

FERRIS STATE UNIVERSITY

Biotechnology B.S. Degree

GRAND RAPIDS COMMUNITY COLLEGE

Articulation Agreement

THIS PROGRAM IS DESIGNED AS A B.S. DEGREE OPTION FOR STUDENTS WHO HAVE COMPLETED OR ARE COMPLETING AN ASSOCIATE IN SCIENCE DEGREE

Application Deadlines:

1. Transfer students must be admitted 21 days prior to the first day of the semester they plan to attend.

Admission Requirements:

1. 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 first year students and must meet freshman admission criteria.
3. Students may complete MACRAO and have the MACRAO Stamp on their transcripts OR are required to complete the Ferris General Education requirements with a 2.0 cumulative GPA. To view the Ferris General Education requirements, go to: <http://www.ferris.edu/HTMLS/academics/gened/gened.html>

Graduation Requirements:

1. Major: 2.0 cumulative GPA in all Major courses. No grade lower than C- in science and math courses allowed for graduation.
2. 30 minimum FSU semester hours must be completed to fulfill Ferris residency requirements.
3. A total of 121 Ferris credit hours are required for graduation for this major.

GENERAL EDUCATION REQUIREMENTS w/MACRAO

FERRIS Courses	FERRIS Credit Hours	Course Titles	GRCC Courses	GRCC Credit Hours	Grade
ENGL 150		English 1	EN 100 or EN 101	3	
ENGL 250		English 2	EN 102	3	
Advanced ENGL 300-Level	3	<i>Upper-Level General Education</i> Advanced Composition (ENGL 321 or ENGL 323 or ENGL 325)			
Lab Science		Scientific Understanding/MACRAO Science General Biology 1 (required for B.S. degree)	BI 151	4	
MATH 115		Intermediate Algebra or higher	MA 107	4	
Gen-Ed Elective		Cultural Enrichment/MACRAO Humanities Public Speaking or Interpersonal Communications (required for B.S. degree)	COM 135 or COM 131	3	
Gen-Ed Elective		Cultural Enrichment/MACRAO Humanities	GRCC	3	
Gen-Ed Elective		Cultural Enrichment/MACRAO Humanities	GRCC	3	
Gen-Ed Elective		Social Awareness/MACRAO Social Science (required for AS degree)	PS 110	3	
Gen-Ed Elective		Social Awareness/MACRAO Social Science	GRCC	3	
Gen-Ed Elective		Social Awareness/MACRAO Social Science	GRCC	3	
3		TOTAL General Education CREDIT HOURS		+	
				32 w/MACRAO	

- Upon completion of the courses outlined above, students will have completed MACRAO
- Students must have the MACRAO Stamp on their college transcript in order to qualify for having met MACRAO
- Students having completed MACRAO will be one of the 300-Level Advanced English courses listed above (ENGL 321 or ENGL 323 or ENGL 325)

BIOTECHNOLOGY MAJOR REQUIREMENTS

For questions about your transfer to Ferris in the Biotechnology BS degree, contact:

PROGRAM COORDINATOR

FERRIS REQUIRED COURSES	COURSE TITLE <i>Ferris prerequisites shown in brackets ()</i>	GRCC Courses	GRCC Sem. Hrs.	GRADE	GRADE PTS.
MAJOR – 91 credit minimum					
No grade lower than a C- allowed for graduation					
BIOL	121	General Biology 1 (CHEM 114 or 121 concurrent) Credits count as meeting Gen-Ed Science & Major requirements	BI 151	MACRAO Gen-Ed (4 cr.)	
BIOL	122	General Biology 2 (BIOL 121 & CHEM 114 or 121)	BI 152	4	
BIOL	205	Human Anatomy/Physiology (CHEM 114)	BI 121 and BI 122	8	
BIOL	375	Principles of Genetics (BIOL 122 and a BIO/CHEM course)	BI232	3	
BIOL	386	Microbiology & Immunology (BIOL 205/322 & a BIO/CHEM course)			
BIOL	388	Advanced Immunology Laboratory (BIOL 386)			
BIOL	470	Molecular Genetics (CHEM 364 and BIOL 375)			
BIOL	471	Biotech 2: Recombinant DNA Lab (BIOL 470)			
BIOL	472	Proteins (BIOL 122 and CHEM 364)			
BIOL	473	Biotech 3: Proteins Laboratory (CHEM 364 & BIOL 472)			
BIOL	474	Advanced Cell & Molecular Biology (CHEM 364 & BIOL 375)			
BIOL	475	Bioinformatics (BIOL 375)			
CHEM	121	General Chemistry 1 (MATH 115 and prior CHEM)	CM 103 or CM 113	4	
CHEM	122	General Chemistry 2 (CHEM 121)	CM 104 or CM 114	4	
CHEM	231	Quantitative Analysis (CHEM 122)	CM 212	4	
CHEM	321	Organic Chemistry 1 (CHEM 122)	CM 236 & CM 237	5	
CHEM	322	Organic Chemistry 2 (CHEM 321)	CM 238 & CM 239	5	
CHEM	332	Biochemistry Lab 1 (CHEM 322, corequisite = CHEM 364)			
CHEM	333	Biochemistry Lab 2 (CHEM 332)			
CHEM	364	Biochemistry (PHCH 320 is acceptable) (CHEM 322)			
CHEM	474	Advanced Biochemistry (CHEM 364)			
MATH	130	Advanced Algebra & Analytical Trigonometry (MATH 120 or placement)	MA 110 & 108 Or MA 131	5-6	
MATH	251	Statistics for the Life Sciences (MATH 130)			
PHYS	211	Introductory Physics 1 (MATH 120)	PH 125	4	
Choose One:					
BIOL	491	Biotechnology Internship (instructor consent)			
BIOL	497	Independent Studies in Biology (instructor consent)			
CHEM	497	Independent Studies in Chemistry (instructor consent)			
Total MAJOR Requirements:			GRCC: 46-47	FERRIS: 44	
Total General Education requirements w/MACRAO			GRCC: 32	FERRIS: 3	
TOTAL CREDIT HOURS:			GRCC: 78-79 + FERRIS: 47 = 125/126		

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