



FERRIS STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES

MEMORANDUM

Date: August 14, 2009
To: Academic Program Review Council
From: Matthew A. Klein, Dean, College of Arts and Sciences
Subject: Pre-Professional Programs Program Review

After review of the Pre-Professional Programs Self-Study document, I provide the following observations:

1. The pre-professional programs are a diverse group of programs that attract a broad array of students. The pre-engineering and pre-science programs attract both students who are uncertain about which field of engineering or science to pursue and students who are underprepared for engineering and science programs. The pre-mortuary science and the pre-pharmacy programs attract highly prepared students. Approximately twenty-five percent of the students in the Honors Program are pre-pharmacy students. The pre-professional programs attract the students for whom the programs have been developed and meet the needs of the students who have enrolled.
2. The programs, particularly pre-pharmacy, have a consistent pattern of growth.
3. The programs are low-cost programs that operate with existing faculty, facilities, and courses.
4. The programs clearly meet expectations and should be continued.

In closing, the self-study appears to be an accurate representation of the current state of the pre-professional programs, and the programs are prepared to work with Vice President for Academic Affairs to address the recommendations of the APRC.

Pre-Professional Programs Program Review:

Pre-Engineering

Pre-Mortuary Science

Pre-Pharmacy

Pre-Science

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Section 1: Program Overview

A. Program Goals

1. State the goals of the program.

The pre-professional programs in the College of Arts and Sciences are difficult programs to categorize for the purposes of program review. The curricula for the pre-professional programs including pre-engineering, pre-mortuary science, pre-pharmacy, and pre-science are largely determined by the professional programs to which students seek access. The overarching programmatic goal for each of these programs is to provide the appropriate academic training to students to prepare them for successful admission to and study in their intended professional program.

Because the programs are tailored to bridge the academic goals of students to established and identified professional programs, the programs are dynamic and seek to conform to the expectations of their respective professional programs' accrediting and other standards-setting entities. Additionally, the pre-professional programs offer students introductory experiences to specific careers and disciplines. Further, pre-professional programs offer students opportunities to build a foundation of general education so that they may have increased flexibility in career decision-making. This curricular design is intentional due to the fluidity of students' interests. That is, many may begin in one of the pre-professional programs, but then migrate to another similar discipline (e.g., pre-pharmacy to pre-medicine). The pre-professional programs also function in ways that support stages of career development and student development--allowing students to engage in hands on learning activities and subsequently reflect on how well those activities fit with their career expectations and goals.

Pre-Engineering

The pre-engineering program was developed to give students a broad overview of the engineering field. Students take general education courses as well as pre-engineering courses to give them the required knowledge and skills necessary to gain entrance to an engineering college.

Pre-Engineering is designed for students who intend to transfer to an engineering college to earn a bachelor's degree in engineering or a related field. The program is based on courses that are fundamental to all engineering disciplines.

The Pre-Engineering program at Ferris is a great place to begin a career in the well-paid engineering field, a field that grows larger every year.

Pre-Mortuary Science

The pre-mortuary science program is designed in accordance with the Mortuary Science program at Wayne State University, which is the only institution in Michigan that prepares students for State certification in mortuary science. Because entrance into the WSU program is competitive, a

minimum requirement for application is completion of at least 68 credit hours with a grade of 'C' or better as outlined in the WSU graduate bulletin. State of Michigan Mortuary Licensure requires a minimum of eight credits of 100-level or higher chemistry.

The duties and responsibilities of a funeral director are extremely varied. They may include counseling, proper completion of death certificates and preparation of the body for burial.

After the funeral service, the director may assist the family for several months in filing necessary claims for Social Security, insurance, etc., until all details are satisfactorily completed. Thus, the pre-mortuary science program is a broad-based program that prepares students for the multifaceted training they will receive in their professional program.

Pre-Pharmacy

The Pre-Pharmacy program at Ferris is designed to give students all the tools necessary to gain admission into the College of Pharmacy. Because of the stringent requirements and extensive educational background needed to become a pharmacist, the courses in the Pre-Pharmacy program provide students with a broad overview and strong fundamental preparation for the Pharmacy program.

A path to a career in pharmacy begins with the two-year Pre-Pharmacy program, which is designed to prepare students to meet the competitive admission requirements of the College of Pharmacy. Upon admission to the College of Pharmacy, students will continue their studies for four years to complete the doctor of pharmacy degree.

Professional pharmacists are often the most accessible member of the health care team and the most knowledgeable about the effects of drugs on people. Pharmacists serve as an essential link between the patient and the prescribing physician, advising both about drug interactions, dosages and possible side effects.

A degree in Pharmacy provides job opportunities as a community pharmacist, hospital pharmacist or industrial pharmacist. Other opportunities include pharmaceutical journalism, advertising, public health, research, law enforcement, pharmacy education and positions with pharmaceutical associations. Ferris graduates enjoy 100 percent job placement, and the financial awards can be abundant.

Pre-Science

Pre-Science is intended for students who have a general interest in science but who are not ready to choose a specific field of study. The program also is intended to provide students with preparatory course work if previous academic experiences require fundamental improvements.

During the first year, students take coursework necessary to fulfill the general education requirements common to all college degrees. Students also choose courses in mathematics, biology, chemistry, physics and other sciences to build fundamental skills in these disciplines. During the second year, students continue selecting similar courses to assist them in focusing on

an appropriate career direction. Coursework is extremely flexible and advisors work with students to plot a program of courses that suits their interests, goals and needs. The Pre-Science program at Ferris provides students with the solid foundation in mathematics and science necessary to pursue a major in a science discipline.

2. Explain how and by whom the goals were established.

All of the pre-professional programs were established by the College of Arts and Sciences as tracks that can lead to the awarding of Associates in Science (AS) degrees. While the programs may lead to the awarding of an AS degree, the primary purpose of the degrees is to prepare students for entry into the professional programs.

3. How do the goals apply to preparing students for careers in and meeting employer needs in the community/region/marketplace?

Each of these pre-professional programs prepares students for further study in high-demand fields. If students successfully complete the professional programs for which they are preparing in the pre-professional programs, they are likely to enter professions in high demand in Michigan and throughout the United States.

4. Have the goals changed since the last program review? If so, why and how? If not, why not?

The pre-professional programs have not previously undergone program review. The nature of the programs make the formal program review process somewhat awkward because the curricula are largely dictated by the professional programs for which the pre-professional programs prepare students. Thus, program requirements change in response to changes in the admission standards of engineering, mortuary science, pharmacy, or science programs.

5. Describe the relationship of program goals to the University's mission, and the departmental, college and divisional plans.

The pre-professional programs are clearly aligned with the university's mission "to prepare students for successful careers, responsible citizenship, and lifelong learning" as they prepare students to enter professional programs with clear career preparation but also provide a broad-based general education that provides the foundation for responsible citizenship and lifelong learning.

The pre-professional programs address several of the college and divisional plans, particularly in the areas of recruitment and retention of students. The pre-professional programs provide an avenue for entry to programs across the university and provide a broad-based educational experience that can be incorporated into many other disciplines of study at the university.

B. Program Visibility and Distinctiveness

1. Describe any unique features or components of the program.

As stated above, the pre-professional programs do not determine their curricula through traditional means but in response to the admission requirements of the professional programs for which they prepare students. Thus, each of the programs prepares students for admission to other majors or programs. See Appendix One for general admission criteria for the College of Engineering at Michigan State University, the Mortuary Science Program at Wayne State University, the College of Pharmacy at Ferris State University, and the BS Program in Biology at Ferris State University.

2. Describe and assess the program's ability to attract quality students.

The pre-professional programs are a diverse group of programs that attract a broad array of students. The pre-engineering and pre-science programs attract both students who are uncertain about which field of engineering or science to pursue and students who are underprepared for engineering and science programs. The pre-mortuary science and the pre-pharmacy programs attract highly prepared students. Approximately twenty-five percent of the students in the Honors Program are pre-pharmacy students. The pre-professional programs attract the students for whom the programs have been developed and meet the needs of the students who have enrolled.

3. Identify the institutions that are the main competitors for prospective students in this program.

Most institutions of higher learning in Michigan, including community colleges, offer programs that are similar to our pre-professional programs. Program descriptions for these programs at Grand Rapids Community College, Grand Valley State University, Central Michigan University, Northern Michigan College, and Saginaw Valley State University are included in Appendix Two.

a. How are these programs similar and different from the FSU program?

All pre-professional programs are more similar than different because the programs are designed in response to the admissions requirements of the professional programs or schools. The major differences between the programs lay in the differences in general education between the schools. In most cases, the general education curriculum requires between 40 and 48 hours of course work. The other differences occur due to course sequencing and course content, but all pre-professional programs will meet the basic requirements of the professional schools or programs.

b. What can be learned from them that would improve the program at Ferris?

While the programs are largely similar in nature, many of the institutions are much more explicit about the importance of early and frequent advising for students who seek entry into professional programs or schools.

C. Program Relevance.

1. Do students come to FSU for the program? Summarize the results of the student satisfaction survey.

Students clearly come to Ferris to attend the pre-professional programs, particularly the pre-pharmacy program. Ferris has an advantage over all of its regional competitors in pre-pharmacy programs because it has a College of Pharmacy on its campus. The pre-science program also continues to have strong enrollment figures. While the pre-engineering and pre-mortuary science programs do not have as robust enrollments as the pre-pharmacy and pre-science programs, the coursework for the programs would exist whether or not we had such programs officially or not.

2. How well does the program meet student expectations?

The programs meet student expectations in all surveyed areas. 88.9% of current pre-professional students feel that their program prepares them for their chosen program either somewhat or very well. 86.1% feel their program serves them well, and over 98% feel their program is an asset to the University (see summary current student information in Section 2).

Among students who studied in Ferris pre-professional programs who are currently enrolled in the College of Pharmacy, 100% of students feel that their program at least adequately prepared them for their chosen field of study, with 72% responding that the program prepared them either very well or somewhat. 100% of those who responded also feel that the program served them well, with 76% responding that their program served them somewhat or very well. 100% of the students in the College of Pharmacy who responded to the survey either strongly agreed or agreed that the program is an asset to the University (see summary pharmacy student information in Section 2).

3. How is student sentiment measured?

Student sentiment was measured through satisfaction surveys conducted with students who are currently enrolled in pre-professional programs, together with follow-up surveys administered to pharmacy students who attend Ferris State University for their pre-pharmacy curriculum.

D. Program Value (Please refer to the relevant faculty survey.)

1. Describe the benefit of the program to the University.

The pre-professional programs provide several benefits to the University. First and foremost, the pre-engineering and pre-science programs help to prepare underprepared students to pursue programs in science and engineering, which benefits enrollment in those disciplines and also attracts students to the University.

The pre-pharmacy program also attracts students to the University who are interested in entering the University's professional doctorate program in Pharmacy. As demonstrated in Appendix Two, many institutions offer programs of study that prepare students for Pharmacy programs, but

the University's undergraduate enrollment benefits from students who attend the University for their preparatory coursework prior to admission to the Pharmacy program.

The University is also able to attract highly qualified students due to its pre-pharmacy and pre-mortuary science programs.

As part of the program review of the Honors Program, Kent Sun compiled information on pre-pharmacy students at Ferris with the following characteristics:

- 1) FTIAC at Ferris State University
- 2) Declared Pre-pharmacy as their incoming major
- 3) Had a minimum 24 composite ACT
- 4) Had a minimum 3.4 HS GPA

Pre-pharmacy students with these characteristics have an above-average admission rate to the College of Pharmacy, but more importantly, nearly 75% of these students complete degrees at Ferris whether or not they are admitted to the College of Pharmacy. Thus, at least in the case of the pre-pharmacy program, the program clearly benefits both the University and the students enrolled in the programs.

	Number in COP	Cohort Size	Percent in COP
1997	22	40	55
1998	23	41	56
1999	18	30	60
2000	27	60	45
2001	29	55	53
2002	33	81	41
2003	42	119	35
2004	48	127	38
2005	51	125	41
2006	43	119	36

Table 1.1

	Number with Assoc+ Degree or still at Ferris	Cohort Size	Percent with Assoc+ Degree or still at Ferris
1997	32	40	80
1998	32	41	78
1999	22	30	73
2000	47	60	78
2001	48	55	87

2002	60	81	74
2003	82	119	69
2004	92	127	72
2005	96	125	77
2006	103	119	87

Table 1.2

	Number with Bach+ Degree or still at Ferris	Cohort Size	Percent with Bach+ Degree or still at Ferris
1997	30	40	75
1998	31	41	76
1999	20	30	67
2000	40	60	67
2001	43	55	78
2002	49	81	60
2003	76	119	64
2004	86	127	68
2005	92	125	74
2006	103	119	87

Table 1.3

Students who are not enrolled in the Honors Program also complete programs at Ferris at very high rates. An average of 10% of students not in the Honors Program but enrolled in pre-pharmacy have been admitted to the College of Pharmacy over the past ten years. Over this same period, 57% of students have either completed an associate's degree or are still enrolled at Ferris, and 44% have completed a baccalaureate degree or are still enrolled at the University. Obviously, there is some overlap in these figures, but they indicated that a high percentage of our pre-professional students complete at least one degree at the University, and some students persist to complete both an associate's degree and a baccalaureate degree.

	Number in COP	Cohort Size	Percent in COP
1997	9	41	22
1998	5	33	15
1999	5	31	16
2000	3	34	9
2001	4	49	8
2002	4	65	6
2003	4	86	5
2004	6	95	6

2005	8	89	9
2006	9	88	10
2007	5	113	4

Table 1.4

	Number with Assoc+ Degree or still at Ferris	Cohort Size	Percent with Assoc+ Degree or still at Ferris
1997	19	41	46
1998	20	33	61
1999	21	31	68
2000	23	34	68
2001	30	49	61
2002	30	65	46
2003	41	86	48
2004	45	95	47
2005	54	89	61
2006	52	88	59
2007	68	113	60

Table 1.5

	Number with Bach+ Degree or still at Ferris	Cohort Size	Percent with Bach+ Degree or still at Ferris
1997	18	41	44
1998	16	33	48
1999	16	31	52
2000	15	34	44
2001	22	49	45
2002	25	65	38
2003	37	86	43
2004	42	95	44
2005	49	89	55
2006	42	88	48
2007	28	113	25

Table 1.6

2. Describe the benefit of the program to the students enrolled in the program.

All pre-professional programs prepare students for disciplinary study in professional programs that lead to career fields in engineering, mortuary science, pharmacy, or science-related fields.

Underprepared students are able to design courses of study that prepare them for enrollment in the rigorous science fields. Highly-qualified students in pre-pharmacy take the coursework necessary for admission to the graduate program in Pharmacy.

3. What is the value of the program to employers? Explain how this value is determined.

None of the pre-professional programs prepare students directly for employers, but they do provide students with the coursework necessary to pursue their career goals through professional education.

4. Describe the benefit of the program to entities external to the University (e.g., services that faculty have provided to accreditation bodies, and regional, state, and national professional associations; manuscript reviewing; service on editorial boards; use of facilities for meetings).

The faculty for the pre-professional programs are very similar to the general education faculty profiles prepared as part of the general education program review conducted during the 2007-2008 academic year. The curriculum vitae of approximately 200 faculty have been filed with the chair of the APRC as part of general education program review.

In summary of the experience of faculty in the pre-professional programs, multiple faculty are engaged in the work of accreditation bodies, regional, state, and national professional associations, manuscript reviewing, and service on editorial boards. Many of the pre-professional program faculty in Arts and Sciences present papers at regional, state, national, and international conferences. Many faculty regularly publish articles or reviews in their disciplines, and several are the authors of academic monographs or textbooks.

5. What services for extra-university general public groups (e.g., presentations in schools or to community organizations) have students provided? Describe how these services benefit students and the community.

56% of students currently in the College of Pharmacy who were enrolled in the FSU pre-pharmacy program reported being in a professional organization, and 60% reported having had opportunities to present at community organizations.

56.9% of students currently enrolled in pre-professional programs also indicated that they have had the opportunity to join professional organizations, and 51.4% reported opportunities to present to community organizations.

The above figures indicate that the pre-professional programs provide significant engagement opportunities to their students, which provide productive experiences for both the students and educational opportunities for the community.

Section 2: Collection of Perceptions

A. Graduate follow-up survey: The purpose of this activity is to learn from the graduates their perceptions and experiences regarding employment based on program outcomes. The goal is to assess the effectiveness of the program in terms of job placement and preparedness of the graduate for the marketplace. A mailed or e-mailed questionnaire is most preferred; however, under certain conditions telephone or personal interviews can be used to gather the data.

Pre-Professional Programs APR...Pharmacy Students

Frequencies

Prepared by: Institutional Research & Testing, 07/09

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1a The program prepared me for my chosen program	25	0	2.04	2.00	.735
q1b The program is successful at attracting quality students	23	2	1.48	1.00	.593
q1c The program served me well	23	2	1.83	2.00	.717
q2a The program is an asset to the University	25	0	1.24	1.00	.436
q2b The program challenged me; it made me a better student	24	1	1.67	2.00	.637
q2c This program prepared me to be a valuable employee in the program's discipline	24	1	2.04	2.00	.690
q2d My participation in the program included becoming a member of a professional organization or working as a volunteer in an organization that has some relationship to the program's discipline	23	2	2.26	2.00	.915
q2e As a student in the program I was provided opportunities to present at other community organizations	24	1	2.25	2.00	.897
q3 Additional comments	25	0			

Frequency Table

q1a The program prepared me for my chosen program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	6	24.0	24.0	24.0
	Somewhat	12	48.0	48.0	72.0
	Adequately	7	28.0	28.0	100.0
	Total	25	100.0	100.0	

q1b The program is successful at attracting quality students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	13	52.0	56.5	56.5
	Somewhat	9	36.0	39.1	95.7
	Adequately	1	4.0	4.3	100.0
	Total	23	92.0	100.0	
Missing	System	2	8.0		
Total		25	100.0		

q1c The program served me well

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	8	32.0	34.8	34.8
	Somewhat	11	44.0	47.8	82.6
	Adequately	4	16.0	17.4	100.0
	Total	23	92.0	100.0	
Missing	System	2	8.0		
Total		25	100.0		

q2a The program is an asset to the University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	19	76.0	76.0	76.0
	Agree	6	24.0	24.0	100.0
	Total	25	100.0	100.0	

q2b The program challenged me; it made me a better student

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	10	40.0	41.7	41.7
	Agree	12	48.0	50.0	91.7
	Disagree	2	8.0	8.3	100.0
	Total	24	96.0	100.0	
Missing	System	1	4.0		
Total		25	100.0		

q2c This program prepared me to be a valuable employee in the program's discipline

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	20.0	20.8	20.8

	Agree	13	52.0	54.2	75.0
	Disagree	6	24.0	25.0	100.0
	Total	24	96.0	100.0	
Missing	System	1	4.0		
Total		25	100.0		

q2d My participation in the program included becoming a member of a professional organization or working as a volunteer in an organization that has some relationship to the program's discipline

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	20.0	21.7	21.7
	Agree	9	36.0	39.1	60.9
	Disagree	7	28.0	30.4	91.3
	Strongly Disagree	2	8.0	8.7	100.0
	Total	23	92.0	100.0	
Missing	System	2	8.0		
Total		25	100.0		

q2e As a student in the program I was provided opportunities to present at other community organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	20.0	20.8	20.8
	Agree	10	40.0	41.7	62.5
	Disagree	7	28.0	29.2	91.7
	Strongly Disagree	2	8.0	8.3	100.0
	Total	24	96.0	100.0	
Missing	System	1	4.0		
Total		25	100.0		

B. Employer follow-up survey: This activity is intended to aid in assessing the employers' experiences with graduates and their perceptions of the program itself. A mailed or e-mailed instrument should be used to conduct the survey; however, if justified, telephone or personal interviews may suffice.

There are no employer follow-up surveys conducted for the pre-professional programs because the programs prepare students for further study and not for career employment.

C. Student evaluation of program: Students are surveyed to obtain information regarding quality of instruction, relevance of courses, satisfaction with program outcomes based on their own expectations. The survey must seek student suggestions on ways to improve the effectiveness of the program and to enhance the fulfillment of their expectations. Due to the nature of the

student population of these programs, such evaluation should be limited to graduating students.

Pre-Professional Programs APR...Current Students Frequencies

Prepared by: Institutional Research & Testing, 07/09

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1a The program prepared me for my chosen program	72	0	1.58	1.00	.727
q1b The program is successful at attracting quality students	72	0	1.56	1.00	.785
q1c The program served me well	72	0	1.64	1.00	.756
q2a The program is an asset to the University	72	0	1.22	1.00	.451
q2b The program challenged me; it made me a better student	72	0	1.44	1.00	.669
q2c This program prepared me to be a valuable employee in the program's discipline	71	1	1.79	2.00	.735
q2d My participation included becoming a member of a professional organization/working as a volunteer in an organization that has some relationship to the program's discipline	71	1	2.17	2.00	1.000
q2e Provided opportunities to present at other community org's	71	1	2.39	2.00	.902
q3 Additional comments	72	0			

Frequency Table

q1a The program prepared me for my chosen program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	39	54.2	54.2	54.2
	Somewhat	25	34.7	34.7	88.9
	Adequately	7	9.7	9.7	98.6
	Not at All	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

q1b The program is successful at attracting quality students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	44	61.1	61.1	61.1
	Somewhat	17	23.6	23.6	84.7
	Adequately	10	13.9	13.9	98.6
	Not at All	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

q1c The program served me well

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	37	51.4	51.4	51.4
	Somewhat	25	34.7	34.7	86.1
	Adequately	9	12.5	12.5	98.6
	Not at All	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

q2a The program is an asset to the University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	57	79.2	79.2	79.2
	Agree	14	19.4	19.4	98.6
	Disagree	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

q2b The program challenged me; it made me a better student

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	46	63.9	63.9	63.9
	Agree	21	29.2	29.2	93.1
	Disagree	4	5.6	5.6	98.6
	Strongly Disagree	1	1.4	1.4	100.0
	Total	72	100.0	100.0	

q2c This program prepared me to be a valuable employee in the program's discipline

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	27	37.5	38.0	38.0
	Agree	33	45.8	46.5	84.5
	Disagree	10	13.9	14.1	98.6
	Strongly Disagree	1	1.4	1.4	100.0
	Total	71	98.6	100.0	
Missing	System	1	1.4		
Total		72	100.0		

q2d My participation included becoming a member of a professional organization/working as a volunteer in an organization that has some relationship to the program's discipline

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	24	33.3	33.8	33.8
	Agree	17	23.6	23.9	57.7
	Disagree	24	33.3	33.8	91.5
	Strongly Disagree	6	8.3	8.5	100.0
	Total	71	98.6	100.0	
Missing	System	1	1.4		
Total		72	100.0		

q2e Provided opportunities to present at other community organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	18.1	18.3	18.3
	Agree	24	33.3	33.8	52.1
	Disagree	27	37.5	38.0	90.1
	Strongly Disagree	7	9.7	9.9	100.0
	Total	71	98.6	100.0	
Missing	System	1	1.4		
Total		72	100.0		

D. *Relevant* Faculty perceptions: The purpose of this activity is to assess faculty perceptions regarding the following aspects of the program: curriculum, resources, admissions standards, degree of commitment by the administration, processes and procedures used, and their overall feelings. Additional items that may be unique to the program can be incorporated in this survey.

Pre-Professional Programs APR...Faculty

Frequencies

Prepared by: Institutional Research & Testing, 07/09

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing	Valid	Missing	Valid
q1a The pre-professional programs in science, engineering, and pharmacy prepare students for careers or continued professional education	5	0	1.00	1.00	.000
q1b The pre-professional programs' curricula sets them apart from similar programs at other institutions of higher education	4	1	2.00	2.00	.816
q1c The programs serve their students well	5	0	1.40	1.00	.894

q2a The programs are an asset to the University	5	0	1.00	1.00	.000
q2b The programs challenge students in meaningful ways; they advance their learning	5	0	1.20	1.00	.447
q2c The programs are valued by professionals in their disciplines	5	0	1.40	1.00	.548
q2d Professional associations affiliated with these programs' disciplines recognize the programs' quality	4	1	2.00	2.00	.000
q2e Provide opportunities for students to present to local or regional schools or community organizations	5	0	1.80	2.00	.447
q3 Additional comments	5	0			

Frequency Table

q1a The pre-professional programs in science, engineering, and pharmacy prepare students for careers or continued professional education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Well	5	100.0	100.0	100.0

q1b The pre-professional programs' curricula sets them apart from similar programs at other institutions of higher education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Well	1	20.0	25.0	25.0
	Adequately	2	40.0	50.0	75.0
	Somewhat	1	20.0	25.0	100.0
	Total	4	80.0	100.0	
Missing	System	1	20.0		
Total		5	100.0		

q1c The programs serve their students well

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Well	4	80.0	80.0	80.0
	Somewhat	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q2a The programs are an asset to the University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	100.0	100.0	100.0

q2b The programs challenge students in meaningful ways; they advance their learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	4	80.0	80.0	80.0
	Agree	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q2c The programs are valued by professionals in their disciplines

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	3	60.0	60.0	60.0
	Agree	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q2d Professional associations affiliated with these programs' disciplines recognize the programs' quality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	4	80.0	100.0	100.0
Missing	System	1	20.0		
Total		5	100.0		

q2e Provide opportunities for students to present to local or regional schools or community organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	1	20.0	20.0	20.0
	Agree	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

E. Advisory committee perceptions (if existent): The purpose of this survey is to obtain information from the members of the program advisory committee regarding the curriculum, outcomes, facilities, equipment, graduates, micro- and megatrends that might affect job placement (both positively and adversely), and other relevant information. Recommendations for improvement must be sought from this group. In the event that a program does not have an advisory committee, a group of individuals may be identified to serve in that capacity on a temporary basis.

There are no advisory boards for the pre-professional programs, although Ric Underhile, the educational counselor for the College of Arts and Sciences, is facilitating a communications group between the Pharmacy program and the College of Arts and Sciences.

Section 3: Program Profile

A. Profile of Students

1. Student Demographic Profile

Describe the students in the program by providing the number and percentage of the following:

- a. Gender, race/ethnicity, age (use annual institutional data).
- b. In-state and out-of-state.
- c. Full-time and part-time.
- d. Attend classes during the day, in the evenings, and/or weekends.
- e. Enrolled in classes on main campus, at an off-site location, or online.
- f. Discuss how the information presented in (a) through (e) impacts the curriculum, scheduling, and/or delivery methods in the *program*.

Table 3.1 provides specific enrollment information on gender, ethnicity and enrollment-status for the pre-professional programs. There is near gender-parity in the current class of students with 52% of those enrolled identifying as male and 48% identifying as female. The pre-professional programs, as a whole, attract a diverse student body.

The pre-professional programs are primarily full-time programs, with no off-campus sites offering the complete curriculum. All of the course offerings in the pre-professional curricula are carefully coordinated with the colleges and schools that rely on the course offerings for their majors. The continued growth in the Pre-Pharmacy Program may present staffing challenges in the future, but current demand can be met through current faculty and facilities.

ENROLLMENT by SEX and ETHNICITY FT vs PT - 200408													
	GENDER			ETHNICITY								Full Time vs Part Time	
	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/ Alaskan	Asian/ Pacific Islander	White	Foreign	Full Time	Part Time	
Pre-Engineering	2	2	0	1	0	0	0	0	1	0	2	0	
Pre-Mortuary Sci	3	0	3	0	1	0	0	0	2	0	3	0	
Pre-Pharmacy	441	179	262	19	12	5	4	27	353	21	438	3	
Pre-Science	82	39	43	4	10	2	0	3	63	0	79	3	
Totals	528	220	308	24	23	7	4	30	419	21	522	6	
ENROLLMENT by SEX and ETHNICITY FT vs PT - 200508													
	GENDER			ETHNICITY								Full Time vs Part Time	
	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/ Alaskan	Asian/ Pacific Islander	White	Foreign	Full Time	Part Time	
Pre-Engineering	2	2	0	1	0	0	0	0	1	0	2	0	
Pre-Mortuary Sci	5	1	4	0	0	0	1	0	4	0	3	2	

Program Profile

Pre-Pharmacy	429	177	252	18	16	3	3	16	360	13	418	11
Pre-Science	104	54	50	8	18	2	0	1	75	0	100	4
Totals	540	234	306	27	34	5	4	17	440	13	523	17
ENROLLMENT by SEX and ETHNICITY FT vs PT - 200608												
	GENDER			ETHNICITY							Full Time vs Part Time	
	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/ Alaskan	Asian/ Pacific Islander	White	Foreign	Full Time	Part Time
Pre-Engineering	2	1	1	0	0	0	0	0	2	0	1	1
Pre-Mortuary Sci	3	2	1	0	0	0	0	0	3	0	3	0
Pre-Pharmacy	503	228	275	18	15	5	2	20	427	16	492	11
Pre-Science	101	41	60	6	19	4	1	0	71	0	97	4
Totals	609	272	337	24	34	9	3	20	503	16	593	16
ENROLLMENT by SEX and ETHNICITY FT vs PT - 200708												
	GENDER			ETHNICITY							Full Time vs Part Time	
	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/ Alaskan	Asian/ Pacific Islander	White	Foreign	Full Time	Part Time
Pre-Engineering	1	0	1	0	0	0	0	0	1	0	1	0
Pre-Mortuary Sci	7	4	3	0	0	0	0	0	7	0	6	1
Pre-Pharmacy	543	250	293	1	18	7	3	29	468	17	530	13
Pre-Science	83	35	48	1	13	5	2	1	61	0	80	3
Totals	634	289	345	2	31	12	5	30	537	17	617	17
ENROLLMENT by SEX and ETHNICITY FT vs PT - 200808												
	GENDER			ETHNICITY							Full Time vs Part Time	
	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/ Alaskan	Asian/ Pacific Islander	White	Foreign	Full Time	Part Time
Pre-Engineering	3	2	1	0	0	0	1	0	2	0	3	0
Pre-Mortuary Sci	4	2	2	0	0	1	0	0	3	0	4	0
Pre-Pharmacy	506	266	240	2	13	9	3	35	426	18	494	12
Pre-Science	69	32	37	1	17	3	0	1	47	0	66	3
Totals	582	302	280	3	30	13	4	36	478	18	567	15

Table 3.1

ENROLLMENT by RESIDENCY and AGE - 200408					
	RESIDENCY				AGE
	Blank	Resident	Midwest Compact	Non-Resident	Average Age
Pre-Engineering	0	2	0	0	23
Pre-Mortuary Sci	0	3	0	0	23
Pre-Pharmacy	0	399	34	8	23
Pre-Science	0	79	1	2	24
Totals	0	483	35	10	23
ENROLLMENT by RESIDENCY and AGE - 200508					
	RESIDENCY				AGE
	Blank	Resident	Midwest Compact	Non-Resident	Average Age
Pre-Engineering	0	2	0	0	22
Pre-Mortuary Sci	0	5	0	0	23
Pre-Pharmacy	1	394	28	6	22
Pre-Science	0	103	1	0	22
Totals	1	504	29	6	22
ENROLLMENT by RESIDENCY and AGE - 200608					
	RESIDENCY				AGE
	Blank	Resident	Midwest Compact	Non-Resident	Average Age
Pre-Engineering	0	2	0	0	22
Pre-Mortuary Sci	0	3	0	0	21
Pre-Pharmacy	0	475	21	7	21
Pre-Science	0	98	2	1	21
Totals	0	578	23	8	21.25
ENROLLMENT by RESIDENCY and AGE - 200708					
	RESIDENCY				AGE
	Blank	Resident	Midwest Compact	Non-Resident	Average Age
Pre-Engineering	0	1	0	0	20
Pre-Mortuary Sci	0	7	0	0	20
Pre-Pharmacy	0	513	19	11	20
Pre-Science	0	82	1	0	20
Totals	0	603	20	11	20
ENROLLMENT by RESIDENCY and AGE - 200808					

	RESIDENCY				AGE
	Blank	Resident	Midwest Compact	Non-Resident	Average Age
Pre-Engineering	0	3	0	0	19
Pre-Mortuary Sci	0	4	0	0	19
Pre-Pharmacy	0	474	22	10	19
Pre-Science	0	67	2	0	19
Totals	0	548	24	10	19

Table 3.2

2. Quality of Students.

Describe and assess the quality of students in the program.

- What is the range and average GPA of all students currently enrolled in the program? ACT? Comment on this data.
- For each of the last 5 years what are the range and average GPA of students graduating from the program? ACT? Comment on this data.
- In addition to ACT and GPA, identify and evaluate measures that are used to assess the quality of students entering the program.
- Identify academic awards (e.g., scholarships or fellowships) students in the program have earned. Comment on the significance of these awards to the program and students.
- What scholarly/creative activities (e.g., symposium presentations, other presentations, or awards) have students in the program participated in? Comment on the significance of these activities to the program and students.
- What are other accomplishments of students in the program? Comment on the significance of these accomplishments to the program and students.

The students in the pre-professional programs, particularly in pre-engineering, pre-mortuary science, and pre-pharmacy, tend to be highly prepared for college-level work. Table 3.3 illustrates the FSU GPA and ACT range of students in pre-professional programs. Because these programs are preparatory programs, we do not currently have data on the scholarships, awards, etc. of pre-professional students. Many of the students in the pre-pharmacy program are students in the Honors Program and are recognized for their achievements there. The average ACT score for students in the pre-professional programs is in line with the University averages, except in Pre-Pharmacy, where the average ACT score is considerably higher than the university average.

AVERAGE GPA and ACT - 200408						
	FSU GPA			ACT		
	Average GPA	Minimum GPA	Maximum GPA	Average ACT	Minimum ACT	Maximum ACT
Pre-Engineering	3.55	3.55	3.55	25.00	25	25
Pre-Mortuary Sci	2.65	2.38	2.93	21.00	16	25
Pre-Pharmacy	3.18	1.50	4.00	24.65	15	34
Pre-Science	2.67	1.05	3.93	19.17	13	26

Total AVG	3.01	2.12	3.60		22.46	17	28
AVERAGE GPA and ACT - 200508							
	FSU GPA				ACT		
	Average GPA	Minimum GPA	Maximum GPA		Average ACT	Minimum ACT	Maximum ACT
Pre-Engineering	3.03	3.00	3.05		21.00	21	21
Pre-Mortuary Sci	3.20	2.32	3.83		19.80	16	25
Pre-Pharmacy	3.25	0.36	4.00		24.64	13	34
Pre-Science	2.53	0.70	3.91		19.09	13	31
Total AVG	3.00	1.60	3.70		21.13	16	28
AVERAGE GPA and ACT - 200608							
	FSU GPA				ACT		
	Average GPA	Minimum GPA	Maximum GPA		Average ACT	Minimum ACT	Maximum ACT
Pre-Engineering	3.18	2.85	3.51		24.50	21	28
Pre-Mortuary Sci	2.95	2.44	3.46		22.00	22	22
Pre-Pharmacy	3.27	0.81	4.00		24.56	14	33
Pre-Science	2.49	0.86	3.92		19.07	13	31
Total AVG	2.97	1.74	3.72		22.53	18	29
AVERAGE GPA and ACT - 200708							
	FSU GPA				ACT		
	Average GPA	Minimum GPA	Maximum GPA		Average ACT	Minimum ACT	Maximum ACT
Pre-Engineering					27.00	27	27
Pre-Mortuary Sci	2.63	1.62	3.77		23.57	17	30
Pre-Pharmacy	3.24	1.21	4.00		24.62	14	34
Pre-Science	2.41	1.64	3.86		19.21	13	26
Total AVG	2.76	1.49	3.88		23.60	18	29
AVERAGE GPA and ACT - 200808							
	FSU GPA				ACT		
	Average GPA	Minimum GPA	Maximum GPA		Average ACT	Minimum ACT	Maximum ACT
Pre-Engineering	2.96	2.96	2.96		24.33	19	29
Pre-Mortuary Sci	3.04	2.94	3.15		23.25	19	30
Pre-Pharmacy	3.36	0.77	4.00		24.98	14	34
Pre-Science	2.52	1.26	4.00		19.41	14	27
Total AVG	2.97	1.98	3.53		22.99	17	30

Table 3.3

3. Employability of students

The pre-professional programs do not directly prepare students for careers, but they do prepare them for advanced study. Because the programs are designed to meet the requirements of the professional schools, if students do well in the pre-professional programs, gain admission to their professional school, and complete their training, then they are highly employable.

B. Enrollment

1. What is the anticipated fall enrollment for the program?

The anticipated enrollment for the four pre-professional programs under review ranges between 500 and 600 students each fall. We anticipate new student enrollment figures of around 300 students. A cursory review of the enrollment figures should make it apparent that most students only complete two years in the pre-professional programs, which is a goal of the programs because they are designed to facilitate admission to professional schools or programs.

ENROLLMENT HEADCOUNT - 200408												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	1	0	1	1	0	1	0	0	0	0	0	0
Pre-Mortuary Sci	2	0	2	0	0	0	1	0	1	0	0	0
Pre-Pharmacy	241	0	241	159	0	159	32	0	32	9	0	9
Pre-Science	43	0	43	32	0	32	7	0	7	0	0	0
Totals	287	0	287	192	0	192	40	0	40	9	0	9
ENROLLMENT HEADCOUNT - 200508												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	1	0	1	1	0	1	0	0	0	0	0	0
Pre-Mortuary Sci	1	0	1	2	0	2	2	0	2	0	0	0
Pre-Pharmacy	233	0	233	152	0	152	38	0	38	6	0	6
Pre-Science	75	0	75	22	0	22	6	0	6	1	0	1
Totals	310	0	310	177	0	177	46	0	46	7	0	7
ENROLLMENT HEADCOUNT - 200608												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	0	0	0	2	0	2	0	0	0	0	0	0
Pre-Mortuary Sci	1	0	1	1	0	1	1	0	1	0	0	0

Pre-Pharmacy	236	0	236	175	0	175	80	0	80	12	0	12
Pre-Science	64	0	64	25	0	25	11	0	11	1	0	1
Totals	301	0	301	203	0	203	92	0	92	13	0	13
ENROLLMENT HEADCOUNT - 200708												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	1	0	1	0	0	0	0	0	0	0	0	0
Pre-Mortuary Sci	5	0	5	1	0	1	1	0	1	0	0	0
Pre-Pharmacy	265	0	265	174	0	174	82	0	82	22	0	22
Pre-Science	54	0	54	21	0	21	4	0	4	4	0	4
Totals	325	0	325	196	0	196	87	0	87	26	0	26
ENROLLMENT HEADCOUNT - 200808												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	2	0	2	0	0	0	1	0	1	0	0	0
Pre-Mortuary Sci	1	0	1	2	0	2	1	0	1	0	0	0
Pre-Pharmacy	260	0	260	163	0	163	66	0	66	17	0	17
Pre-Science	44	0	44	20	0	20	5	0	5	0	0	0
Totals	307	0	307	185	0	185	73	0	73	17	0	17

Table 3.4

2. Have enrollment and Student Contact Hours (SCH) increased or decreased since inception or the last APRC review? Comment on any enrollment trends.

Enrollment is consistent in the aggregate from year to year. Pre-engineering and pre-mortuary science have small enrollments, but they do not have program-specific courses, and the cost of offering the majors is minimal. Pre-pharmacy continues to attract a large number of students each year. (See Table 3.5)

ENROLLMENT - Student Credit Hours - 200408												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	16	0	16	13	0	13	0	0	0	0	0	0
Pre-Mortuary Sci	28	0	28	0	0	0	14	0	14	0	0	0
Pre-Pharmacy	3784	0	3784	2355	0	2355	456	0	456	116	0	116
Pre-Science	623	0	23	439	0	439	88	0	88	0	0	0
Totals	4451	0	3851	2807	0	2807	558	0	558	116	0	116
ENROLLMENT - Student Credit Hours - 200508												

Program Profile

	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	16	0	16	13	0	13	0	0	0	0	0	0
Pre-Mortuary Sci	7	0	7	27	0	27	18	0	18	0	0	0
Pre-Pharmacy	3665	0	3665	2194	0	2194	505	0	505	84	0	84
Pre-Science	1047	0	1047	289	0	289	85	0	85	14	0	14
Totals	4735	0	4735	2523	0	2523	608	0	608	98	0	98
ENROLLMENT - Student Credit Hours - 200608												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	0	0	0	24	0	24	0	0	0	0	0	0
Pre-Mortuary Sci	13	0	13	17	0	17	16	0	16	0	0	0
Pre-Pharmacy	3702	0	3702	2510	0	2510	1129	0	1129	153	0	153
Pre-Science	912	0	912	338	0	338	153	0	153	16	0	16
Totals	4627	0	4627	2889	0	2889	1298	0	1298	169	0	169
ENROLLMENT - Student Credit Hours - 200708												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	16	0	16	0	0	0	0	0	0	0	0	0
Pre-Mortuary Sci	72	0	72	15	0	15	12	0	12	0	0	0
Pre-Pharmacy	4145	0	4145	2479	0	2479	1061	0	1061	274	0	274
Pre-Science	764	0	764	282	0	285	54	0	54	58	0	58
Totals	4997	0	4997	2776	0	2779	1127	0	1127	332	0	332
ENROLLMENT - Student Credit Hours - 200808												
	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot
Pre-Engineering	31	0	31	0	0	0	13	0	13	0	0	0
Pre-Mortuary Sci	12	0	12	29	0	29	12	0	12	0	0	0
Pre-Pharmacy	4042	0	4042	2274	0	2274	878	0	878	196	0	196
Pre-Science	615	0	615	263	0	263	63	0	63	0	0	0
Totals	4700	0	4700	2566	0	2566	966	0	966	196	0	196

Table 3.5

3. Since inception or the last APRC review, how many students apply to the program annually?

Fall Application Numbers by College & Program												
Generated 06/12/09												
Term Code												
200808			200908									
Applicant Status												
	Accepts	Decisions -- Accepts	Pending	Accepts	Decisions -- Accepts	Pending	Accepts Difference	Pending Difference	App Total 2008	App Total 2009	App Difference	
Pre-Engineering	7	5	5	10	4	5	3	0	17	19	2	
Pre-Mortuary Science	2	3	3	7	5	7	5	4	8	19	11	
Pre-Pharmacy	519	157	123	494	122	184	-25	61	799	800	1	
Pre-Science	158	18	10	157	15	0	-1	-10	186	172	-14	
Total	686	183	141	668	146	196	-18	55	1010	1010	0	

Table 3.6

4. Of those who apply, how many and what percentage are admitted?

Approximately 80% of those who apply are admitted to the pre-professional programs. (See Table 3.5)

5. Of those who are admitted, how many and what percentage enroll?

On average, about 38% enroll at Ferris State University, yielding approximately 300 FTIAC students in the pre-professional program each year.

6. What are the program's current enrollment goals, strategy, and efforts to maintain/increase/decrease the number of students in the program? Please explain.

Currently, the goal of the college is to maintain current enrollment levels in pre-pharmacy and pre-science and to increase enrollment in pre-engineering and pre-mortuary science. The Departments of Biological Sciences and Physical Sciences are reaching capacity for course offerings for pre-pharmacy, but there is room for growth in your other pre-professional areas.

C. Program Capacity

1. What is the appropriate program enrollment, given the available faculty, physical resources, funding, accreditation requirements, state and federal regulations, and other factors?

The current enrollment levels of the pre-professional programs are sustainable, and in the cases of pre-engineering and pre-mortuary science could support some growth. Pre-pharmacy can sustain limited growth before faculty and/or physical spaces, such as laboratories, become a barrier to growth.

D. Retention and Graduation

1. What is the annual attrition rate (number and percent of students) in the program?
2. What are the program's current goals, strategy, and efforts to retain students in the program?
3. Describe and assess trends in number of degrees or designations awarded in the program.
4. What are the number and percentage of students who enroll in the program who graduate from it or complete its expectations within the prescribed time? Comment on any trends.
5. On average, how long does it take a student to graduate from or complete the expectations of the program? Comment on this.

The attrition and retention rates for the pre-professional programs may be somewhat misleading. The majority of the students in these programs will not complete an associate's degree because they enroll directly in a professional program following completion of the pre-professional sequence. Nonetheless, the requested figures are provided in Table 3.7 below. Most students in these programs complete their pre-professional sequence within three years.

RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 199808							
	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
% Graduated By							
PENG	0	0	25	25	25	25	
PMOR	0	0	0	0	33	33	
PPHR	0	16	27	38	49	68	
PSCI	0	0	2	11	26	30	
% Still Enrolled In							
PENG	50	50	0	0	0	0	
PMOR	67	33	33	33	0	0	
PPHR	89	61	45	35	23	2	
PSCI	53	40	38	25	14	8	
% Persisters							
PENG	50	50	25	25	25	25	
PMOR	67	33	33	33	0	0	
PPHR	89	77	72	73	72	70	
PSCI	53	40	40	36	40	38	
% Non-Persisters							
PENG	50	50	75	75	75	75	
PMOR	33	67	67	67	67	67	

	PPHR	11	23	28	27	28	30
	PSCI	47	60	60	64	60	62
RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 199908							
		Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By							
	PENG	0	0	0	0	33	33
	PMOR						
	PPHR	0	16	28	31	46	67
	PSCI	0	0	5	11	21	24
% Still Enrolled In							
	PENG	67	33	33	33	0	0
	PMOR						
	PPHR	85	61	46	38	21	3
	PSCI	45	29	26	20	6	5
% Persisters							
	PENG	67	33	33	33	33	33
	PMOR						
	PPHR	85	77	74	69	67	70
	PSCI	45	29	31	31	27	29
% Non-Persisters							
	PENG	33	67	67	67	67	67
	PMOR						
	PPHR	15	23	26	31	33	30
	PSCI	55	71	69	69	73	71
RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200008							
		Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By							
	PENG	0	0	0	0	0	0
	PMOR	0	0	0	100	100	100
	PPHR	0	7	15	27	53	72
	PSCI	0	0	0	9	14	23
% Still Enrolled In							
	PENG	100	100	0	0	0	0
	PMOR	100	100	100	0	0	0
	PPHR	87	75	59	47	23	5
	PSCI	66	41	34	23	20	7
% Persisters							
	PENG	100	100	0	0	0	0

PMOR	100	100	100	100	100	100
PPHR	87	82	74	74	76	77
PSCI	66	41	34	32	34	30
% Non-Persisters						
PENG	0	0	100	100	100	100
PMOR	0	0	0	0	0	0
PPHR	13	18	26	26	24	23
PSCI	34	59	66	68	66	70
RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200108						
	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By						
PENG						
PMOR	0	0	0	0	0	0
PPHR	0	14	27	43	56	70
PSCI	0	0	0	9	20	30
% Still Enrolled In						
PENG						
PMOR	33	33	0	0	0	0
PPHR	84	63	49	31	19	5
PSCI	57	43	39	28	17	7
% Persisters						
PENG						
PMOR	33	33	0	0	0	0
PPHR	84	77	76	74	75	75
PSCI	57	43	39	37	37	37
% Non-Persisters						
PENG						
PMOR	67	67	100	100	100	100
PPHR	16	23	24	26	25	25
PSCI	43	57	61	63	63	63
RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200208						
	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By						
PENG	0	0	0	0	50	50
PMOR	0	33	33	67	67	67
PPHR	0	8	11	25	40	60
PSCI	0	0	2	11	16	22
% Still Enrolled In						

	PENG	50	50	50	50	0	0
	PMOR	100	34	34	0	0	0
	PPHR	77	62	56	40	24	4
	PSCI	60	35	29	18	11	5
% Persisters							
	PENG	50	50	50	50	50	50
	PMOR	100	67	67	67	67	67
	PPHR	77	70	67	65	64	64
	PSCI	60	35	31	29	27	27
% Non-Persisters							
	PENG	50	50	50	50	50	50
	PMOR	0	33	33	33	33	33
	PPHR	23	30	33	35	36	36
	PSCI	40	65	69	71	73	73

RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200308

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By						
	PENG	0	0	33	33	67
	PMOR					
	PPHR	0	3	9	24	40
	PSCI	0	0	5	18	22
% Still Enrolled In						
	PENG	67	67	34	34	0
	PMOR					
	PPHR	78	65	55	36	21
	PSCI	55	45	39	24	14
% Persisters						
	PENG	67	67	67	67	67
	PMOR					
	PPHR	78	68	64	60	61
	PSCI	55	45	44	42	36
% Non-Persisters						
	PENG	33	33	33	33	33
	PMOR					
	PPHR	22	32	36	40	39
	PSCI	45	55	56	58	64

RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200408

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

% Graduated By						
PENG						
PMOR	0	100	100	100		
PPHR	0	13	21	40		
PSCI	0	0	0	13		
% Still Enrolled In						
PENG						
PMOR	100	0	0	0		
PPHR	73	56	43	23		
PSCI	77	60	50	34		
% Persisters						
PENG						
PMOR	100	100	100	100		
PPHR	73	69	64	63		
PSCI	77	60	50	47		
% Non-Persisters						
PENG						
PMOR	0	0	0	0		
PPHR	27	31	36	37		
PSCI	23	40	50	53		

RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200508

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By						
PENG	0	0	0			
PMOR						
PPHR	0	2	8			
PSCI	0	2	2			
% Still Enrolled In						
PENG	100	0	0			
PMOR						
PPHR	79	69	59			
PSCI	62	35	35			
% Persisters						
PENG	100	0	0			
PMOR						
PPHR	79	71	67			
PSCI	62	37	37			
% Non-Persisters						
PENG	0	100	100			
PMOR						

	PPHR	21	29	33			
	PSCI	38	63	63			
RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200608							
		Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By							
	PENG						
	PMOR	0	0				
	PPHR	0	4				
	PSCI	0	2				
% Still Enrolled In							
	PENG						
	PMOR	100	0				
	PPHR	81	70				
	PSCI	56	39				
% Persisters							
	PENG						
	PMOR	100	0				
	PPHR	81	74				
	PSCI	56	41				
% Non-Persisters							
	PENG						
	PMOR	0	100				
	PPHR	19	26				
	PSCI	44	59				
RETENTION AND GRADUATION RATES OF Full-Time FTIAC Students - 200708							
		Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
% Graduated By							
	PENG	0					
	PMOR	0					
	PPHR	0					
	PSCI	0					
% Still Enrolled In							
	PENG	100					
	PMOR	100					
	PPHR	76					
	PSCI	66					
% Persisters							
	PENG	100					

PMOR	100					
PPHR	76					
PSCI	66					
% Non-Persisters						
PENG	0					
PMOR	0					
PPHR	24					
PSCI	34					

Table 3.7

E. Access

1. **Describe and assess the program's actions to make itself accessible to students. Use examples such as off-site courses, accelerated courses, use of summer courses, multiple semester-entry-points, online courses, mixed-delivery courses, scheduling.**

Most of the pre-professional programs do not lend themselves to the types of format described above because of the requirements for laboratory experiences, etc. that make such formats difficult to construct.

2. **Discuss what effects these actions have had on the program. Use examples such as program enrollment, faculty load, computer, and other resources.**

Not applicable.

3. **How does the program's scheduling of classes advance program goals and priorities?**

The pre-professional programs do not schedule their courses in traditional ways because their courses are largely derived from existing general education and preparatory course work.

4. **What factors hamper these efforts?**

Not applicable.

F. Curriculum

1. **Program requirements. Describe and assess the current program requirements.**

The pre-professional program checksheets for pre-engineering, pre-mortuary science, pre-pharmacy, and pre-science are provided in Appendix Three. As stated above, the curricula are aligned with the requirements of the professional schools and are changed as professional schools and/or programs change their admission's criteria.

2. **As part of the graduation requirements of the current program, list directed electives and directed General Education courses. Provide the rationale for these selections.**

There are no directed electives in the pre-professional programs if one excludes the general education coursework that provides the foundation for the degrees. That is, in the science-oriented pre-professional programs, the required science coursework also fulfills the scientific understanding requirement, but the coursework is part of the program.

3. Indicate any hidden prerequisites (i.e., required courses that are not on the checksheet).

The pre-professional programs do not rely on hidden prerequisites to reduce credit hours. Some remedial work may be required for those students who do not meet basic requirements in mathematics or writing.

4. Has the program been significantly revised since the last review, and if so, how?

This is the first review.

5. Are there any curricular or program changes currently in the review process? If so, what are they?

There are no proposed changes in the pipeline at this time. Biology 286 was added to the pre-pharmacy program in response to changes in the pharmacy admission requirements last year.

6. Are there plans to revise the current program within the next three to five years? If so, why?

There are no immediate plans to revise the programs at this time, but changes in admission requirements for professional programs and schools may necessitate curricular changes prior to the next review.

G. Quality of Instruction

1. Describe and comment on trends in student mastery of the essentials of the subject area, using benchmarks such as professional college entrance exams or other assessment data.

As reported in Section 1, as part of the program review of the Honors Program, Kent Sun compiled information on pre-pharmacy students at Ferris with the following characteristics:

- 1) FTIAC at Ferris State University
- 2) Declared Pre-pharmacy as their incoming major
- 3) Had a minimum 24 composite ACT
- 4) Had a minimum 3.4 HS GPA

Pre-pharmacy students with these characteristics have an above-average admission rate to the College of Pharmacy, and nearly 75% of these students complete degrees at Ferris whether or not they are admitted to the College of Pharmacy.

Students who are not enrolled in the Honors Program also complete programs at Ferris at very high rates. An average of 10% of students not in the Honors Program but enrolled in pre-pharmacy have been admitted to the College of Pharmacy over the past ten years. Over this same period, 57% of students have either completed an associate's degree or are still enrolled at Ferris, and 44% have completed a baccalaureate degree or are still enrolled at the University. Obviously, there is some overlap in these figures, but they indicated that a high percentage of our pre-professional students complete at least one degree at the University, and some students persist to complete both an associate's degree and a baccalaureate degree.

2. Discuss student and alumni perceptions of the quality of instruction.

The programs meet student expectations in all surveyed areas. 88.9% of current pre-professional students feel that their program prepares them for their chosen program either somewhat or very well. 86.1% feel their program serves them well, and over 98% feel their program is an asset to the University. 93% of students also reported that the pre-professional program challenged them and made them better students (see summary current student information in Section 2).

Among students who studied in Ferris pre-professional programs who are currently enrolled in the College of Pharmacy, 100% of students feel that their program at least adequately prepared them for their chosen field of study, with 72% responding that the program prepared them either very well or somewhat. 100% of those who responded also feel that the program served them well, with 76% responding that their program served them somewhat or very well. 100% of the students in the College of Pharmacy who responded to the survey either strongly agreed or agreed that the program is an asset to the University. 88% of students currently enrolled in the College of Pharmacy who were in FSU pre-professional programs also reported that the pre-professional program challenged them and made them better students (see summary pharmacy student information in Section 2).

3. What collaborative departmental and individual efforts have been made to improve the learning environment and to use or add appropriate technology?

The pre-professional programs cross departmental and disciplinary boundaries. The College of Arts and Sciences regularly upgrades classrooms and computer labs used by these programs. All of the computer labs in CAS have been upgraded in the past four years. New technology has been installed in the large lecture halls and in smaller classrooms throughout the CAS buildings. The College is in the process of equipping fifteen classrooms with the complete Tegrity solution this summer.

4. What types of professional development have faculty participated, in efforts to enhance the learning environment that is pertinent to the program? (e.g., Writing Across the Curriculum; Center for Teaching and Learning, etc.)

Faculty in the College of Arts and Sciences regularly engage in the full area of participation in and leading workshops, symposia, and learning communities throughout the University.

5. What efforts have been made to increase the interaction of students with faculty and peers? Include such items as developmental activities, seminars, workshops, guest lectures, special events, student organizations, and student participation in the Honors Program Symposium.

The College of Arts and Sciences has established a special events funding grant to encourage such opportunities for interaction. The College also funds student research grants and grants for faculty/student collaborative research. Many of the students in the pre-professional programs also participate in the Honors Program.

6. Discuss the extent to which teaching and learning in this program are informed by current research and practice regarding inclusive pedagogy and curriculum.

Faculty in the pre-professional programs engage in a variety of teaching strategies that address a broad array of learning styles. Several of the faculty in the sciences use electronic response systems to measure student learning as a course is in progress. Others break down responses on examinations and quizzes so that students can see their individual strengths and weaknesses.

7. What effects have these activities had on the quality of teaching and learning in the program? Please comment.

The pre-professional programs are rigorous in their design, course load, and expectations and students must apply themselves to be successful in these programs. The faculty use of multiple teaching strategies supports student progress through the programs.

H. Composition and Quality of Faculty

1. Does the program have designated course sections or faculty?

The program does not have designated course sections or faculty, but the departments that offer courses are committed to expanding the diversity of their faculty, staff, and students. The CAS Diversity Committee supports faculty in search processes, recruiting, and awareness of trends in recruiting diverse faculty, staff, and students.

2. Reward Structure: e.g., salary, professional development funds, travel funds, UCEL and FSUGR incentive money.

The College of Arts and Sciences provides \$600 per faculty member for professional development activities. Each department in the college develops criteria for awarding the professional development funds. Some departments also allocate UCEL and FSUGR for professional development activities. The College, as indicated above, also has stipends available for faculty/student research, grant development, and special events.

I. Degree Program Cost and Productivity Data

Submit institutional studies data. Comment on the data.

Institutional Research does not prepare productivity data at the programmatic level for the pre-professional programs, but the CAS productivity information is presented below. Productivity in the College of Arts and Sciences surpasses the University average.

Productivity Data, Ferris State University, College of Arts and Sciences

Student Credit Hours (SCH), Full Time Equated Faculty (FTEF) and SCH/FTEF Aggregated by College

Year	Student Credit Hours				Full Time Equated Faculty				SCH / FTEF			
	Sum.	Fall	Winter	F + W (a)	Sum.	Fall	Winter	Avg F + W (b)	Sum.	Fall	Winter	F + W (a + b)
2003-04	9,246.00	61,523.00	55,081.00	116,604.00	46.05	201.57	183.64	192.61	200.79	305.22	299.94	605.40
2004-05	10,292.00	60,947.00	54,980.00	115,927.00	48.00	205.27	191.93	198.60	214.42	296.92	286.46	583.73
2005-06	10,785.00	62,742.00	57,058.00	119,800.00	50.04	207.38	193.02	200.20	215.51	302.54	295.61	598.41
2006-07	10,399.00	61,097.00	55,704.00	116,801.00	48.82	207.96	200.21	204.09	213.02	293.79	278.23	572.31
2007-08	10,495.00	62,124.00	56,538.00	118,662.00	54.81	207.97	196.11	202.04	191.47	298.71	288.30	587.32

Table 3.8

Degree program costs are in line with comparable programs in the College of Arts and Sciences and at Ferris State University.

Degree Program Costing Summary, 2003-2004

Program Name	Prog Crs Req	Total Instructor Cost*	Total Dept Cost**	Total Dean's Cost***	Total Program Cost	Instructor Cost Per SCH	Dept Cost Per SCH	Dean's Cost Per SCH	Total Cost Per SCH
Pre-Engineering	73	\$9,096.29	\$1,149.15	\$541.31	\$10,786.75	\$124.61	\$15.74	\$7.42	\$147.76
Pre-Mortuary	60	\$6,335.06	\$1,371.92	\$657.29	\$8,364.27	\$105.58	\$22.87	\$10.95	\$139.40
Pre-Pharmacy	61	\$5,280.25	\$1,183.08	\$398.81	\$6,862.15	\$86.56	\$19.38	\$6.54	\$112.49
Pre-Science	60	\$5,858.13	\$1,354.28	\$559.47	\$7,771.88	\$97.64	\$22.57	\$9.32	\$129.53

* Instructor Cost – Salary & Fringe, ** Department cost – Department Level Non Instructor compensation, Supplies and Equipment, *** Dean's Cost – Dean's Level Non Instructor Compensation, supplies and Equipment

Table 3.9

J. Assessment and Evaluation

Describe and evaluate the program's assessment mechanisms.

- 1. What measures are used to evaluate whether or not the program is meeting its goals?**
- 2. How are the rigor, breadth, and currency of the degree requirements and curriculum assessed?**
- 3. Based on these measures, describe the extent to which the goals are being reached.**

The pre-professional programs rely largely on institutional data and the program review process for program assessment. The programs have not established benchmarks on admission to professional programs, but may strive to do so in the future.

The rigor, breadth, and currency of the program requirements are regularly adjusted to be in line with the admission requirements of the professional programs and schools.

The coursework for the pre-professional programs are currently in line with the requirements of the professional schools and change as circumstances warrant.

Section 4: Conclusions

Draw some conclusions based on data analysis derived from Sections 2-4 and on the collective wisdom and judgment of the PRP. In arriving at these conclusions, the PRP should summarize the relationship of the program to each of following specific categories and any other categories it deems appropriate:

A. Relationship to FSU Mission

The pre-professional programs are clearly aligned with the university's mission "to prepare students for successful careers, responsible citizenship, and lifelong learning" as they prepare students to enter professional programs with clear career preparation but also provide a broad-based general education that provides the foundation for responsible citizenship and lifelong learning.

B. Program Visibility and Distinctiveness

Due to the College of Pharmacy, the Pre-Pharmacy Program enjoys high visibility. None of the programs are distinctive, nor should they be because they prepare students for entry to professional schools, which have clearly established criteria for admissions, to which our, and most other, pre-professional programs adhere.

C. Program Value

Each of the pre-professional programs evaluated here has clear value to the University, either through coursework that is offered to multiple programs, or through the number of students they attract to the university.

D. Enrollment

Enrollment in the Pre-Pharmacy Program is robust. The Pre-Science Program also continues to have strong enrollment. While the Pre-Engineering and Pre-Mortuary Science Programs could grow, they are low-cost programs for the University and provide preparatory coursework already offered for other programs and majors.

E. Characteristics, Quality and Employability of Students

Students are prepared for entry into professional schools through these programs. The professional programs are highly selective, competitive programs, but the data shows that many of our students are successful in meeting their goals. The programs also provides a strong general education for those students who change programs or majors.

F. Quality of Curriculum and Instruction

Through a broad array of approaches to teaching and learning, students are well-prepared for their future professional programs of study.

G. Composition and Quality of the Faculty

In line with the findings of the General Education Program Review, the composition and quality of the faculty in the pre-professional programs is strong. Many present regularly at state, regional, national, and international conferences. Many are published in their fields. The College is also home to a majority of the Distinguished Teachers and Distinguished Faculty on the campus.

Requirements

Admission

[Curriculum](#) [Admissions Requirements](#) [How to Apply](#) [Equivalency Guides](#)

Mortuary Science - [Link to Department](#)

Admission Requirements

- Minimum of 2.50 GPA
- All pre-professional coursework must be completed with a grade of "C" or better
- Test of English as a Foreign Language (TOEFL)-required only if English is not your first language
- Minimum of 68 credits including all pre-requisites, University General Education requirements and program specific requirements. A maximum of 64 credits can be transferred from a community college.
- Pre-professional coursework taken at an accredited college or university is acceptable

Program Specific Prerequisites

ACC 3010 - Accounting

BIO 1510 - Basic Life Mechanisms

BIO 2870 - Human Anatomy & Physiology with lab

BIO 2200 - Microbiology with lab

CHM 1020 - General Chemistry with lab

CHM 1030 - Survey of Organic and Biochemistry lab

*Computer Literacy (CL)- Course or WSU exam

ENG 3010 - Basic Composition (BC)

ENG 3010 - Intermediate Composition (IC)

COM 1010 - Basic Speech

PSY 1010 - Introductory Psychology

PSY 2410 - Health Psychology or PSY 2400 - Developmental Psychology or Course in Psychology of Death & Dying

*Mathematics Proficiency (MC) - must be completed at WSU or transferred as MAT 1800 or higher (Mathematics Competency is not required of students who hold a previous bachelor's degree)

University General Education/Degree Requirements

All classes must be at least 3 transferable credit hours

Historical Studies (HS)

Philosophy and Letters (PL)

American Society and Institutions (AI)

Social Science (SS)

Foreign Culture (FC)

*Critical Thinking Competency (CT)

*Degree requirements that may be satisfied by coursework or examination: Please contact the [WSU Office of Testing & Evaluation](#) at (313)577-3400 for further information.

Students who hold a bachelor's degree from a regionally accredited 4-year college or university need only complete the prerequisite requirements.

The National Board Examination is required for degree completion.

Undergraduate Studies

College Admissions

Academics

Advising

Apply to CoE

Resources & Services

Student Organizations

Graduation

FAQ

The Center**Diversity Programs
Office****Study Abroad****Admission to the College of Engineering**

Home / Undergraduate Studies / Admission To The College Of Engineering

Admission to the College of Engineering

At the end of every semester, the records of all freshmen and sophomore engineering students will be reviewed to determine if they are admissible.

Students are admitted to the College of Engineering as soon as they have completed the required core courses and have met specific GPA requirements for their declared major. All eligible students are automatically review once they have:

- completed the required courses
- declared a degree-granting Engineering major
- and attained a specific combined technical/cumulative grade point average within the major.

Students whose major is listed as Engineering No-Preference will not be admitted until they declare a degree-granting major. In some cases, an application to the College may be necessary.

Juniors and seniors who have a declared major outside the College of Engineering and wish to change to Engineering should submit an application which can be found by clicking [here](#).

You must be admitted to a degree-granting major by the time you have attained 56 credits. If you are admitted to an engineering major and wish to change to another engineering major, you will need to submit an application and will be reviewed at the end of that semester. Admitted students are able to begin taking major courses immediately upon admission (provided all course prerequisites have been satisfied).

Freshmen and sophomore students are always in one of two categories:

1. **Admitted** - in a degree-granting major and have been admitted to the college.
2. **Continuing** - have not yet been admitted to the college.

After admission decisions have been made at the end of each semester, all applicants will receive a message from the Office of the Registrar's Confidential Message System either admitting you to a major, denying you admission to the college, or explaining the remaining deficiencies you must complete to gain admission to the college.

Admission to the College of Engineering is based on a student's *combined* grade point average. Your combination grade point average is calculated as follows:

1. the cumulative grade point average of *all* courses taken, plus
2. the technical grade point average based on all technical classes taken at MSU (generally those in the College of Engineering and the College of Natural Science),
3. then divided by 2.

Courses Required for College of Engineering Admission

- **Math 132** and **Math 133**. Students must have a minimum 2.0 grade point average or higher in *all* mathematics courses completed at the time of admission (this does not include MTH 1825).
- **Chemistry 141** or **151** for all majors except Computer Science
- **Physics 183** or **183B**
- **Engineering 100** and **Engineering 102**. Students in Computer Engineering and Computer Science are required to take EGR 100 only.

FAQs

- How do I become an engineering student?
- I submitted my application today, when will I find out whether or not I've been admitted to my major?
- Why can't everyone who wants to major in engineering do so?

>>View More

- **Computer Science 231** for Computer Engineering and Computer Science majors *only*.

Earned a minimum number of MSU and technical credits:

- Engineering freshmen and sophomores must have completed at least 12 MSU credits, at least **six** of them from technical courses.
- Junior and senior applicants with a current major in a college outside of Engineering must have completed a minimum of 12 MSU credits, at least **10** of them from technical courses.

Attained the necessary GPA requirements:

- There are specific GPA requirements that you need to meet for admission to each Engineering program. Admission is based on a combined cumulative/technical grade point average calculation, please click [here](#) for more information.
- Students attaining the required GPAs are guaranteed admission. In certain majors, additional students may be considered for admission. on a space-available basis.
- The average combined cumulative/technical GPA required for upper school admission to each degree program may change from year to year depending on the demand for that program

Minimum Required Combined GPA for Majors

3.0 - Mechanical Engineering

2.9 - Applied Engineering Sciences, Civil Engineering, Computer Engineering, Computer Science, and Electrical Engineering

2.8 - Biosystems Engineering, Chemical Engineering and Materials Science & Engineering

Academic Warnings

Please click [here](#) to read the College of Engineering's academic warning policies.

[Home](#) | [Contact Us](#) | [Research](#) | [Directory](#) | [About](#)

[Applied Engineering Sciences](#) | [Biosystems & Agricultural Engineering](#) | [Chemical Engineering & Materials Science](#) | [Civil & Environmental Engineering](#) | [Computer Science & Engineering](#) | [Electrical & Computer Engineering](#) | [Mechanical Engineering](#)

Admissions Policies

Advanced Placement:

Advanced Placement (AP)/CLEP credits in science and math courses cannot be applied towards meeting the admissions requirements for the College of Pharmacy at Ferris State University.

Age Limit on Courses:

Science and math courses over five years old are generally not considered, unless there are extenuating circumstances. Repeat penalties are not applied to courses that are too old to be considered for admissions.

Application Deadline:

The application deadline is January 31st. All application materials (i.e., FSU application for transfer students, College of Pharmacy application, all academic transcripts, and the PCAT scores) need to be submitted or a request made for them to be sent by this date. Obtaining a receipt is strongly recommended.

Foreign Academic Credits:

Foreign academic credits (besides Canadian) cannot be used to meet the pre-pharmacy requirements. Course equivalency evaluations and OAC credits from Canada are not acceptable. Evaluations from agencies who assess foreign transcripts are not considered.

General Education:

Applicants who have earned (or will earn prior to admissions into the professional program) a BS degree, will have some of their General Education requirements waived, if necessary. These include English, Speech, and Cultural Enrichment coursework. Even so, these courses are strongly encouraged in order to prepare students for the professional program.

Honors Program Pre-Admission:

The College of Pharmacy offers students pre-admission into the professional program after two years of pre-pharmacy courses in the Honors Program at Ferris State University. As long as the conditions listed on the following link are met, students are guaranteed a seat in the class in which they are eligible to enter: **Honors Guarantee**.

Minimum Application Requirements:

In order to apply, an applicant must have completed the majority of the Biology/Anatomy & Physiology (three-quarters) and Chemistry (three-quarters) along with the Calculus coursework prior to the application deadline. Students must also forward their PCAT scores prior to the deadline.

Minimum GPA:

The minimum acceptable Pre-Pharmacy GPA is a 2.5.

Minimum Acceptable Grade for an individual course:

Pre-pharmacy courses in which a student earned a grade less than a C (2.0) cannot be applied towards meeting the admissions requirements.

PCAT:

The last acceptable Pharmacy College Admissions Test (PCAT) testing date is in October. Students may take the PCAT as many times as they wish without incurring a penalty. The highest composite score will be utilized in the admissions process. There is a minimum PCAT composite score of 50th percentile. Students must have taken the PCAT exam June 2007 or sooner, due to recently added components.

Ranking Formula:

Each year the Assistant Dean of Admissions will create a method or formula for ranking applicants that must be approved by the Admissions Committee before being implemented.

Re-Applications:

Students who do not receive an offer of admission and wish to reapply to the program the following year must complete a new College of Pharmacy application prior to the January 31st application deadline for the next year.

Repeat Penalty:

Applicants will be penalized for repeating pre-pharmacy science or math courses in which they earned a grade less than a C (2.0). These courses include Biology/Anatomy & Physiology, General/Inorganic Chemistry, Organic Chemistry, and Calculus. There is no penalty for withdrawing from a course (however, see "Minimum Application Requirements" above).

Transfer Policy:

A student who has attended, or is currently attending, another college of pharmacy and who wishes to pursue pharmacy education at Ferris must: (1) be in good academic standing at the college of origin and able to continue, (2) have space available in the appropriate class at Ferris, (3) submit transcripts of all college courses, and (4) have the dean of the previous college attended provide a letter of recommendation directly to the dean of the FSU College of Pharmacy, 220 Ferris Drive, Big Rapids, MI 49307-2740.



Biology BIBS

Degree Type: **Bachelor of Science**

College: **Arts and Sciences**

Program home page
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Locate a Course
Find a Degree
Learn about a Program
Follow a Career Path

Why Choose Biology?

The B.S. Biology program provides a quality bachelors degree in biology. Ferris is a recognized leader in vocational education, and students take 36 or more credit hours in biology courses plus eight or more semester credit hours in biology-related courses. The B.S. Biology program is individually designed, matching the abilities of each student with his/her academic interests. The B.S. Biology program at Ferris is flexible, allowing students of differing abilities and interests to choose a program of study that best fits them. The program also incorporates applied courses from the Ferris College of Allied Health Sciences and College of Pharmacy, creating a unique bachelors degree in biology.

Get a Great Job

Graduates of the B.S. Biology program are in high demand in the science and technology industry and may enter highly competitive professional programs. Students wishing to complete an allied health science degree program can work toward a bachelors degree in applied biology to increase their knowledge of basic science and increase their chances for employment advancement. Students may also choose to use this degree as a prerequisite for advanced study, such as medicine, dentistry or Optometry. Students may also choose to use their bachelors degree to pursue advanced degrees in the biological sciences. Because admission to advanced programs is competitive, academic excellence as an undergraduate is important.

Admission Requirements

First year student admission is open to high school graduates (or equivalent) who demonstrate academic preparedness, maturity and seriousness of purpose with educational backgrounds appropriate to their chosen program of study. High school courses and grade point average, ACT composite score, and ACT reading and mathematics subscores will be considered in the admission and placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course, or they must provide their high school records and ACT scores for admission review.

Graduation Requirements

The Biology program leads to a Bachelor of Science degree. Graduation requires a minimum 2.0 GPA overall and a minimum of 121 credits including completion of all general education requirements as outlined on the General Education website. No grade lower than a 'C-' is acceptable in courses that apply to the major, supporting sciences, and application area of the program. At least 50% of the semester credits applying toward the Biology major must be completed at FSU with a minimum of 30 FSU credits overall.

More Information

Department of Biological Sciences
Ferris State University
820 Campus Drive/ASC 2004
Big Rapids, MI 49307-2225
Phone: 231-591-2550

Required Courses

Credit Hours

General Education

This degree requires completion of the General Education requirements for a Bachelor of Science degree. Details of these requirements are delineated on the **General Education website**. Courses listed below as program/major required courses with the indicators: C, S, Z, R, G, may also be used to satisfy some of these general education requirements.

COMM 121 Fundamentals-Public Speaking 3

Biology Classes

BIOL 121 General Biology 1 4

BIOL 122 General Biology 2 4

BIOL 375 Principles of Genetics 3

BIOL 460 Current Topics in BIOL 2

Biology Electives 300 or higher (consult advisor) 7 - 13

Choose one of the following three Microbiology courses:

BIOL 218 Microbial Ecology 3

BIOL 286 General Microbiology 3

BIOL 386 Microbiology and Immunology 5

Choose one sequence for Anatomy and Physiology

BIOL 205 Human Anatomy-Physiology 5

Or

BIOL 205 Human Anatomy-Physiology 5

And

BIOL 206 Advanced Human Physiology 3

Or

BIOL 321 Human Physiology-Anatomy 1 4

And

BIOL 322 Human Physiology-Anatomy 2 4

Or

BIOL 353 Plant Physiology 4

Choose one of the following three Ecology courses:

BIOL 346 Ecological Assessment 3

BIOL 347 Environmental Conservation 3

BIOL 442 Ecology 3

Supporting Sciences

MATH 120 or higher		3
CHEM 121	General Chemistry 1	5
CHEM 122	General Chemistry 2	5

Choose one of the following two Organic Chemistry options:

CHEM 214 Fund of Organic Chemistry 4

Or

CHEM 321 Organic Chemistry 1 5

And

CHEM 322 Organic Chemistry 2 5

Choose one of the following two Biochemistry courses:

CHEM 324 Fund of Biochemistry 3

CHEM 364 Biochemistry 4

Choose one of the following three Physics options:

PHYS 130 Concepts in Physics 4

Or

PHYS 211 Introductory Physics 1 4

And

PHYS 212 Introductory Physics 2 4

Or

PHYS 241 General Physics 1 5

And

PHYS 242 General Physics 2 5

Additional Program Requirements

Application area additional biology related 5
credits (consult advisor)

Computer competence (consult advisor)

COMM 121 Fundamentals-Public 3
Speaking

Electives to a credit total of 121 credits (consult advisor)

Ferris State University Catalog

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Ferris State University

(updated 1/09)

Applicants to the Michigan College of Optometry must complete a minimum of three years (90 semester hours or 135 quarter hours or 135 quarter term hours) of college or university education or have earned a baccalaureate degree prior to admission. An earned baccalaureate degree is preferred.

Big Rapids Campus

See printable Transfer Guide at:

www.ferris.edu/mco/admissions/ODadmiss.htm

Choose "community colleges" listed under the Transfer Information subheading.

For more information, contact: Colleen Olson

Michigan College of Optometry

Phone: (231) 591-3700

e-mail: olsonc@ferris.edu

■ PHARMACY

Ferris State University

(updated 1/09)

Students interested in a career in pharmacy follow a 6-year (2+4) program leading to a Doctor of Pharmacy (Pharm.D.) degree. Courses in the first two years provide background for later technical courses and include liberal arts experience. Students interested in the Ferris State University College of Pharmacy should familiarize themselves with the detailed requirements as stated in the FSU catalog.

Big Rapids Campus

See printable Transfer Guide at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Tara Lee, B.S.

Phone: (231) 591-3780

Grand Valley State University

(updated 1/09)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101..... 3	EN 102..... 3
MA 107..... 4	Foreign Lang.102..... 4
PS 110..... 3	Elective..... 5
Foreign Lang.101..... 4	PL 201..... 3
WE Activity..... 1	
15	15

SECOND YEAR

First Semester	Second Semester
Foreign Lang. 231..... 4	PL 205..... 3
World Perspectives Elect.... 3	U. S. Diversity Elect.... 3
PL 202..... 3	Science Lab Elect. 4
Social Science Elect. 3	Social Science Elect. ... 3
Elective..... 3	Elective..... 3
16	16

Note: Degree offered: B.A.

It is strongly recommended that students see the GRCC Counseling and Career Center for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ PHOTOGRAPHY

Grand Valley State University

(updated 1/09)

See Communications.

■ PHYSICAL THERAPY

Central Michigan University

(updated 1/09)

FIRST YEAR

■ **EDUCATION**
SPECIAL EDUCATION
Eastern Michigan University

(updated 1/09)

The department provides courses that prepare students to educate children and adolescents with disabilities. Special education majors earn State Provisional Elementary or Secondary Teaching Certificate and endorsement to teach students with disabilities as described by the selected major.

See printable Transfer Guide at:
ict.emich.edu/service/online/tranequiv/

Completion of the MACRAO requirements and completion of the courses listed in the guide does not guarantee that a student has completed the requirements for an associate degree. Please see a GRCC Counselor for additional information on associate degree requirements.

■ **EDUCATION**
SPECIAL EDUCATION/ELEMENTARY
Grand Valley State University

(updated 1/09)

FIRST YEAR

First Semester	Second Semester
EN 100 <i>or</i> 101.....3	EN 102.....3
MA 1074	Elective3
PS 1103	PY 2333
PY 201.....3	Science Lab Elect.4
Humanities Elect.3	Humanities Elect.....3
16	16

SECOND YEAR

First Semester	Second Semester
----------------	-----------------

■ **ENGINEERING**

Grand Valley State University

(updated 1/09)

FIRST YEAR

First Semester	Second Semester
EN 100 <i>or</i> 101.....3	EN 102.....3
MA 1335	MA 134.....5
WE Activity1	CO 117 (for CE).....3
CM 103 <i>or</i> 113.....4	PH 2455
U.S. Diversity Elective...3	Humanities Elective....3
16	19

SECOND YEAR

First Semester	Second Semester
EG 208 (1).....3	MA 257.....4
MA 2554	EC 251 <i>or</i> 252.....3
PH 246.....5	PS 110.....3
PL 2053	World Perspective ele..3
Humanities Elective3	Social Science.....3
	EG 212 (2)3
18	19

Notes:

- (1) EG 208 will require a 1 credit bridge course at GVSU.
- (2) EG 212 is required for the mechanical emphasis only.

- Degree offered B.S.E.
- Students normally start at GVSU in the fall semester, after completing this GRCC curriculum. Application for transfer should be filed by June 1, prior to fall entry. The program involves full-time participation for the next nine continuous semesters (36 months): six academic and three alternating cooperative work semesters. Students normally need seven additional courses before starting the Co-op engineering experience; these are included in the first two academic semesters



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Professional Programs

The CLAS Academic Advising Center provides Pre-Professional advising for students preparing for acceptance into the professional schools of:

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[American Physician Scientist Association](#)

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[Medical School, MD](#)
[Michigan State University Early Assurance Program](#)

[Optometry, OD](#)

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Students who hope to matriculate to such schools must spend a significant amount of time planning their undergraduate experience. At the Center we are here to assist you in major and curriculum selection, career counseling, professional school admission requirements, facilitation of important test dates, and a variety of other services to aid your transition into a professional school.

While the information found with in this site will give you a better understanding of what is required to be accepted into these Pre-Professional programs it is not a replacement for meeting with your advisor. We strongly encourage you to meet with your faculty advisor and your CLAS pre-professional advisor for additional assistance throughout this process.

Central Michigan University

Admissions

Whether you're a high school student exploring college options, transferring from another institution, interested in graduate programs or returning to college as a working adult, welcome to Central!

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Pre-Professional Programs

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Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

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[Pre-dentistry](#)

Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

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Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

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[Pre-law](#)

The pre-law program offers students hands-on training and classroom preparation to enter law school or a law-related graduate program.

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[Pre-medicine/Pre-osteopathy](#)

The pre-medicine and osteopathy program offers outstanding clinical and classroom preparation for entrance into medical schools.

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[Pre-occupational Therapy](#)

Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

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[Pre-optometry](#)

Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

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Pre-pharmacy

Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

[View more](#)

Pre-physical Therapy

The pre-physical therapy program at CMU offers outstanding clinical and classroom preparation to enter a graduate program in physical therapy or a related area.

[View more](#)

Pre-physician Assistant

The pre-physician assistant pre-professional prepares students for entrance into Central Michigan University's nationally recognized physician assistant program or for study in other professional schools.

[View more](#)

Pre-veterinary Medicine

Pre-professional studies are designed to prepare students with the requirements for applying to professional schools for further study.

[View more](#)

Admissions Office | [Admissions](#) | 888-292-5366 (toll-free) or (989) 774-3076 | Fax: 989-774-7267 | cmuadmit@cmich.edu
| Warriner Hall 102, Mount Pleasant, MI 48859

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Pre-Professional Programs

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Most Common Degrees Sought

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Degree or Program Details

Pre-Pharmacy Program

Students wishing to pursue a career in pharmacy must fulfill a six-year doctor of pharmacy program. The first two years' requirements may be completed at Northern Michigan University; the latter four years' requirements must be fulfilled at one of the nation's pharmacy schools. Within Michigan, the doctor of pharmacy degree (Pharm.D.) is available from Ferris State University, the University of Michigan and Wayne State University. Another option, the Ph.D. in pharmacy, is also available from the University of Michigan and Wayne State University, but these usually require earning the bachelor's degree in chemistry or pharmacy first.

The pre-pharmacy program at Northern Michigan University is composed of a tightly structured two-year sequence, or a slower paced three-year schedule that includes four courses in chemistry, three in biology and additional course work that is dependent upon the intended pharmacy school.

Specific requirements, substitutions and pharmacy school admission procedures can be explained in detail by an adviser from the Chemistry Department.

For department information or additional degree requirements, [click here](#)

For course description, click on the course.

BI 111 Introductory Biology: Principles	4
BI 112 Introductory Biology: Diversity	4
BI 203 Medical Microbiology	3-5
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
MA 161 Calculus I	5
Additional course work*	29

**Additional course work is dependent upon the intended pharmacy school.*

Degree or Program Details

Pre-Engineering Program

Students interested in engineering who plan to transfer to an engineering school should contact the Physics Department to get program details and be assigned an academic adviser. NMU offers courses from several departments that provide the foundations for engineering students. These courses, along with the liberal studies courses, comprise the first two years of study at most engineering schools.

For department information or additional degree requirements, [click here](#)

For course description, click on the course.

EN 211D Technical and Report Writing	4
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CS 120 Computer Science I	4
MA 161 Calculus I	5
MA 163 Calculus II	4
MA 265 Calculus III	3
MA 211 Introduction to Matrix Theory and Linear Algebra	3
MA 361 Differential Equations	3
PH 220 Introductory Physics I	5
PH 221 Introductory Physics II	5

Graduation Requirements: Honors Program

1. Satisfy all Basic Skills and General Education requirements.
2. Maintain a minimum of 3.5 SVSU grade point average.
3. Produce a discipline-appropriate Honors Thesis, project, or presentation.
4. Complete at least four Honors courses, designated with an "H" on transcripts and as "Honors" in the Course Schedule, or by Honors -92 numbers. Students may seek a partial exemption by applying in writing to the Committee.
5. Complete at least 124 credits.
6. Complete an academic major and minor, if required.

International Programs

Call 964-4473 or E-mail: qip@svsu.edu

The Office of International Programs works with incoming international students, American students interested in study abroad, and university and faculty exchanges. Students can earn SVSU credit while studying overseas through programs in Argentina, Australia, Austria, Chile, England, France, Germany, Ireland, Italy, Japan, Mexico, Poland, Spain, Taiwan, Turkey and other countries. Financial aid can be used to support these programs and foreign language is not required. More information is available at www.svsu.edu/studyabroad. The English Language Program, located in 214 Brown Hall, provides quality intensive English instruction and academic preparation to non-native speakers of English who are seeking to enroll at institutions of higher education in the United States. The ELP is a member of the American Association of Intensive English Programs. For more information, visit www.svsu.edu/intprog/esl.

Pre-Professional Studies**Pre-Law**

Saginaw Valley State University offers the necessary background courses for law school admissions, and our graduates with proper preparation have been successful in being accepted and graduating from accredited law schools. Law schools do not specify a particular major that students must complete as undergraduates. Consequently, any number of majors at SVSU can prepare students for the rigors of law school. To prepare for law school, students should take courses that develop their skills in the following areas:

- › Writing
- › Public Speaking
- › Logical Reasoning
- › Analytical Reasoning
- › Historical Research
- › Accounting Principles

Several majors have served students well in the past as preparation for law school. They have become traditional choices and can serve SVSU students as the foundation for their law school plans. These majors include the following:

- › English
- › History
- › Communication
- › Management
- › Political Science
- › Accounting

Students interested in law school should speak with one of several faculty and staff members designated as prelaw advisors. A list of these people and of curriculum suggestions is available in the Academic Advisement Center, 117 Wickes Hall.

Pre-Medicine, Pre-Dentistry and Pre-Veterinary

Saginaw Valley State University offers all courses and advisement necessary to prepare the student for admission to medical, dental or veterinary school. Medical schools today are flexible about their requirements concerning the major field of study for the undergraduate student. However, most colleges have specific course requirements: one year of general chemistry, one year of organic chemistry, one year of biology, one year of physics and one year of English. (CHEM 111, 112; 111L, 112L; 230, 330, 231L, 331L; BIOL 111A, 111B, 111C; PHYS 111, 112; ENGL 111, 212.) Students interested in medicine as a career are advised to choose one of the many major fields of study offered by Saginaw Valley State University. Majors such as chemistry, biochemistry or biology particularly lend themselves to satisfying the specific course requirements noted above; however, if these courses are taken as electives, any other major also is suitable.

In addition, the student should take the appropriate Admissions Tests toward the end of the Junior year. Graduates of Saginaw Valley State University have been placed in all three of Michigan's medical schools. Students interested in medicine and associated programs should contact the faculty advisor for pre-medicine no later than their first semester of attendance at SVSU.

Pre-Theology

Students who are considering a career in the ministry or priesthood should consult with a member of their chosen denominational clergy as soon as possible in order to learn more about the profession and its requirements and to assist in the selection of a seminary for postgraduate training (usually three years beyond the bachelor's degree). Admission policies vary, but most seminaries will accept any undergraduate major as long as the student has broad-based training in the social sciences, humanities and natural sciences.

Recommended SVSU courses for pre-theological preparation include: HIST 111; MGT 321; PHIL 123, 210A/B, 315, 350; PSYC 100, 370; SOC 111, 360; and COMM 105A. The faculty advisor for pre-theology can provide additional counseling and course selection assistance.

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PRE-ENGINEERING

FERRIS STATE UNIVERSITY

ADVISING GROUP CHAIR: Mr. Roy Gifford

OFFICE: ASC 2034 PHONE: (231) 591-5862 E-MAIL: giffordr@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

The following program is designed to provide students with either of the following options:

1. A student may elect to transfer to a college which offers an engineering program in a variety of areas: electrical, mechanical, aeronautical, industrial, computer, and civil. The student should make contact with an advisor at the engineering college he/she plans to attend in order to effectively plan the pre-engineering program. Some engineering college course recommendations for specific universities are available through your FSU pre-engineering advisor.
2. A student may elect to remain at Ferris and enroll in the appropriate track of Applied Mathematics.

Students could qualify for the Associate in Science degree upon completion of this program and the FSU general education requirements. For Associate in Science graduation details, see the Pre Science program check sheet.

Program Requirements: effective for students entering Pre Engineering Fall Semester 2009

COURSE TITLE – FOR COURSE PREREQUISITES NOT INDICATED, SEE FSU CATALOG COURSE DESCRIPTIONS			FSU S.H.	GRADE
Recommended Courses			Prerequisites	
NGL	150	English 1	(by placement)	3
ENGL	250	English 2	(ENGL 150)	3
ENGL	311	Advanced Technical Writing	(ENGL 250)	3
COMM	105 or 121	Interpersonal Communications Fundamentals of Public Speaking		3
CHEM	121	General Chemistry 1	(MATH 115 and prior CHEM)	5
CPSC	244	Sci Programming with Fortran		3
MATH	220	Analytical Geometry & Calculus 1	(MATH 130)	5
MATH	230	Analytical Geometry & Calculus 2	(MATH 220)	5
MATH	320	Analytic Geometry & Calculus 3	(MATH 230)	3
MATH	322	Linear Algebra	(MATH 220)	3
MATH	330	Differential Equations	(MATH 230)	3
PHYS	241	General Physics 1	(MATH 220)	5
PHYS	242	General Physics 2	(PHYS 241)	5
PHYS	260	Statics	(PHYS 241 AND MATH 230 or concurrent)	3
PHYS	261	Dynamics	(PHYS 242 and MATH 330 or concurrent)	3
		Cultural Enrichment Elective		3
		Cultural Enrichment Elective		3
	200+	Cultural Enrichment Elective		3
		Social Awareness Elective		3
		Social Awareness Elective		3
	300+	Social Awareness Elective		3

SAMPLE COURSE SEQUENCE: The following chart depicts one strategy to begin the program requirement. In order to complete this program in two years, students must average 16 – 18 credit hours per semester. Students **MUST** consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

<u>FIRST YEAR Fall Semester</u>		<u>FIRST YEAR Spring Semester</u>	
MATH (by placement) see note 1	5	Choose one:	
ENGL 150 or COMM 105 or 121	3	COMM 105 or COMM 121 or ENGL 150	3
Cultural Enrichment elective	3-4	MATH	5
Chemistry or Physics	<u>5</u>	Chemistry or Physics	5
	16-17	Choose one: Cultural Enrich. or Social Awareness	<u>3-4</u>
			16-17
<u>SECOND YEAR Fall Semester</u>		<u>SECOND YEAR Spring Semester</u>	
_____		_____	
_____		_____	
_____		_____	
_____		_____	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

<http://www.ferris.edu/htmls/academics/gened/courses.html>

Race/Ethnicity/Gender: For an associate, bachelor, or PharmD. Degree at Ferris State University, students must select one course from either the cultural enrichment or social awareness categories that fulfills the General Education REG content requirement. Courses that satisfy this requirement are listed in the general education section of the FSU catalog.

Global: For a bachelor degree at Ferris State University, students must select one course that fulfills the General Education Global content requirement. Courses that satisfy this requirement are listed in the general education section of the FSU catalog.

.NOTE 1: If your MATH development requires coursework prerequisite to MATH 220, additional time will be required to complete this program.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted,

PRE-MORTUARY SCIENCE

FERRIS STATE UNIVERSITY

ADVISING GROUP CHAIR: Dr. John Jablonski

OFFICE: ASC 3089 PHONE: (231) 591-5868 E-MAIL: jablonsj@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

The following program is designed in accordance with the Mortuary Science program at Wayne State University. Wayne State University is the only institution in Michigan that prepares students for State certification in mortuary science and entrance to the WSU program is competitive. Minimum requirements for application include completion of the courses listed below with at least a "C" grade in each course, at least 68 credit hours with a minimum grade average of 2.5, as outlined in the WSU graduate bulletin. Students must be admitted to both WSU and the Professional Program in Mortuary Science. Applications are available on line from WSU at www.cphs.wayne.edu/stuaff/applications.php after November 1, and the WSU application deadline for the Mortuary Science program is March 15 for the Fall Semester entry. A WSU math competency test is required. Eight credit hours of 100 level or above chemistry are required to meet State of Michigan Mortuary Science license requirements.

Proper selection of 60 credit hours including university general education requirements could lead to an Associate in Science degree at Ferris State University. For Assoc. in Science degree requirements, see the Pre-Science check sheet.

Courses recommended for students entering Pre Mortuary Science Fall Semester 2009

COURSES		COURSE TITLE – FOR PREREQUISITES NOT INDICATED, SEE FSU CATALOG COURSE DESCRIPTIONS	FSU S.H.	GRADE
A minimum of 60 credits, including the following specific courses satisfy the minimum entrance requirements of Wayne State University.				
ACCT	201	Principles of Accounting 1 (MATH 110)	3	
BIOL	121	General Biology 1 (Co= CHEM 114 or 121)	4	
BIOL Or BIOL	108 Or 286	Medical Microbiology (F, Sp, Su) General Microbiology (Sp, Su) (CHEM 122)	3	
BIOL Or BIOL	109 Or 205	Basic Human Anatomy/Physiology (F, Sp) Human Anatomy/Physiology (F, Sp, Su) (CHEM 114 Min. C-)	4 5	
CHEM CHEM	114 and 124	Introduction to General Chemistry (MATH 115 and prior CHEM)	4	
	OR	Introduction to Organic and Biochemistry (CHEM 114)	3	
CHEM CHEM	121 and 124	General Chemistry 1 (MATH 115 and prior CHEM)	5	
		Introduction to Organic and Biochemistry (CHEM 114 or CHEM 121)	3	
MATH		competency through MATH 130 recommended	3	
ENGL	150	English 1 (by placement)	3	
ENGL	250	English 2 (ENGL 150)	3	
PSYC	150	Introduction to Psychology	3	
			3	
COMM	121	Fundamentals of Public Speaking	3	
ISYS	105	Microcomputer Applications	3	

SAMPLE COURSE SEQUENCE: The following chart depicts one strategy for scheduling the program requirements. In order to complete this program in two years, students must average 16-17 credit hours per semester. Students **MUST** consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

First Year

<u>Fall Semester</u>	<u>Credit Hours</u>	<u>Spring Semester</u>	<u>Credit Hours</u>
ENGL 150 English 1	3	COMM 121 Fund. Of Public Speaking	3
BIOL by placement	3 – 4	BIOL by placement	3 – 4
CHEM by placement (see note 2)	3 – 5	CHEM by placement	3 – 5
MATH by placement	3 – 4	MATH by placement	3 – 4
PSYC 150 Intro. Psychology	<u>3</u>	Elective (see note 3)	<u>3</u>
	15 – 18		15 - 18

Second Year

<u>Fall Semester</u>	<u>Credit Hours</u>	<u>Spring Semester</u>	<u>Credit Hours</u>
BIOL by placement	3 – 5	BIOL by placement	3 – 5
ENGL 250 English 2	3	ACCT 201 Principles of Accounting 1	3
ISYS 105 Microcomputer Applications	3	Elective (see note 3)	3
Elective (see note 3) or Math	3	Elective (see note 3)	3
Elective (see note 3) or CHEM	<u>3</u>	Elective (see note 3)	<u>3</u>
	15 - 17		15 - 17

Notes:

1. Mathematics course placement will be determined by high school mathematics background and test scores. Contact Mortuary Science program at WSU for details on their math competence exam. MATH Competency minimum is FSU's MATH 130
2. Students must complete a minimum of 8 credits of CHEM numbered 100 or higher, including some BioChem (CHEM 124).
3. **To be full time in the Mortuary Science program and receive a Bachelor Degree at WSU, the following WSU general education graduation requirements should be taken at FSU prior to transferring to WSU. For additional information you may contact a Wayne State Academic Advisor, at (313) 577-1716.**

CATEGORY:

FSU COURSES

Critical Thinking (3 cr.)	COMM 251 or PHIL 217
Foreign Culture	Choose one: FREN 201, GERM 201, SPAN 201, FREN 331, GERM 331, SPAN 331
Historical Studies (3 cr.)	HIST 151 or HIST 152
MATH Competency (4 cr.)	MATH 130 (waives the need for WSU math competency exam)
Philosophy and Letters (3 cr.)	choose one: HUMN 101, 102, PHIL 115, 204, 216; LITR 150, 170, 180, LITR 202, 203, 204, 241, 242, 311, 312, 323, 351, 352
Political Science (3cr.)	choose one: PLSC 121, 122
Social Science (3 cr.)	choose one: ANTH 122; ECON 221, 222; GEOG 100; SOCY 121, or 122
Visual/Performing Arts (3cr.)	choose one: ARTH 110, 111, ARTS 290; HUMN 100, FILM 253; MUSI 221, 228; THTR 215

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

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PRE-PHARMACY

FERRIS STATE UNIVERSITY

ADVISING GROUP CHAIR: Dr. Kent Sun

OFFICE: ASC 2031 PHONE: (231) 591-2579 E-MAIL: sunk@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

The following program is designed to conform to the minimum entrance requirements of the College of Pharmacy at Ferris State University and will take at least two years to complete. Students applying elsewhere should investigate the requirements of that College of Pharmacy. Admission to the College of Pharmacy at FSU is on a competitive basis and completion of this program does not assure acceptance by the College of Pharmacy. Only grades of "C" or higher in pre-pharmacy courses are acceptable. Students must also have results of the Pharmacy College Admission Test (PCAT) submitted by the Psychological Corporation.

Students could qualify for the Associate in Science degree upon completion of this program and FSU general education requirements. This check sheet does not contain all Associate in Science graduation requirements. For Associate in Science graduation details, see the Pre Science Academic Program Planning Guide.

Program requirements: for students entering Pre-Pharmacy Fall Semester 2009

REQUIRED		COURSE TITLE and (FSU PREREQUISITES) SEE THE FSU CATALOG COURSE DESCRIPTIONS	CREDIT HOURS	GRADE
ENGL	150	English 1 (by placement)	3	
ENGL	250	English 2 (ENGL 150)	3	
COMM	105 OR 121	Interpersonal Communication Fundamentals of Public Speaking	3	
BIOL	121	General Biology 1 (Co=CHEM 121 or CHEM 114)*	4	
BIOL	122	General Biology 2 (BIOL 121 Min. C- & CHEM 121 or 114)	4	
BIOL	205/206 OR 321/322	Human Anatomy/Physiology (CHEM 114 or 121) Human Physiology and Anatomy (CHEM 122 and BIOL 121 and 122)	8	
BIOL	286	General Microbiology (CHEM 122) (typically offered spring only)	3	
CHEM	121	General Chemistry 1 (MATH 115 and prior high school chemistry)	5	
CHEM	122	General Chemistry 2 (CHEM 121)	5	
CHEM	321	Organic Chemistry 1 (CHEM 122)	5	
CHEM	322	Organic Chemistry 2 (CHEM 321)	5	
MATH	135 OR 220	Calculus for the Life Sciences (preferred) (MATH 130 Min. C- or by placement) Analytical Geometry and Calculus 1 (MATH 130 Min. C- or by placement)	3 5	
ECON	221	Principles of Macroeconomics (MATH 110)	3	
PSYC SOCY	150 OR 121	Introduction to Psychology** Introductory Sociology **	3	
		CULTURAL ENRICHMENT ELECTIVE	3	
		CULTURAL ENRICHMENT ELECTIVE (200 + level)	3	
		CULTURAL ENRICHMENT ELECTIVE (global)	3	
		(to complete Assoc. Science Gen Ed requirements add 3 cr. of Social Awareness)		

*CHEM121 or 114 may be taken as a co-requisite rather than a prerequisite to BIOL 121

** This course satisfies the Race/Ethnicity/Gender requirement

SAMPLE COURSE SEQUENCE: The following chart depicts one strategy to complete the program requirements. In order to complete this program in two years, students must enter with the appropriate mathematics preparation and average 16 - 17 credit hours per semester. Students are encouraged to consider enrollment in Summer classes. Students **MUST** consult their faculty advisor to develop a course sequence appropriate to their academic development and educational plans.

First Year		Second Year	
Fall Semester		Fall Semester	
Choose one: ENGL 150, COMM 105, or COMM 121	3	ENGL 250	3
CHEM 121	5	CHEM 321	5
BIOL 121	4	Choose one: BIOL 205 or 321	4-5
Choose one: SOCY 121, PSYC 150 or MATH (if placement is MATH 115, 120, or 130)	3-4	Cultural Enrichment Elective	3
FSUS 100 (Ferris State University Seminar)	1	Cultural Enrichment Elective (200+ level)	3
	16-17		18-19
Spring Semester		Spring Semester	
CHEM 122	5	CHEM 322	5
BIOL 122	4	BIOL 206 or 322	3-4
Choose one: ENGL 150, COMM 105, or COMM 121	3	BIOL 286	3
MATH 135 (See Note Below)	3	ECON 221	3
	15	Cultural Enrichment elective (global)	3
			17-18

Note: MATH 135 is the minimum requirement for entry into the College of Pharmacy. First semester mathematics placement is determined by Department of Mathematics guidelines. Not all students admitted to Pre Pharmacy qualify for initial placement into MATH 135. Students initially placed in a mathematics course that is a prerequisite for MATH 135 will need to complete all remaining prerequisite mathematics courses prior to enrolling in MATH 135. The prerequisite sequence begins at MATH 115, then MATH 120, then MATH 130 then MATH 135. Consequently, if course prerequisites for MATH 135 are needed, either an overload or an additional semester(s) may be required to complete the program requirements.

Students planning to attend a graduate school in a scientific field of study (other than the Pharm.D. at FSU) should consider adding PHYS 211 and 212, substituting MATH 220 and 230 for MATH 135, and taking BIOL 321 and 322 rather than BIOL 205 and 206 in their academic plan.

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Cultural Enrichment (C), Social Awareness (S) and Global Consciousness (G) categories are delineated in the General Education section of the FSU electronic catalog:

<http://www.ferris.edu/htmls/academics/gened/courses.html>

Race/Ethnicity/Gender: For an associate, bachelor, or Pharm.D. Degree at Ferris State University, students must select one course from either the cultural enrichment or social awareness categories that fulfills the REG content requirement. Courses that satisfy this requirement are listed in the general education section of the FSU catalog.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

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GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

<http://www.ferris.edu/htmls/academics/gened/courses.html>

I. GENERAL EDUCATION REQUIREMENTS			
A. COMMUNICATION COMPETENCE 9 Sem Credits			
Course	Grade	Credit	
ENGL 150		3	
ENGL 250		3	
COMM		3	
TOTAL			
B. SCIENTIFIC UNDERSTANDING 7 - 8 Sem Credits			
Only approved "Z" courses may count toward this category (one must be a lab course).			
Course	Grade	Credit	
Lab			
TOTAL			
C. QUANTITATIVE SKILLS			
This requirement can be fulfilled by ONE of the following options:			
CHECK	Course	Grade	Credit
	MATH 115 or higher <i>or</i>		3
	MATH 115 or higher proficiency <i>or</i>		
	MATH ACT subtest score 24 or higher	Score	
TOTAL			

D. CULTURAL ENRICHMENT			9 Sem Credits
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply			
Course	Grade	Credit	
200+ level			
TOTAL			
E. SOCIAL AWARENESS			9 Sem Credits
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one 200+ level course			
Course	Grade	Credit	
Foundation			
200+ level			
TOTAL			

Sample Course Sequence: The following chart depicts one strategy to begin the program requirements. In order to complete this program in two years, students must average 15 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

First Year

<p>Fall Semester</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">ENGL by placement</td> <td style="text-align: center;">3</td> </tr> <tr> <td>MATH by placement</td> <td style="text-align: center;">4</td> </tr> <tr> <td>CHEM by placement or Gen Ed Elective</td> <td style="text-align: center;">3-5</td> </tr> <tr> <td>BIOL by placement</td> <td style="text-align: center;">3-4</td> </tr> <tr> <td colspan="2" style="text-align: right; border-top: 1px solid black;">13-16</td> </tr> </table> <p>Second Year</p> <p>Fall Semester See Note</p>	ENGL by placement	3	MATH by placement	4	CHEM by placement or Gen Ed Elective	3-5	BIOL by placement	3-4	13-16		<p>Spring Semester</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">CHEM by placement</td> <td style="text-align: center;">5</td> </tr> <tr> <td>BIOL by placement</td> <td style="text-align: center;">4</td> </tr> <tr> <td>MATH by placement</td> <td style="text-align: center;">3-4</td> </tr> <tr> <td>Choose one: Cultural Enrichment elective or Social Awareness Elective</td> <td style="text-align: center;"><u>3-4</u></td> </tr> <tr> <td colspan="2" style="text-align: right; border-top: 1px solid black;">15-16</td> </tr> </table> <p>Spring Semester See Note</p>	CHEM by placement	5	BIOL by placement	4	MATH by placement	3-4	Choose one: Cultural Enrichment elective or Social Awareness Elective	<u>3-4</u>	15-16	
ENGL by placement	3																				
MATH by placement	4																				
CHEM by placement or Gen Ed Elective	3-5																				
BIOL by placement	3-4																				
13-16																					
CHEM by placement	5																				
BIOL by placement	4																				
MATH by placement	3-4																				
Choose one: Cultural Enrichment elective or Social Awareness Elective	<u>3-4</u>																				
15-16																					

Note: If you do not transfer to another program, your third and fourth semester course work will be determined through careful planning with your faculty advisor.

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