IP: _____ Units Needed: _____Units: Total: ☐ Updt: ☐

CATALOG YEARS: 2005-2010 **TOTAL UNITS REQUIRED = 120**

Biotechnology Major

Student Name: _____ **ID#**_____ **Grad Term:** _____

- **All non-articulated courses MUST be reviewed by a faculty advisor.**
- **A minimum of eighteen (18) units must be completed at CSU San Marcos.**
- **All courses for the major, including supporting courses, must be completed with a grade of C (2.0) or better.**
- **Must attend a series of four (4) seminars before graduating (Note: BIOT 357 will meet this requirement).**
- **Those pursuing a Minor in Biological Sciences may use either BIOL 352 or 353 to fulfill part of the 5 elective units for this major. Additionally, the minor must have 12 exclusive units from this major.**
- **CHEM 352, or 351 can double count for GE "BB" and major elective credit (May be taken in semester in which you achieve 60 units.**
- ***You must complete the graduation requirement of 40units of Upper Division coursework. You will need to take an additional 3 units of upper division coursework (either as upper division GE or upper division elective).***

PREPARATION FOR THE MAJOR (53 – 54 UNITS)

NON-BIOLOGY/CHEMISTRY SUPPORTING COURSES (25 - 26 UNITS)

Course Number/Title	Units	Grade	Sem	Equivalent	Institution	Need	IP	Met
MATH 160-Calculus with Applications I (fulfills area B4) (**prereq. :strong H.S. Math or Math 125 w/min grade of C**)	**5**							
♦ PSYC 100 – Introduction to Psychology OR ♦ SOC 101 – Intro to Sociology (Either may fulfill area D**)**	**3-4**							
PHYS 205 – Physics for the Biological Sciences I	**4**							
PHYS 206 – Physics for the Biological Sciences II	**4**							
♦ ACCT 201- Intro. to Financial Accounting	**3**							
♦ ACCT 202- Intro. to Managerial Accounting	**3**							
PHIL 315► or PHIL 340 ►or PHIL 345 ►(may meet "CC" certain restrictions apply)	**3**							

► For this course to also meet "CC" requirement: May be taken in semester in which you achieve 60 units. ***Note: Students admitted Spring 2010 and beyond: Must be taken semester <u>after</u> completion of 60 units or more.).***

LOWER-DIVISION CHEMISTRY/BIOLOGY (28 UNITS)

Course Number/Title	Units	Grade	Sem	Equivalent	Institution	Need	IP	Met
CHEM 150-Gen Chem (*ELM) meets B1 lower-div GE.	**4**							
CEM 150L-Gen Chem Lab meets B3 lower div GE	**1**							
CHEM 201-Organic Chem (*CHEM 150)	**3**							
CHEM 201L-Organic lab (*CHEM 150)	**2**							
CHEM 202-Organic Chem (*CHEM 201/201L)	**3**							
CHEM 250-Quantitative (*Math160,Chem202)	**3**							
BIOL 210-Intro to Cell and Molecular Biology (*pre-or corequisite: CHEM 150)	**4**							
BIOL 211-Intro to Organ & Pop (* BIOL 210) Also meets area B2 in lower-division GE.	**4**							
BIOL 215 –Experimental Design & Statistical Analysis (BIOL 360 may be used to fulfill this requirement)	**3**							
BIOL 215L – Lab in Experimental Design & Stat Analysis (BIOL 360 may be used to fulfill this requirement)	**1**							

Student Name: _____ **ID#**_____ **Grad Term:** _____

UPPER-DIVISION REQUIREMENTS (24 UNITS)

Course Number/Title	Units	Grade	Sem	Equivalent	Institution	Need	IP	Met
BIOT 355-Molecular Biotechnology (prereq:BIOL 210,211)	**4**							
BIOT 356-Cellular Biotechnology (prereq:BIOL 210,211)	**4**							
BIOT 357-Foundations of Biotechnology (prereq:BIOL 210,211)	**2**							
BIOL 367-Biology of Microorganisms (prereq:BIOL 210,211)	**4**							
BIOL 477 – Immunology(replaces BIOL 377)	**3**							
CHEM 351 -Biochemistry(may fulfill area **BB** if taken after completion of 60 units)	**3**							
MGMT 302 – Foundations of Management**	**2**							
MKTG 302– Foundations of Marketing**	**2**							

UPPER-DIVISION ELECTIVES: MINIMUM OF 7 UNITS REQUIRED. (NEED TO COMPLETE PSYC 100 OR SOC 101 AND ACCT 201, ACCT 202 BEFORE COMPLETING UPPER DIVISION BUSINESS COURSES(**).

(PLUS ONE ADDITIONAL 3 UNIT COURSE OF UPPER DIVISION ELECTIVE OR 3 UNITS OF UPPER DIVISION GE TO MEET THE 40 UNIT UPPER DIVISION GRADUATION REQUIREMENT)

BIOL 352 Genetics (4)
BIOL 353 Comparative Animal Physiology (4)
BIOL 489 Intro. To Laboratory/Field Research (2)
BIOT 358 Computer Skills for Biotechnology (3)
BIOT 497 Internship in Biotechnology (4)
CHEM 351L Biochemistry Laboratory (2)
CHEM 352 Biochemistry (3)
FIN 302** Foundations of Finance (2)
MIS 411** Database Management Systems (4)
MIS 425** Systems Analysis & Design (4)
MIS 426**Telecomm. For Management (4)
MGMT 415** Human Resource Management (4)
MGMT 452** Leadership in Organizations (4)
MGMT 461** Management in Different Cultures (4)
MIS 302** Foundations of Management Information Systems (2)
OM 302** Foundations of Prod. & Ops Management (2)

Course #	**Course Title**	Units	Grade	Sem	Equivalent	Institution	Need	IP	Met

Total Elective Units _____(7 required)

SEMINAR REQUIREMENT/BIOTECH 357– (The class focuses on Quality Control/Assurance, Regulatory Affairs, Clinical Testing/Animal Care & Scale-up Procedures, delivered by industry or topic experts. See faculty advisor for details.**)**

Seminar Title	Sem	Need	IP	Met
BIOT 357				

Date _____ **Advisor Signature**_____

Grade Update: _____ _____ **(2) Date:** _____ _____ **(3) Date:** _____ _____

Dhm 8/10/2009
*Prerequisite required
NOTE: lower division Business prep courses (♦) must be completed prior to taking courses marked **

Recommended Course Sequence: **Biotechnology**

Fall	Units	**Spring**	Units	**Summer**	Units
BIOL 210	4	**BIOL 211** *(GE-**B2,B3**)*	4	Foreign Lang III (**C**)	3
CHEM 150 *(GE-**B1, B3**)*	5	**MATH 160** *(GE-**B4**)*	5		
GE (**A2** Must take 1st year)	3	GE (**E-**Lifelong Learning)	3		
Foreign Lang I (If Need)	4	Foreign Lang II (If Need)	4		
		Comp test/CS 100 (1st yr)			
Total Units	16	Total Units	16	Total Units	3

Fall	Units	**Spring**	Units	**Summer**	Units
BIOL 215/215L	4	**CHEM 202**	3		
CHEM 201 & 201L	5	**PHYS 205**	4		
PSYC 100 or SOC 101*(GE-**D**)*	3-4	**ACCT 201**	3		
PSCI 100orHIST 130/131 (GE-**D**)	3	PSCI 100 or HIST 130/131	3		
		GE (**A3**-Critical Thinking)	3		
Total Units	15-16	Total Units	16	Total Units	

Fall	Units	**Spring**	Units	**Summer**	Units
BIOT 355	4	**CHEM 250**	3		
PHYS 206	4	**MGMT 302**	2		
ACCT 202	3	**PHIL 315 or 340 or 345** *(**CC**)*	3		
GE (**A1**-Oral Communication)	3	**BIOT 356**	4		
BB, or DD (no earlier)	3	BB, or DD (no earlier)	3		
Total Units	17	Total Units	15	Total Units	3

Fall	Units	**Spring**	Units	**Summer**	Units
BIOL elect (see faculty advisor)	3	**BIOL 367**	4		
BIOL 477	3	**BIOL elect (see faculty advisor)**	4		
BIOL 357	2	**MKTG 302**	2		
CHEM 351	3	GE (**C1**-Fine Arts)	3		
GE (**C2**-Humanities)	3	GE (**D7**-Interdisciplinary)	3		
Total Units	14	Total Units	16	Total Units	

CROSS-OUT COURSES BELOW UPON SUCCESSFUL COMPLETION (C OR BETTER) TO INDICATE COURSES OUTSTANDING.

Major Requirements (refer to MAJOR worksheet):

BIOL 210 (4)
BIOL 211 (4) *(GE-**B2,B1**)*
BIOL 215/215L (4)
CHEM 150 (5) *(GE-**B1,B3**)*
CHEM 201/201L (5)
(1st yr)
CHEM 202 (3)
CHEM 250 (3)
MATH 160 (5) *(GE **B4**)*
PHYS 205 (4)
PHYS 206 (4)
ACCT 201 (3)
ACCT 202 (3)

PSYC 100 or SOC 101 (3-4) *(GE-**D**)*
PHIL 315, 340, or 345 (3) (**CC**)
CHEM 351 (3)
MGMT 302 (2)
MKTG 302 (2)

BIOT 355 (4)
BIOT 356 (4)
BIOT 357 (2)
BIOL 367 (4)
BIOL 477 (3)
BIOL elect from list (4)
BIOL elect from list (3)

Attend four (4) seminars (see faculty advisor for details)

GE + Graduation Requirements: (refer to GE worksheet)

A1-Oral Comm
A2-must take 1st year
A3-Critical Thinking
C1-Fine Arts

C2-Humanities
D7-Interdisciplinary
D-PSCI 100 or U.S. Hist
PSCI 100 or U.S. Hist
E-Lifelong Understanding
Foreign Lang 101
Foreign Lang 102

Foreign Lang 201 (**C**)
BB (60 unit rule)
DD (60 unit rule)
Comp test/CS 100

Dhm 8/10/2009
*Prerequisite required
NOTE: lower division Business prep courses (♦) must be completed prior to taking courses marked **