

**CEDAR CREST COLLEGE**  
**GENETIC ENGINEERING MAJOR WITH FORENSIC SCIENCE**

Student Name: \_\_\_\_\_ ID #: \_\_\_\_\_ Grad year: \_\_\_\_\_

Required Courses <i>[Prerequisites are listed in brackets]</i>	Cred.	Offered	Semester	Grade
BIO 121 <sup>+</sup> Principles of Biology I	3+1	Fall		
BIO 122 <sup>+</sup> Principles of Biology II	3+1	Spring		
CHE 111 Chemical Principles	4	Fall*		
CHE 112 Chemical Equilibrium and Analysis <i>[CHE 111]</i>	4	Spring*		
MAT 141 Calculus I	3	Fall, Spring*		
MAT 142 Calculus II <i>[MAT 141]</i>	3	Fall, Spring*		
PHY 101 Introductory College Physics I	4	Fall*		
PHY 102 Introductory College Physics II <i>[PHY 101]</i>	4	Spring*		
BIO 235 Ecology, Evolution and Genetics <i>[BIO 121, 122; CHE 111, 112 recom.]</i>	3+1	Fall		
BIO 236 Cell and Molecular Biology <i>[BIO 121, 122; CHE 111, 112 recommended]</i>	3+1	Spring		

*Students who have previously taken BIO 222 or 231 should consult their advisors or the department website to determine the courses needed to complete the major.*

BIO 227 Microbiology <i>[BIO 121, 122; CHE 111, 112]</i>	3+1	Fall		
CHE 205 Organic Chemistry I <i>[one year of college chemistry]</i>	4	Fall*		
CHE 206 Organic Chemistry II <i>[CHE 205]</i>	4	Spring*		
CHE 241 Crime Scene Reconstruction and Pattern Analysis <i>[CHE 111]</i>	4	Spring		
BIO 248 Biostatistics <i>[BIO 121, 122; Jr. or Sr. standing recommended]</i>	3	Fall, Spring		
BIO 335 <sup>++</sup> Molecular Genetics I <i>[BIO 222, 227, 231; CHE 205, 206]</i>	4	Fall		
BIO 336 <sup>++</sup> Molecular Genetics II <i>[BIO 335]</i>	4	Spring		
BIO 345 <sup>++</sup> Advanced Recombinant DNA Techniques <i>[BIO 335, 336]</i>	3	Fall		
BIO 350 <sup>++</sup> Junior Colloquium <i>[BIO 121, 122; Junior standing]</i>	2	Fall		
BIO 355 <sup>++</sup> Science, Ethics, and Society <i>[BIO 350]</i>	2	Fall		
CHE 302 Instrumental Analysis <i>[CHE 206 and PHY 102, or dept. approval]</i>	4	Spring		
CHE 307 Biochemistry I <i>[CHE 205, 206]</i>	4	Fall		
CHE 347 Trace Evidence and Microscopy <i>[CHE 111, 112]</i>	4	Spring		
CHE 348 <sup>++</sup> Forensic Molecular Bio. and Population Genetics <i>[BIO 231]</i>	4	Fall		
CHE 349 Professional Issues in Forensic Science <i>[CHE 241]</i>	3	Fall		

**Elective course<sup>++</sup>.** One elective is fulfilled by CHE 348. The other elective must be from the list below.

BIO 327 Microbial Pathogenesis <i>[BIO 227, 222, 231 or permission]</i>	4	Spring		
BIO 332 Developmental Biology <i>[BIO 222, 231]</i>	4	Spring 08, 10		
BIO 333 Advanced Bioinformatics	3	Spring 08, 10		
BIO/NEU 348 Diseases of the Nervous System <i>[BIO 222]</i>	4	Spring		

**Techniques courses: two courses from the list below**

BIO 343 <sup>++</sup> Polymerase Chain Reaction <i>[BIO 231, Jr. or Sr. standing]</i>	1.5	Fall		
BIO 344 <sup>++</sup> DNA Sequencing <i>[BIO 231, Jr. or Sr. standing]</i>	1.5	Fall		
BIO 347 <sup>++</sup> Microscopy and Image Analysis <i>[BIO 222 recommended]</i>	1.5	Spring		
BIO 349 <sup>++</sup> Protein Purification and Analysis <i>[BIO 231, Jr. or Sr. standing]</i>	1.5	Spring		

**NOTES:** Grades of C- or higher must be attained in all required courses for the major, and in prerequisite courses before proceeding to subsequent courses. A minimum cumulative GPA of 2.000 and a minimum average in the major of 2.000 are required.

<sup>+</sup> For students with AP credit, BIO 121 and 122 labs must be taken at Cedar Crest College.

<sup>++</sup> For transfer students, these courses must be taken at Cedar Crest College.

\* May be available in summer; please consult the department offering the course.

## GENETIC ENGINEERING MAJOR WITH FORENSIC SCIENCE RESEARCH REQUIREMENT AND THESIS OPTION

Student Name: \_\_\_\_\_

Faculty Research Advisor: \_\_\_\_\_

Course <i>[Prerequisites are listed in brackets]</i>	Requirement	Semester	Grade
BIO 243 Biology Independent Research <i>[permission of faculty research supervisor]</i>	Optional, taken prior to the completion of BIO 350		
BIO 350 Junior Colloquium <i>[BIO 121, 122; Junior standing]</i>	Required for the major		
Research proposal approved by faculty research supervisor	Included as part of BIO 350		
BIO 353 Biology Independent Research <i>[BIO 350, permission of faculty research supervisor]</i> OR CHE 391/392	Minimum of two semesters (4-6 credits) required for Forensic Science concentration		
BIO 354 Thesis and Presentation <i>[Declared major within the Department of Biological Sciences; permission of the faculty supervising the research; 4 credits of BIO 353, CHE 391/392; 2 credits of BIO 353 - CHE391/392 may be taken concurrently]</i> (CHE 391/392 students enroll in BIO 354 for 0 credits)	Taken in the final semester before graduation		

**NOTE:** Students who are completing a joint Biology / Honors research project should enroll in their final two semesters as follows:

- HON 350 and 351 for 3 credits per semester
- BIO 353 or CHE 391/392 for zero credits
- BIO 354 for zero credits

*Major requirements checklist revised May, 2008*

*For a complete description of major requirements and policies, refer to the Cedar Crest College Catalog and the Department of Biological Sciences website: [www2.cedarcrest.edu/academic/bio/acad\\_policies.htm](http://www2.cedarcrest.edu/academic/bio/acad_policies.htm)*

# LIBERAL ARTS CURRICULUM FOR THE GENETIC ENGINEERING MAJOR / FSC

Effective beginning 2007-2008	Requirement		Course	Semester	Grade
	ART	Arts: six credits; one course must be a 3-credit course			
	HUM	Humanities: two courses from different disciplines			
	ML	Mathematics and Logic: two courses; one must be a college-level math course	MAT 141 MAT 142		
	SCI	Natural Sciences: two courses; one must be a lab course	BIO 121 BIO 122		
	SS	Social Sciences: two courses from different disciplines			
	ETH	Ethics: one course			
	GS	Global Studies: one course			
	WRI 1	Writing 1: one course	WRI 100 or HON 122		
	WRI 2	Writing 2: one course			
<p><b>NOTES:</b> At least four different disciplines must be represented in the Humanities and Social Sciences categories; one additional discipline must be represented in the Arts category. A grade of C or better is required in courses fulfilling requirements of the Liberal Arts Curriculum.</p>					

Only for students matriculated in 2006-2007 or earlier	Requirement		Course	Semester	Grade
	ART	Arts (one classroom)			
	IHE*	Illuminating the Human Experience			
	MQR	Math and Quantitative Reasoning	MAT 141 MAT 142		
	SR	Scientific Reasoning	BIO 121 BIO 122		
	ETH	Ethics			
	WV	World Views			
	WRI 1	Writing 1 <i>grade of C or better required</i>	WRI 100 or HON 122		
	WRI 2	Writing 2			
	Theme	Course	Credits	Semester	Grade
	SD	BIO 231**	4		
<b>TOTAL (21 credits in theme courses required):</b>					
<p><b>NOTES:</b> At least four different disciplines must be represented in the Liberal Arts Theme. * Only one of the two courses fulfilling the IHE requirement may be applied to the Liberal Arts Theme. ** A maximum of 4 credits from the student's primary major may be applied to the Liberal Arts Theme.</p>					