

## PROPOSAL SUMMARY AND ROUTING FORM

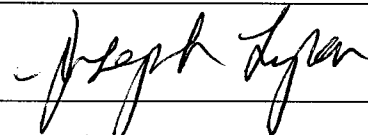


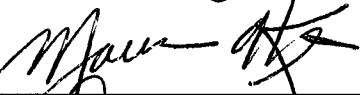

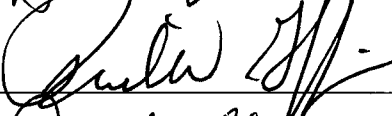

**Proposal Title:** Biotechnology course changes

**Initiating Unit or Individual:** Department of Biological Sciences

**Contact Person's Name:** Strasser/ Isler e-mail: strassek@ferris.edu phone: x2543

**Date or Semester of Proposal Implementation:** Spring 2007

- Group I - A – New degree/major or major, or redirection of a current offering
- Group I - B – New minors or concentrations
- Group II - A – Minor curriculum clean-up and course changes
- Group II - B – New Course
- Group III - Certificates
- Group IV – Off-Campus Programs

Group/Individual	Signature	Date	Vote/Action *
<b>Program or Academic Unit Faculty</b>			<input type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
<b>Department Faculty</b>		11/1/07	<del>12</del> Support 1 Support with Concerns 0 Not Support
<b>Department Head</b>		11/1/07	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
<b>College Curriculum Committee</b>		12/10/07	5 Support <input type="checkbox"/> Support with Concerns 0 Not Support
<b>Dean</b>		12/14/07	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
<b>University Curriculum Committee</b>		1/23/08	<input checked="" type="checkbox"/> Support 9-0. <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
<b>Senate</b>		1/24/08	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
<b>Academic Affairs</b>		1/24/08	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support

\*Support with Concerns or Not Support must include a list of concerns.

\*\*Vote counts are to be shown for faculty group actions. "X" for administrative actions.

**To be completed by Academic Affairs**

\_\_\_\_\_  
 President (Date Approved)      Board of Trustees (Date Approved)      President's Council (Date Approved)

## 1. Proposal Summary

We request to change the prerequisites for BIOL 388, BIOL 471, and BIOL 473 to better reflect the content and level of these lab-based courses. Changes in course titles and descriptions are requested to reduce student confusion and better represent the content of these classes.

**Request #1:** For BIOL 388 and BIOL 471, we request the addition of CHEM 333 as a prerequisite, since both of these courses are for senior-level students. For BIOL 471, the corequisite of BIOL 470 is not necessary for the course content. Instead, we request BIOL 375 (and CHEM 333) be included as prerequisites for BIOL 471 to better prepare them for the advanced level of techniques included.

For BIOL 473, we request the removal of BIOL 472 as a corequisite and the addition of CHEM 333 as a prerequisite. Due to the similar nature of the intensive laboratory skills covered in both CHEM 333 and BIOL 473, CHEM 333 will serve as a more appropriate prerequisite than a lecture course such as BIOL 472.

**REQUEST #2:** Simplify the full course titles for BIOL 471 and BIOL 473 to more accurately the course content and reduce confusion during registration. We request the full course title for BIOL 471 to be changed from “Biotech 2: Recombinant DNA lab” to “Recombinant DNA Laboratory”. We also request the full course title for BIOL 473 to be changed from “Biotech 3: Proteins Laboratory” to “Proteins Laboratory”. Since there is no longer a “Biotech 1: Tissue Culture Lab” included in the biotechnology curriculum, the inclusion of the “Biotech 2” and ‘Biotech 3” prefixes is a source of confusion to students.

**REQUEST #3:** Update the course catalog description for BIOL 473 to represent the material covered in the most recent offerings of these courses.

## 2. Summary of All Course Action Required\*

- a. **Newly Created Courses to FSU:**
- | Prefix | Number | Title |
|--------|--------|-------|
|--------|--------|-------|

**b. Courses to be Deleted From FSU Catalog:**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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**c. Existing Course(s) to be Modified:**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
BIOL	388	Advanced Immunology Laboratory
BIOL	471	Biotech 2: Recombinant DNA Lab
BIOL	473	Biotech 3: Proteins Laboratory

**d. Addition of existing FSU courses to program**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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**e. Removal of existing FSU courses from program**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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\*Contact Senate Secretary or UCC Chair if spaces for additional courses are needed.

# MODIFY COURSE

## Course Date Entry Form

FORM F  
Modify Course  
rev. 2/14/05

### I. ACTION TO BE TAKEN: MODIFY AN EXISTING COURSE

Notes:

1. Complete all parts of sections I and II; complete only those items in section III that represent changes.
2. If either prefix or number are being changed, use 'Delete Course' and 'New Course' forms rather than this form.

a. List the changes to be made: Revise and update course catalog description

b. Term Effective: Semester  Fall Year 2008 See instructions.

### II. CURRENT: Include information that is in the current course database.

a. Course Prefix **BIOL**      b. Number **174**      c. Enter Contact Hours per week in boxes or check Independent Study (X).  
 LECTure  hr/week      LAB  hr/week      INDEpendent Study   
 Practicum:  hr/week      Seminar:  hr/week

d. Full Course Title: Introduction to Biotechnology

### III. PROPOSED CHANGES: Complete only those boxes that represent proposed changes in the course. Leave all other spaces blank.

a. Course Prefix       b. Number       c. Enter Contact Hours per week in boxes or check Independent Study (X).  
 LECTure  hr/week      LAB  hr/week      INDEpendent Study   
 Practicum:  hr/semester      Seminar:  hr/week

d. Full Course Title:

e. Abbreviated Course Title: . (Abbreviate only if necessary. Use Arabic numerals. Limit to 26 characters and spaces.)

f. Semester(s) Offered:  (See instructions for listing.)      g. Max. Section Enrollment:

Credit Hours: Check (x) type and enter maximum and minimum hours in boxes.

h. Type:  Variable  Fixed      i. Maximum Credit Hours       j. Minimum Credit Hours

k. Grade Method: Check (x)  Normal Grading       Credit/No Credit only (Pass/Fail)

m. May Be Repeated for Added Credit: Check (x)  Yes       No

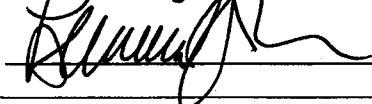
n. Levels: Check (x)  Undergraduate  Graduate  Professional

### o. CATALOG DESCRIPTION – Limit to 75 words – PLEASE BE CONCISE.

This course is survey of biotechnology resources available at Ferris State, in the state of Michigan, and the United States as a whole. Special focus will be placed on those resources relating to future careers in the biotechnology field. The course is designed for students entering the biotechnology program, those considering entering the biotechnology program, and those considering future careers in biotechnology-related fields.

p. Prerequisites: (if no prerequisites, write "None") Limited to 60 spaces.

UCC Chair Signature/Date:

 1/23/08

Academic Affairs Approval Signature/Date:

 1/28/08

To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS)  General Education (GE)  Occupational Education (OC)  G.E. Codes

### Office of the Registrar use ONLY

Date Received: \_\_\_\_\_ Date Completed: \_\_\_\_\_ Entered: SIS [125 \_\_\_ 1D4 \_\_\_ 12R \_\_\_ 131 \_\_\_ ]

# MODIFY COURSE

## Course Date Entry Form

FORM F  
Modify Course  
rev. 2/14/05

### I. ACTION TO BE TAKEN: MODIFY AN EXISTING COURSE

Notes:

1. Complete all parts of sections I and II; complete only those items in section III that represent changes.
2. If either prefix or number are being changed, use 'Delete Course' and 'New Course' forms rather than this form.

a. List the changes to be made: add prerequisite

b. Term Effective: Semester Fall Year 2008 See instructions.

### II. CURRENT: Include information that is in the current course database.

a. Course Prefix BIOL b. Number 388 c. Enter Contact Hours per week in boxes or check Independent Study (X).  
LECTure  hr/week LAB 8 hr/week INDEpendent Study   
Practicum:  hr/week Seminar:  hr/week

d. Full Course Title: Advanced Immunology Laboratory

### III. PROPOSED CHANGES: Complete only those boxes that represent proposed changes in the course. Leave all other spaces blank.

a. Course Prefix  b. Number  c. Enter Contact Hours per week in boxes or check Independent Study (X).  
LECTure  hr/week LAB  hr/week INDEpendent Study   
Practicum:  hr/semester Seminar:  hr/week

d. Full Course Title:

e. Abbreviated Course Title: . (Abbreviate only if necessary. Use Arabic numerals. Limit to 26 characters and spaces.)

f. Semester(s) Offered: Every Fall (See instructions for listing.) g. Max. Section Enrollment:

Credit Hours: Check (x) type and enter maximum and minimum hours in boxes.

h. Type:  Variable  Fixed i. Maximum Credit Hours  j. Minimum Credit Hours

k. Grade Method: Check (x)  Normal Grading  Credit/No Credit only (Pass/Fail)


m. May Be Repeated for Added Credit: Check (x)  Yes  No

n. Levels: Check (x)  Undergraduate  Graduate  Professional

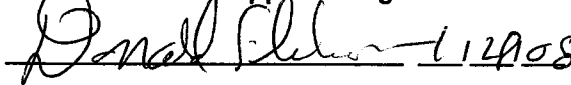
o. CATALOG DESCRIPTION – Limit to 75 words – PLEASE BE CONCISE.

p. Prerequisites: (if no prerequisites, write "None") Limited to 60 spaces. BIOL 386 and CHEM 333.

UCC Chair Signature/Date:

 1/23/08

Academic Affairs Approval Signature/Date:

 1/24/08

To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS)  General Education (GE)  Occupational Education (OC)  G.E. Codes

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Date Received: \_\_\_\_\_ Date Completed: \_\_\_\_\_ Entered: SIS [125 \_\_\_ 1D4 \_\_\_ 12R \_\_\_ 131 \_\_\_]

# MODIFY COURSE

FORM F  
Modify Course  
rev. 2/14/05

## Course Date Entry Form

### I. ACTION TO BE TAKEN: MODIFY AN EXISTING COURSE

Notes:

1. Complete all parts of sections I and II; complete only those items in section III that represent changes.
2. If either prefix or number are being changed, use 'Delete Course' and 'New Course' forms rather than this form.

a. List the changes to be made: Change corequisites and prerequisites, and revise title

b. Term Effective: Semester Fall Year 2008 See instructions.

### II. CURRENT: Include information that is in the current course database.

a. Course Prefix BIOL b. Number 471 c. Enter Contact Hours per week in boxes or check Independent Study (X).  
LECture 1 hr/week LAB 8 hr/week INDEPENDENT Study   
Practicum:  hr/week Seminar:  hr/week

d. Full Course Title: Biotech 2: Recombinant DNA Lab

### III. PROPOSED CHANGES: Complete only those boxes that represent proposed changes in the course. Leave all other spaces blank.

a. Course Prefix  b. Number  c. Enter Contact Hours per week in boxes or check Independent Study (X).  
LECture  hr/week LAB  hr/week INDEPENDENT Study   
Practicum:  hr/semester Seminar:  hr/week

d. Full Course Title: Recombinant DNA Laboratory

e. Abbreviated Course Title: . (Abbreviate only if necessary. Use Arabic numerals. Limit to 26 characters and spaces.)

f. Semester(s) Offered: Every Spring (See instructions for listing.) g. Max. Section Enrollment:

Credit Hours: Check (x) type and enter maximum and minimum hours in boxes.

h. Type:  Variable  Fixed i. Maximum Credit Hours  j. Minimum Credit Hours

k. Grade Method: Check (x)  Normal Grading  Credit/No Credit only (Pass/Fail)


m. May Be Repeated for Added Credit: Check (x)  Yes  No

n. Levels: Check (x)  Undergraduate  Graduate  Professional

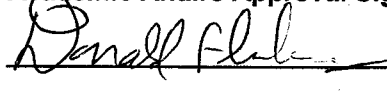
o. CATALOG DESCRIPTION – Limit to 75 words – PLEASE BE CONCISE.

p. Prerequisites: (if no prerequisites, write "None") Limited to 60 spaces. BIOL 375 and CHEM 333.

UCC Chair Signature/Date:

 1/23/08

Academic Affairs Approval Signature/Date:

 1/23/08

To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS)  General Education (GE)  Occupational Education (OC)  G.E. Codes

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# MODIFY COURSE

FORM F  
Modify Course  
rev. 2/14/05

## Course Date Entry Form

### I. ACTION TO BE TAKEN: MODIFY AN EXISTING COURSE

Notes:

1. Complete all parts of sections I and II; complete only those items in section III that represent changes.
2. If either prefix or number are being changed, use 'Delete Course' and 'New Course' forms rather than this form.

a. List the changes to be made: Change co- and prerequisites, change catalog entry, title.

b. Term Effective: Semester Fall Year 2008 See instructions.

### II. CURRENT: Include information that is in the current course database.

a. Course Prefix BIOL b. Number 473 c. Enter Contact Hours per week in boxes or check Independent Study (X).  
LECTure 1 hr/week LAB 8 hr/week INDEPENDent Study   
Practicum:  hr/week Seminar:  hr/week

d. Full Course Title: Biotech 3: Proteins Laboratory

### III. PROPOSED CHANGES: Complete only those boxes that represent proposed changes in the course. Leave all other spaces blank.

a. Course Prefix  b. Number  c. Enter Contact Hours per week in boxes or check Independent Study (X).  
LECTure  hr/week LAB  hr/week INDEPENDent Study   
Practicum:  hr/semester Seminar:  hr/week

d. Full Course Title: Proteins Laboratory

e. Abbreviated Course Title: . (Abbreviate only if necessary. Use Arabic numerals. Limit to 26 characters and spaces.)

f. Semester(s) Offered: Every Fall (See instructions for listing.) g. Max. Section Enrollment:

Credit Hours: Check (x) type and enter maximum and minimum hours in boxes.

h. Type:  Variable  Fixed i. Maximum Credit Hours  j. Minimum Credit Hours

k. Grade Method: Check (x)  Normal Grading  Credit/No Credit only (Pass/Fail)

m. May Be Repeated for Added Credit: Check (x)  Yes  No

n. Levels: Check (x)  Undergraduate  Graduate  Professional

### o. CATALOG DESCRIPTION – Limit to 75 words – PLEASE BE CONCISE.

Hands-on practical experience in protein purification. Student-developed term projects will utilize a variety of laboratory techniques, including: enzyme assays, ammonium sulfate precipitation, ion exchange, ultracentrifugation, gel permeation chromatography, SDS-PAGE electrophoresis, and other techniques. This course meets General Education requirements: Scientific Understanding, Lab.

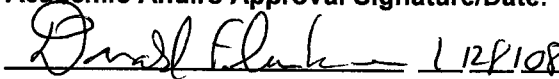
p. Prerequisites: (if no prerequisites, write "None") Limited to 60 spaces. CHEM 333.

UCC Chair Signature/Date:



1/23/08

Academic Affairs Approval Signature/Date:



To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS)  General Education (GE)  Occupational Education (OC)  G.E. Codes

### Office of the Registrar use ONLY

Date Received: \_\_\_\_\_ Date Completed: \_\_\_\_\_ Entered: SIS [ 125 \_\_\_ 1D4 \_\_\_ 12R \_\_\_ 131 \_\_\_ ]

# BACHELOR OF SCIENCE IN BIOTECHNOLOGY

## FERRIS STATE UNIVERSITY

**PROGRAM COORDINATOR: DR. BRADLEY ISLER**

**OFFICE: ASC 2118 Phone: (231) 591-2641 E-Mail: islerb@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.

Admission to the Junior Year Professional Sequence is competitive

### Graduation Requirements

1. 2.0 Cumulative Grade Average in all courses. No grade lower than a C- in science and math courses allowed for graduation
2. Minimum 121 credits including general education requirements
3. Residency Requirements: 30 minimum FSU semester credits
4. Minimum 53 credits numbered 300 or higher

### Program requirements: for students entering Biotechnology Fall Semester 2007

REQUIRED		COURSE TITLE – FOR PREREQUISITES NOT INDICATED, SEE FSU CATALOG COURSE DESCRIPTIONS	FSU S.H.	GRADE
<b>Major – 91 credit minimum - No grade lower than a C- allowed for graduation.</b>				
BIOL	121	General Biology 1 (CHEM 114 or 121 concurrent)	4	
BIOL	122	General Biology 2 (BIOL 121 & CHEM 114 or 121)	4	
BIOL Or	205	Human Anatomy/Physiology (CHEM 114)	5	
BIOL	321	Human Physiology and Anatomy 1 (BIOL 122 and CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2 (BIOL 321)	4	
BIOL	375	Principles of Genetics (BIOL 122 and a Biological CHEM course)	3	
BIOL	386	Microbiology and Immunology (BIOL 322 and a Biological CHEM course)	5	
BIOL	388	Advanced Immunology Laboratory (CHEM 333 and BIOL 386)	2	
BIOL	470	Molecular Genetics (CHEM 364 and BIOL 375)	4	
BIOL	471	Biotech 2: Recombinant DNA Lab (CHEM 333 and BIOL 375)	3	
BIOL	472	Proteins (BIOL 122 and CHEM 322)	3	
BIOL	473	Biotech 3: Proteins Laboratory (CHEM 364, corequisite =BIOL 472)	3	
BIOL	474	Advanced Cell & Molecular Biology (CHEM 364 and BIOL 375)	3	
BIOL	475	Bioinformatics (BIOL 375)	3	
CHEM	121	General Chemistry 1 (MATH 115 and prior CHEM)	5	
CHEM	122	General Chemistry 2 (CHEM 121)	5	
CHEM	231	Quantitative Analysis (CHEM 122)	4	
CHEM	321	Organic Chemistry 1 (CHEM 122)	5	
CHEM	322	Organic Chemistry 2 (CHEM 321)	5	
CHEM	332	Biochemistry Lab 1 (CHEM 322, corequisite = CHEM 364)	2	
CHEM	333	Biochemistry Lab 2 (CHEM 332)	2	
CHEM	364	Biochemistry (CHEM 322)	4	
CHEM	474	Advanced Biochemistry (CHEM 231/351, CHEM 364, and BIOL 375)	3	
MATH	130	Advanced Algebra & Analytical Trigonometry (MATH 120 or placement)	4	
MATH	251	Statistics for the Life Sciences (MATH 130)	3	
PHYS	211	Introductory Physics 1 (MATH 116)	4	
<b>CHOOSE ONE:</b>				
BIOL	491	Biotechnology Internship (instructor consent)	3-6	
BIOL	496	Independent Studies in Biology (instructor consent)	3-6	
CHEM	497	Independent Studies in Chemistry (instructor consent)	3-6	

# 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>

<b>I. GENERAL EDUCATION REQUIREMENTS</b>		
<b>A. COMMUNICATION COMPETENCE</b>		<b>12 Sem Credits</b>
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311		3
COMM 105 or 121		3
<b>TOTAL</b>		
<b>B. SCIENTIFIC UNDERSTANDING</b>		<b>7 Sem Credits</b>
This requirement is satisfied in the program requirements area.		
<b>C. QUANTITATIVE SKILLS</b>		
This requirement is satisfied in the program requirements area.		
<b>D. CULTURAL ENRICHMENT</b>		<b>9 Sem Credits</b>
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		
<b>TOTAL</b>		

<b>E. SOCIAL AWARENESS</b>		<b>9 Sem Credits</b>
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		
<b>TOTAL</b>		
<b>F. GLOBAL CONSCIOUSNESS</b>		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		
<b>G. RACE/ETHNICITY/GENDER</b>		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		

**Sample Course Sequence:** The following chart depicts one method to begin the course work requirements. In order to compete this program in a four year plan, 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.

<u>First Year</u>				<u>Second Year</u>			
<b>Fall</b>		<b>Spring</b>		<b>Fall</b>		<b>Spring</b>	
BIOL 174	1	BIOL 122	4	BIOL 205 or 321	4 (5)	Soc. Aware. (BIOL 322)	3 (4)
BIOL 121	4	CHEM 122	5	CHEM 231	4	CHEM 322	5
CHEM 321	5	MATH 130	4	CHEM 321	5	PHYS 211	4
ENGL 150	3	Cult. Enrich Elec.	3		13-14	ENGL 250	3
COMM 105 or 121	3		16				15-16
	16						
<p>1) Admission to the third year level is granted on a competitive basis based on GPA and space available. As a Biotechnology student, you must have completed the course prerequisites and have earned an overall GPA of 2.7 or above to be eligible to apply.</p> <p>2) Students must take their remaining social awareness and cultural enrichment courses during their third and fourth years.</p>							
<u>Third Year</u>				<u>Fourth Year</u>			
<b>Fall</b>		<b>Spring</b>		<b>Fall</b>		<b>Spring</b>	
BIOL 375	3	BIOL 386	5	BIOL 388	2	CHEM 474	3
CHEM 332	2	CHEM 333	2	BIOL 473	3	BIOL 471	3
CHEM 364	4	BIOL 470 (Even yrs.)	4	ENGL 311	3	BIOL 470 (Even yrs.)	4
BIOL 472 (Odd yrs.)	3	BIOL 474 (Odd yrs.)	3	MATH 251	3	BIOL 474 (Odd yrs.)	3
	9-12	BIOL 475 (Even yrs.)	3	BIOL 472 (Odd yrs.)	3	BIOL 475 (Even yrs.)	3
			10-14		11-14		9-13
		<b>Summer</b>					
		<b>Internship or Independent Study 3-6</b>					

**It is strongly recommended that students take electives during the first and second year summer semesters either at Ferris State University or at a community college, as it will lighten the load during the year.**

### 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.