	Declining
GO Crse Prefix Cost SCH - Off campus FS	110.33	Irregular	58,880.67	Improving

GO Crse Prefix Cost SCH - Summer	113.67	Declining	38,779.00	Declining
GO Crse Prefix Cost SCH - Overall	110.67	Irregular	311,021.67	Irregular

UNDERGRADUATE

Brief Conclusion from Data

The difference between total revenue and total cost for all courses has gone from slightly negative to slightly positive over the last three years, which is obviously a desirable trend. Total revenues were \$725K while total costs were \$772K in AY2007, a difference of -\$47K. Total revenues were \$816K while total costs were \$840K in AY2008, a difference of -\$24K. Total revenues were \$899K while total costs were \$866K in AY2009, a difference of +\$33K. Over these three years, the net difference between revenue and cost is -\$38K, which is a revenue shortfall of only about 1.5% compared to total costs over that period.

The average cost per major for the Department over the last three years is \$3083 while the same average for the College is \$3915 and for the University is \$2908. So, the average cost per major is less than the College average and only slightly more than the University average over the last three years. Even though the average looks pretty good, the trend is upward for the Department (\$2239, \$3497, \$3513), while it is downward for the College (\$4816, \$5019, \$1911) and the University (\$3297, \$3345, \$2083). The large decrease in average cost per major for the College and the University seems quite large to us, and makes this figure rather suspect. Assuming that the figures for AY09 are accurate, they are probably going to be stable for a while, so it is clear that the cost per major is higher for our Department than the College or the University. The overall average cost per SCH for the Department over the last three years is \$217 while the same average for the College is \$144 and for the University is \$156. The Delaware average cost per SCH for physics departments is \$215, so we are in line with other physics departments in the Delaware data on this measure. Our cost per SCH for University Studies courses and service courses is closer to the College and University averages, but our cost per major SCH is much higher.

The higher cost per major, cost per major SCH, and the cost per SCH overall arise from two primary sources. First, we have higher salaries in the Department compared to the College and University averages. We have mostly senior faculty in physics and junior faculty in engineering, but engineering faculty command higher salaries than physics faculty. Engineering faculty are required in order to have an ABET/EAC accredited engineering program. The second major factor in our costs is the fact that we must use expensive, modern equipment in our laboratories for both major courses and for service courses.

Even though our cost per major and cost per major SCH are higher than the averages for the College and University, our overall costs over the last three years have nearly been covered by our overall revenues, so we are almost a break-even operation.

Additional Data or Comments

Plan to Address

Reduction of the cost per major and the cost per major SCH will only occur as the number of majors continues to increase or the composition of the faculty changes. As previously stated, we will continue our aggressive recruitment efforts; however, we don't think this figure will ever be as low as the College or University averages. However, if we reach our goal of increasing our number of majors by about 50%, the cost per major should decrease proportionately, which will bring us much closer to the College and University average cost per major.

Our cost per SCH for University Studies courses and service courses is closer to the College and University averages. Since we are already nearly at enrollment capacity in these type courses, the cost per SCH to deliver them will be decreased only if the mix of tenured/tenure track and non tenure track faculty changes in the department. There is also some potential for improvement through course redesign and larger lecture sections of PH109 as previously mentioned.

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Brief Conclusion from Data

Additional Data or Comments

Plan to Address

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IV. CONTRIBUTION TO UNIVERSITY STUDIES AND COURSES SERVING OTHER PROGRAMS

UNIT SCH FROM UNIVERSITY STUDIES AND COURSES SERVING OTHER PROGRAMS					
	AY07	AY08	AY09	Year 4	Year 5
University Studies: On Campus FS	2,206	2,278	2,365		
University Studies: Off Campus FS	173	246	218		
University Studies: Summer	272	219	207		
University Studies: Total	2,651	2,743	2,790		
Services: On Campus FS	315	415	515		
Services: Off Campus FS	0	0	0		
Services: Summer	0	0	0		
Services: Total	315	415	515		
ROM: On Campus FS	360	250	245		
ROM: Off Campus FS	0	0	0		
ROM: Summer	0	0	0		
ROM: Total	360	250	245		
Business Core: On Campus FS	0	0	0		
Business Core: Off Campus FS	0	0	0		
Business Core: Summer	0	0	0		
Business Core: Total	0	0	0		

SCH FROM UNIVERSITY STUDIES AND COURSES SERVING OTHER PROGRAMS					
	AY07	AY08	AY09	Year 4	Year 5
GO: US ROM SER Course Prefix - On Campus FS	855	786	807		
GO: US ROM SER Course Prefix - Off Campus FS	273	270	252		
GO: US ROM SER Course Prefix - Summer	138	114	72		
GO: US ROM SER Course Prefix - Total	1,266	1,170	1,131		

UNIT SCH SUMMARY		
Measure	Mean	Trend
University Studies: On Campus FS	2,283.0	Improving
University Studies: Off Campus FS	212.3	Irregular
University Studies: Summer	232.7	Declining
University Studies: Total	2,728.0	Improving
Services: On Campus FS	415.0	Improving
Services: Off Campus FS	0.0	Static
Services: Summer	0.0	Static

Services: Total	415.0	Improving
ROM: On Campus FS	285.0	Declining
ROM: Off Campus FS	0.0	Static
ROM: Summer	0.0	Static
ROM: Total	285.0	Declining
Business Core: On Campus FS	0.0	Static
Business Core: Off Campus FS	0.0	Static
Business Core: Summer	0.0	Static
Business Core: Total	0.0	Static

SCH SUMMARY		
Measure	Mean	Trend
GO: US ROM SER Course Prefix - On Campus FS	816.0	Irregular
GO: US ROM SER Course Prefix - Off Campus FS	265.0	Declining
GO: US ROM SER Course Prefix - Summer	108.0	Declining
GO: US ROM SER Course Prefix - Total	1,189.0	Declining

UNDERGRADUATE

Brief Conclusion from Data

The data show that about 76% (2728/3565) of the student credit hours generated by our Department support the University Studies Program. The data also show that when the service courses and those required for other majors are included, the percentage rises to about 96% (3428/3565). We assume that this latter figure includes courses required by our Pre-engineering majors. These courses are also taken by our Engineering Physics majors, Physics majors, and Physics Education majors.

The obvious conclusion from these data is that very little immediate savings would result from not having our B.S. programs because essentially the same number of faculty members would be needed without them. Over time however, costs could be reduced as the faculty composition changes from tenured/tenure track to non-tenure track faculty.

Additional Data or Comments

We think the growth in enrollment in our B.S. programs, the quality of the students we attract and graduate, the fact that the department has been nearly a break-even operation over the last three years, the fact that we showed a profit last year, the fact that 96% of our SCH come from University Studies and service courses, and the fact that little immediate savings would be realized by eliminating our B.S. programs make us a very viable operation even in fiscally challenging times like these.

Plan to Address

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V. EXTERNAL DEMAND

EXTERNAL DEMAND DATA UNDERGRADUATE										
	AY07		AY08		AY09		Year 4		Year 5	
ACT DATA										
	N	ACT	N	ACT	N	ACT	N	ACT	N	ACT
No. Identifying Planned Major										
UNIT Totals			2018	23.87						
AEROSPACEENGINEERING [621]			113	26.30						
ASTRONOMY [831]			27	23.40						
ATMOSPHERSCI&METEOROL [832]			54	22.60						
BIOCHEMISTRY&BIOPHYSICS [833]			101	26.30						
BIOENGINEER&BIOMEDENG [624]			28	26.50						
CERAMICENGINEERING [625]			1	23.00						
CHEMICALENGINEERING [626]			63	26.10						
CIVILENGINEERING [627]			66	23.30						
CIVILENGINEERINGTECH [665]			30	22.90						
EARTHSCIENCE [837]			11	25.90						
ENGINEERING GENERAL [620]			564	23.00						
ENGINEERINGPHYSICS [632]			9	29.30						
ENGINEERINGSCIENCE [633]			4	18.50						
ENGINEER-RELATDTECH GEN [660]			295	23.40						
GEOLOGICAL&GEOPHYSENG [635]			4	15.00						
GEOLOGY [839]			8	26.40						
MATERIALSENGINEERING [637]			4	25.30						
MECHANICALENGINEERING [638]			151	23.50						
METALLURGICALENGINEERING [639]			4	25.30						
MINING&MINERALENG [640]			5	23.40						
NAVALARCHIT&MARINEENG [641]			4	21.80						
NUCLEARENGINEERING [642]			24	25.60						
OCEANENGINEERING [643]			0	0.00						
PETROLEUMENGINEERING [644]			2	24.00						
PHYSICS [842]			60	27.90						
SCIENCES(BIO&PHYS) GEN [830]			386	23.30						
No. of ACT Scores to Southeast										
UNIT Totals			137	21.57						
AEROSPACEENGINEERING [621]			5	21.80						
ASTRONOMY [831]			4	21.30						

ATMOSPHERSCI&METEOROL [832]			1	30.00					
BIOCHEMISTRY&BIOPHYSICS [833]			5	22.00					
BIOENGINEER&BIOMEDENG [624]			0	0.00					
CERAMICENGINEERING [625]			0	0.00					
CHEMICALENGINEERING [626]			2	22.50					
CIVILENGINEERING [627]			5	20.60					
CIVILENGINEERINGTECH [665]			1	21.00					
EARTHSCIENCE [837]			0	0.00					
ENGINEERING GENERAL [620]			43	21.00					
ENGINEERINGPHYSICS [632]			0	0.00					
ENGINEERINGSCIENCE [633]			0	0.00					
ENGINEER-RELATDTECH GEN [660]			14	19.60					
GEOLOGICAL&GEOPHYSENG [635]			0	0.00					
GEOLOGY [839]			1	26.00					
MATERIALSENGINEERING [637]			0	0.00					
MECHANICALENGINEERING [638]			7	21.30					
METALLURGICALENGINEERING [639]			0	0.00					
MINING&MINERALENG [640]			0	0.00					
NAVALARCHIT&MARINEENG [641]			0	0.00					
NUCLEARENGINEERING [642]			1	25.00					
OCEANENGINEERING [643]			0	0.00					
PETROLEUMENGINEERING [644]			0	0.00					
PHYSICS [842]			5	25.80					
SCIENCES(BIO&PHYS) GEN [830]			43	22.00					
Yield: No. Enrolled at Southeast									
UNIT Totals			49	22.17					
AEROSPACEENGINEERING [621]			1	21.00					
ASTRONOMY [831]			3	21.30					
ATMOSPHERSCI&METEOROL [832]			0	0.00					
BIOCHEMISTRY&BIOPHYSICS [833]			1	26.00					
BIOENGINEER&BIOMEDENG [624]			1	20.00					
CERAMICENGINEERING [625]			0	0.00					
CHEMICALENGINEERING [626]			1	16.00					
CIVILENGINEERING [627]			2	18.50					
CIVILENGINEERINGTECH [665]			0	0.00					
EARTHSCIENCE [837]			0	0.00					
ENGINEERING GENERAL [620]			13	22.50					
ENGINEERINGPHYSICS [632]			0	0.00					
ENGINEERINGSCIENCE [633]			0	0.00					
ENGINEER-RELATDTECH GEN [660]			3	19.70					

GEOLOGICAL&GEOPHYSENG [635]			0	0.00					
GEOLOGY [839]			0	0.00					
MATERIALSENGINEERING [637]			0	0.00					
MECHANICALENGINEERING [638]			4	22.80					
METALLURGICALENGINEERING [639]			0	0.00					
MINING&MINERALENG [640]			0	0.00					
NAVALARCHIT&MARINEENG [641]			0	0.00					
NUCLEARENGINEERING [642]			0	0.00					
OCEANENGINEERING [643]			0	0.00					
PETROLEUMENGINEERING [644]			0	0.00					
PHYSICS [842]			2	22.00					
SCIENCES(BIO&PHYS) GEN [830]			18	23.10					

SUMMARY UNDERGRADUATE		
	Mean	Trend
Yield: No. Enrolled at Southeast		
UNIT Totals	22.2	
AEROSPACEENGINEERING [621]	21.0	
ASTRONOMY [831]	21.3	
ATMOSPHERSCI&METEOROL [832]	0.0	
BIOCHEMISTRY&BIOPHYSICS [833]	26.0	
BIOENGINEER&BIOMEDENG [624]	20.0	
CERAMICENGINEERING [625]	0.0	
CHEMICALENGINEERING [626]	16.0	
CIVILENGINEERING [627]	18.5	
CIVILENGINEERINGTECH [665]	0.0	
EARTHSCIENCE [837]	0.0	
ENGINEERING GENERAL [620]	22.5	
ENGINEERINGPHYSICS [632]	0.0	
ENGINEERINGSCIENCE [633]	0.0	
ENGINEER-RELATDTECH GEN [660]	19.7	
GEOLOGICAL&GEOPHYSENG [635]	0.0	
GEOLOGY [839]	0.0	
MATERIALSENGINEERING [637]	0.0	
MECHANICALENGINEERING [638]	22.8	
METALLURGICALENGINEERING [639]	0.0	
MINING&MINERALENG [640]	0.0	
NAVALARCHIT&MARINEENG [641]	0.0	
NUCLEARENGINEERING [642]	0.0	

OCEANENGINEERING [643]	0.0	
PETROLEUMENGINEERING [644]	0.0	
PHYSICS [842]	22.0	
SCIENCES(BIO&PHYS) GEN [830]	23.1	

Additional Data Available at http://www.missourieconomy.org/occupations/occ_proj.stm

UNDERGRADUATE

Brief Conclusion from Data

The data show that in AY08, 2018 students in Missouri indicated interest in Engineering or Physics. Of these, 137 applied to Southeast for admission and 49 enrolled. So, about 7% of interested Missouri students applied and of those who applied, about 36% actually enrolled. These seem like good yields to us, and they indicate that our recruitment efforts are reasonably effective.

Additional Data or Comments

We also receive a significant fraction of our majors from Illinois; a fact which is not reflected in the data.

The demand for scientists and engineers is increasing as our society recognizes that in order remain competitive in the global economy; our nation must continue to be leaders in innovation, particularly in technical innovation. To do so, we must produce more scientists and engineers. Our programs contribute to meeting this national priority. The demand for such training is growing as seen by the growth in the enrollments in Physics programs (see <http://www.aip.org/statistics/trends/reports/EDphysund07.pdf>, Figures 3 and 4), Engineering programs, and Engineering Physics programs in particular nationwide (see <http://www.asee.org/publications/profiles/upload/2008ProfileEng.pdf>, page 37).

There is also a high demand for secondary teachers qualified to teach physics. Illustrative of this is a recent email we received soliciting participants with degrees in chemistry, physics or mathematics, but without education training, for the GSKyTeach program at Western Kentucky University (<http://edtech.wku.edu/gskyteach/>). Participants receive a generous stipend of \$30,000 plus benefits to complete their Masters of Arts degree in Teaching and then are placed in schools in the Louisville, KY area to teach at a pay of \$42,000 per year. Our Physics Education program produces more graduates trained and qualified to teach physics at the secondary level than any other program in the state of Missouri, and that with 1 graduate every 2 years or so. The demand for such teachers exceeds the supply, so many schools hire people educated in physics or engineering and then have them seek alternative certification.

Plan to Address

We will continue our aggressive promotion and recruitment efforts as described elsewhere in this review.

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

VI. QUALITY OF PROGRAM INPUTS

UNDERGRADUATE					
Measure	AY07	AY08	AY09	Year 4	Year 5
ACT	25.22	24.08	25.53		
Selected Merit Scholarships	21.00	15.00	18.00		
High School GPA	3.20	3.41	3.68		
CBASE Composite	0.00	0.00	0.00		
CBASE English	0.00	0.00	0.00		
CBASE Math	0.00	0.00	0.00		
CBASE Science	0.00	0.00	0.00		
CBASE Social Studies	0.00	0.00	0.00		
CBASE Writing	0.00	0.00	0.00		

GRADUATE					
Measure	AY07	AY08	AY09	Year 4	Year 5
GMAT Total	0.00	0.00	0.00		
GMAT Total Converted	0.00	0.00	0.00		

COMPARISONS UNDERGRADUATE															
	AY07			AY08			AY09			Year 4			Year 5		
	COLL	UNIV	NAT	COLL	UNIV	NAT	COLL	UNIV	NAT	COLL	UNIV	NAT	COLL	UNIV	NAT
ACT	23.53	22.24	21.10	24.08	22.38	21.20	24.49	22.59	21.10						
High School GPA	3.47	3.31		3.52	3.29		3.68	3.40							
CBASE Composite	0.00	0.00		0.00	0.00		0.00	0.00							
CBASE English	0.00	0.00		0.00	0.00		0.00	0.00							
CBASE Math	0.00	0.00		0.00	0.00		0.00	0.00							
CBASE Science	0.00	0.00		0.00	0.00		0.00	0.00							
CBASE Social Studies	0.00	0.00		0.00	0.00		0.00	0.00							
CBASE Writing	0.00	0.00		0.00	0.00		0.00	0.00							

COMPARISONS GRADUATE															
	AY07			AY08			AY09			Year 4			Year 5		
	COLL	UNIV	NAT	COLL	UNIV	NAT	COLL	UNIV	NAT	COLL	UNIV	NAT	COLL	UNIV	NAT
GMAT Total	0.00	0.00		0.00	0.00		0.00	0.00							
GMAT Total Converted	0.00	0.00		0.00	0.00		0.00	0.00							

SUMMARY UNDERGRADUATE		
Measure	Mean	Trend
ACT	24.96	Irregular
High School GPA	3.39	Improving
CBASE Composite	0.00	Static

SUMMARY GRADUATE		
Measure	Mean	Trend
GMAT Total	0.00	Static
GMAT Total Converted	0.00	Static

UNDERGRADUATE

Brief Conclusion from Data

The data indicate that the average ACT scores for our incoming freshmen are above the College average and well above the University average. For the last three years, the averages for the Department are 25.22, 24.08, and 25.53. The averages for the College are 23.53, 24.08, 24.49 and the averages for the University are 22.24, 22.38, and 22.59. Over half of our incoming freshmen receive a merit scholarship. Clearly we attract some of the most academically qualified students who enroll at Southeast.

Although some of these highly qualified students change to other majors once at Southeast, most remain here and contribute to campus life, both intellectual and social in many ways.

Additional Data or Comments

As of the May 7th First STEP, we have registered 14 Engineering Physics, 5 Physics, 2 Physics Education, and 7 Pre-engineering students. Their average ACT score is 28.5. These 20 new BS majors is the largest incoming class we have ever had, and there are still 5 more First STEPS to go.

Plan to Address

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

Additional Data or Comments

Plan to Address

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

VII. QUALITY OF PROGRAM OUTPUTS

WP003 UNDERGRADUATE										
	AY07		AY08		AY09		Year 4		Year 5	
	N	%	N	%	N	%	N	%	N	%
>= 9.5 (superior)	0	0.00	1	20.00	2	22.22				
8.0 - 9.0 (proficiency)	2	50.00	3	60.00	5	55.55				
7.0 - 7.5 (marginal pass)	1	25.00	1	20.00	1	11.11				
< 7.0 (fail)	1	25.00	0	0.00	1	11.11				
Unit First Time Pass Rate	4	100.00	5	100.00	9	100.00				
Unit Mean	4	7.62	5	8.40	9	8.22				

WP003 COMPARISONS UNDERGRADUATE					
	AY07	AY08	AY09	Year 4	Year 5
College Mean	8.26	8.40	8.67		
College Pass Rate	100.00	99.31	98.13		
University Mean	8.25	8.34	8.35		
University Pass Rate	97.99	98.74	98.23		

DISCIPLINE SPECIFIC UNDERGRADUATE						
		AY07	AY08	AY09	Year 4	Year 5
Praxis Tests (Majors Only)						
PX43: PRX Physics Ck 265-Total	Southeast	0.00	0.00	147.00		
	Comparison					
Praxis Tests (All Majors)						
PX43: PRX Physics Ck 265-Total	Southeast	161.00	0.00	147.00		
	Comparison					
MFAT (Majors Only)						
MF32: MFAT Physics - Total	Southeast	145.67	144.67	139.00		
	Comparison					
MF41: MFAT Physics: Intro Physics	Southeast	42.00	0.00	0.00		
	Comparison					

MF42: MFAT Physics: Advance Physics	Southeast	37.00	0.00	0.00		
	Comparison					
MFAT (All Majors)						
MF32: MFAT Physics - Total	Southeast	145.67	142.86	139.40		
	Comparison					
MF41: MFAT Physics: Intro Physics	Southeast	42.00	0.00	0.00		
	Comparison					
MF42: MFAT Physics: Advance Physics	Southeast	37.00	0.00	0.00		
	Comparison					

WP003 SUMMARY UNDERGRADUATE		
Method	Mean	Trend
WP003 Mean	8.11	Irregular

DISCIPLINE SPECIFIC SUMMARY UNDERGRADUATE		
Method	Mean	Trend
Praxis Tests (Majors Only)		
PX43: PRX Physics Ck 265-Total	147.00	Improving
Praxis Tests (All Majors)		
PX43: PRX Physics Ck 265-Total	151.67	Irregular
MFAT (Majors Only)		
MF32: MFAT Physics - Total	143.11	Declining
MF41: MFAT Physics: Intro Physics	42.00	Irregular
MF42: MFAT Physics: Advance Physics	37.00	Irregular
MFAT (All Majors)		
MF32: MFAT Physics - Total	142.09	Declining
MF41: MFAT Physics: Intro Physics	42.00	Irregular
MF42: MFAT Physics: Advance Physics	37.00	Irregular

UNDERGRADUATE

Brief Conclusion from Data

Our students score about equal to the College and University averages on the WP003. They score at about the national average on the Physics MFAT.

Although not provided with the data sets this time, our students have historically scored well above the College and University averages on the CCTST.

Our Engineering Physics majors also take the Fundamentals of Engineering (FE) Exam, which is the first step to becoming Registered Professional Engineers. The FE Exam is an 8-hour exam, the results of which we also use as part of our assessment process. Only students in ABET/EAC accredited programs may take the FE Exam. Of the 23 or so students who have taken the FE Exam since 2004, 85% have passed, which exceeds the typical pass rate by between 3% and 12% (see http://www.ncees.org/Exams/Pass_rates.php), depending on the discipline. After passing the FE Exam and obtaining four years of creditable engineering experience, our graduates are eligible to take another 8-hour exam, the Principles and Practice (PE) Exam. After passing the PE Exam, they are registered as Professional Engineers.

Additional Data or Comments

Our students receive competitive summer internships. The National Science Foundation funds the Research Experience for Undergraduates (REU) program. Research universities bring in students after their junior year for the summer to work alongside faculty in their research labs. An REU award pays room and board and about \$4000 for a ten-week stay. Over the last three summers, 5 students received REU awards. Another student received a NASA internship and another received a Department of Energy funded internship run by Princeton Univ. This represents over one third of our eligible students. All who applied for these internships received them. Both students who applied for REU's for Summer 2010 received them, and another has an internship arranged with a company in Florida conducting research related to chemical reactors. Since typical acceptance rates for REU programs are about 25%, this speaks highly of our students. In addition, nearly all our other students during this period have received paid internships during the summers after their junior years. We have had about five students participate in the McNair Scholars Program as well. Most of these students have given presentations at national conferences on their research. One of our early REU recipients from 2004 published his summer REU work in a refereed journal.

Since its inception, we have had one or two of our students each year attend the week at CSIS in Washington, DC during Spring Break. One student subsequently arranged a semester-long internship at CSIS for Spring 2009.

All of our graduates in the last few years have been successful at gaining admission to the graduate school of their choice or at obtaining technical employment within a reasonable amount of time (typically 3 to 6 months) of graduating. Please see <http://www6.semo.edu/pep/deptinfo/grads/epgrads.asp> and <http://www6.semo.edu/pep/deptinfo/grads/phygrads.asp> for complete details on placement of our graduates since 1996. Note that many of our graduates are employed in the state of Missouri. Note also that over 20% of our graduates are female, which compares well with national averages.

Of those listed, a few highlights follow. Janessa Burford (2008) recently went to work for NASA Kennedy Space Center. Eliza Grove (2008) recently went to work at Lighting Science Group, Satellite Beach, FL, Matthew Clark (2008) and Nathaniel Golden (2008) work locally at Schaefer's Electrical Enclosures, several graduates work for The Boeing Company in St. Louis, MO, and Lt. Cmdr. Cory Pritchard (1996) is a TOPGUN, F-18 fighter pilot. Jason Alexander (2002) received his Ph.D. in Physics from Missouri University of Science and Technology in 2009, Bryan Miller (1996) received his Ph.D. in Materials Science and Engineering from Univ. of Illinois-Champaign in 2009, Guillaume Quelin (2003) will receive his Ph.D. in Physics from the Univ. of Southern California in 2010. Currently, Jerrad Martin (2007) is in the Physics graduate program at Washington Univ., Edward Graef (2007) and Clayton Schenk (2009) are both in the Physics graduate program at the University of Arkansas, and Va'Juanna Wilson (2009) is in the Electrical Engineering graduate program at Southern Illinois University at Edwardsville. Jonathan Kessler (2010) will enter the Physics graduate program at Washington Univ. next fall. Astronaut Dr. Linda Godwin (1974) is one of only four astronauts to receive their B.S. degree from a Missouri university. A prominent display in Dr. Godwin's honor sits just outside the President's Office in Academic Hall.

Plan to Address

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

GRADUATE

Brief Conclusion from Data

Additional Data or Comments

Plan to Address

Brief Follow Up on Outcomes of Plans to Address from Last Review

Program Review Final University Committee Chair Comments

VIII. CURRENCY OF CURRICULUM

UNDERGRADUATE

What steps have you taken to ensure that your programs and courses are up-to-date and effective?

Our programs are designed to address our Departmental Program Outcomes, which are listed on the Departmental web site at <http://www6.semo.edu/pep/deptinfo/objectives.asp>. Each instructor completes a Course Assessment Form at the end of the semester which describes the course, changes that were implemented that semester, and how well they worked. It also describes suggestions for future changes. The outcomes the course was to address are assessed using student artifacts such as homework or tests and assigned a rating. The assessments of the various outcomes are aggregated, then evaluated and discussed at a faculty meeting each semester. Actions are taken to address any shortcomings identified by this process.

Courses are also kept up to date by ensuring that textbooks are updated regularly.

Our faculty is very active in scholarship, attending professional conferences, and serving professional societies, which provides opportunity to stay current in our disciplines and to see what other programs around the country are doing.

A documented and functioning continuous improvement process is required in order to be accredited by ABET.

Program Review Final University Committee Chair Comments

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What steps have you taken to ensure that your programs and courses are up-to-date and effective?

Program Review Final University Committee Chair Comments

IX. IMPACT, JUSTIFICATION, AND OVERALL ESSENTIALITY TO THE SOUTHEAST MISSION

UNDERGRADUATE

The Department of Physics and Engineering Physics plays an essential role at Southeast because of the contribution it makes to delivering courses for University Studies and other majors (96% of our SCH). In addition, our BS programs attract some of the most academically qualified students to Southeast, and our graduates all either attend the graduate school of their choice or are employed in high-paying technical jobs directly related to their major.

We offer one of only two BS degrees in a physical science at Southeast, Chemistry being the other. We offer the only engineering degree at Southeast, our BS in Engineering Physics. Having an accredited engineering program offers students in our region the opportunity to obtain such a degree without leaving the region. It also attracts engineering students outside the Southeast Missouri region (e.g. from Southern Illinois) who prefer the smaller environment and close interaction with faculty offered by our department.

The availability of programs such as our Physics program and our Engineering Physics program in the Southeast Missouri region supports efforts to recruit high-technology enterprises to our region because of the prospects of recruiting well-trained, local technical professionals. One challenge often faced by such high technology enterprises is to recruit and retain technical talent because many such people prefer to live in larger urban areas. The ability to recruit local talent is important for such enterprises as they consider locating in our region.

Our programs attract some of the best-prepared students to Southeast (high average incoming freshman ACT, high percentage receiving merit scholarships, etc), and most remain at Southeast whether or not they remain in our department. These students contribute to the campus in many ways by their participation in such activities as the CSIS trips, the Honors Program, athletics (two gymnasts with 4.00 GPA's), tutoring programs, the Student Research Conference, and student government. Because we emphasize undergraduate research and pursuing competitive summer internships, our students have access to quality experiential learning opportunities. Our department clearly enhances the academic stature and intellectual climate of Southeast and contributes to meeting Strategic Priority One to provide top-quality academic programs.

Our faculty members continue to be quite productive in scholarship by regularly publishing and attending professional meetings to present papers. They are quite active in professional service as well. Both scholarship and professional service enhance the stature of Southeast as our institution's visibility is increased by such activities by faculty.

Program Review Final University Committee Chair Comments

GRADUATE

Program Review Final University Committee Chair Comments

X. PLANNING FOR THE FUTURE

Given impending personnel and environmental changes, how do you envision the configuration of your unit in five years? What components would be phased out? What components would be reduced in size? What components will have grown? What new components will have been developed? What other units might be involved in the new components?

UNDERGRADUATE

The current program offerings will be maintained for the near future.

Two faculty members may decide to retire within the next five years. Either not replacing one of them or replacing one of them with a regular non-tenure track (RNTT) person would reduce our costs. An RNTT person could teach some of the Univ. Studies courses or service courses currently taught by tenured or tenure-track faculty, relieving tenure/tenure-track faculty to engage more undergraduates in research activities. The second line would still need to be tenure track.

Following are ideas directed at improving our financial position by increasing our number of majors or by restructuring. Each will require considerable discussion in order to determine their feasibility. They are listed simply to indicate that there may be viable directions for program expansion and restructuring in our college that will improve our financial position over time.

Additional options for the Engineering Physics (EP) program may be possible. One option seriously considered in AY07-08 was an Environmental Applications Option that combines physics with environmental engineering. The idea is to leverage what is already taught in the Environmental Science (ES) program. We did not pursue the idea then because the Environmental Science courses, while very similar to courses taught in environmental engineering programs, would not be taught by an environmental engineer nor would they have an engineering perspective. This would cause issues for ABET accreditation of our EP Program. This option will only be viable if an environmental engineer is hired. When the next opportunity arises to hire a faculty member for the ES program, we have suggested to them, and they are open to the idea, that they hire an environmental engineer. Another possibility is to replace one of our retiring faculty members with such a person.

Another possibility recently discussed is a Biomedical Applications Option. One faculty member currently is very active in biomaterials research, and he collaborates with a faculty member in Biology on some aspects of the research. We already teach nearly all the courses at Southeast that might make up such an option. This option would also include courses already taught by the Departments of Biology and Chemistry. US News & World Report just reported that Biomedical Engineering is one of the fastest growing career fields (see <http://www6.semo.edu/pep/deptinfo/objectives.asp>). Since in Missouri, only the University of Missouri in Columbia, MO has any program close to this with their Biological Engineering program, a viable niche may exist here, especially for some students wishing to do pre-medical preparation.

Another idea suggested by Dr. Michael Aide in the Agriculture Department is to develop an Agricultural Engineering Option in our EP program or an emphasis in the Pre-engineering program. Neither of these would require additional courses.

Another idea we have discussed is to offer the courses in the Pre-engineering program on rotation in the evening over perhaps a four-year cycle. This would allow a person to complete the Pre-engineering program while working full time. The Mathematics Department would have to offer the calculus sequence and differential equations in the evening as well for this to be viable.

During separate brainstorming, our faculty and the Computer Science faculty considered the idea of merging departments. After discussion, neither faculty felt the potential savings of the merger was sufficient to outweigh the potential challenges.

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Program Review Final University Committee Chair Comments

DEANS' COMMENTS

The quality of the Engineering Physics program has been affirmed by accreditation from ABET since 2001. The program attracts top quality students and its graduates have been highly successful. The Engineering Physics program continues to grow; and based on the first few First-Steps this year, it will grow again next year. The higher costs of the program are related to the high cost of the faculty (engineers) and a relatively low number of students. The department has operated in efficiency mode for more than a decade. It is already teaching a large number of its upper division courses once every other year. The departmental faculty with their various expertises are probably at the minimum number in order to maintain the program. The large cost of the program can probably be reduced only by growth. And, I expect that growth will continue. The department has a long history of active recruiting. The department has added one option in the recent past and plans are currently being formulated to add two additional options. The pre-engineering program takes advantage of courses that would be taught anyway. The pre-engineering program is taught in larger sections and is revenue generating. Because of the overlap between the Physics degree and the Engineering Physics degree only three classes taught over two years are required to continue the Physics degree. I would seriously consider merging this department with Computer Science. Savings would derive from the loss of a Chair's stipend and an administrative assistant. I overwhelmingly support the continuation of two degree programs and the pre-engineering program.

Final University Committee Chair Comments on Entire Document

Provost's Decision