



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:

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

Admission Requirements:

- 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.
- 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:

- Major: 2.0 cumulative GPA in all Major courses. No grade lower than C- in science and math courses allowed for graduation.
- 30 minimum FSU semester hours must be completed to fulfill Ferris residency requirements.
- 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 above (ENGL 321 or ENGL 323 or ENGL 325) one of the 300-Level Advanced English courses listed



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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