CHECKSHEET FOR BIOCHEMISTRY MAJOR AND CONCENTRATIONS

NAME: ___________________  CSU ID#: ___________________  DATE: ____________

DEPARTMENTAL REQUIREMENTS FOR ALL CONCENTRATIONS IN THE BIOCHEMISTRY MAJOR:
These courses are departmental requirements for the major. These courses both meet and exceed all AUCC Category 3A and Category 4 requirements.

BIOCHEMISTRY [SEE ALSO AUCC CATEGORY 4]:
BC 192 [2]  
*BC 401 [3]  
BC 403 [3]  
BC 411 [4]  
BC 465 [3]  
BC 493 [1]  

BIOLOGICAL SCIENCES: (Category 3A)
*LIFE 102 [4]  
*LIFE 201B [3]  
*LIFE 210 [3]  
LIFE 203 [2]  
LIFE 212 [2]  

CHEMISTRY: (Category 3A)
*CHEM 111 [4]  
*CHEM 113 [3]  
*CHEM 341 [3]  
CHEM 344 [2]  

PHYSICS: (Category 3A)
*PH 121 [5]  
*PH 122 [5]  
*PH 141 [5]  

LOGIC/CRITICAL THINKING (3 CR, DEPT. REQ.)
STAT 301 [3]  
STAT 307 [3]  

* = Honors section available
☑ A minimum grade of C must be earned for BC 493 and all Biochemistry (BC) and LIFE prefix lecture and laboratory courses at or above the 200-level required in the biochemistry major.

DEPARTMENTAL REQUIREMENTS FOR EACH CONCENTRATION IN THE BIOCHEMISTRY MAJOR:

GENERAL CONCENTRATION:
BIOCHEMISTRY:
BC 499A [3]  
OR
BC 499B [3]  

BIOCHEMISTRY ELECTIONS:
† Bioscience elective (phys/org biol) [3-4]  
‡ Bioscience elective [7-8]  

HEALTH AND MEDICAL SCIENCE CONCENTRATION:
PHYSIOLOGY:
BMS 300 [4]  
OR
BMS 360 [4]  

ANATOMY:
BMS 301 [5]  
OR
BMS 305 [4]  

RESEARCH:
BC 475 [3]  
OR
BC 487 [3]  
OR
BC 495 [3]  

BIOCHEMISTRY:
BC 467 [3]  
BC 499A [3]  
OR
BC 499C [3]  

MCAT:
PSY 100 [3]  
OR
SOC 100 [3]  
SOC 105 [3]  

PRE-PHARMACY CONCENTRATION:
PHYSIOLOGY:
BMS 300 [4]  
OR
BMS 360 [4]  
BMS 302 [2]  

MICROBIOLOGY/IMMUNOLOGY:
MIP 300 [3]  
MIP 302 [2]  
MIP 342 [4]  

PUBLIC SPEAKING AND ECONOMICS:
SPCM 200 [3]  
ECON 202 [3]  

BIOCHEMISTRY:
BC 499A [3]  
OR
BC 499D [3]  

† BIOSCIENCE ELECTIVES FOR GENERAL CONC:
One of the bioscience electives must be from the following list of physiology/organismal biology courses:

The second and third bioscience electives must be from the above list or from the following:
UNIVERSITY AND COLLEGE OF NATURAL SCIENCES REQUIREMENTS:

CATEGORY 1: CORE COMPETENCIES (11 CREDITS)

1A: WRITTEN COMMUNICATION (3 CR)
CO 150 [3]

1B: MATHEMATICS (8 CR, DEPT. REQ.)
OR

CATEGORY 2: ADD’L CORE COMPETENCIES (3 CR)

ADVANCED WRITING
CO 300 [3]
OR
CO 301 A-D [3] (CO 301B is for Sciences)
OR
CO 302 [3]

CATEGORY 3: FOUNDATIONS AND PERSPECTIVES (24 CREDITS TOTAL)

3A: BIOLOGICAL/PHYSICAL SCIENCES
Requirements for this category are met and exceeded by the Departmental requirements for the major in biochemistry.

3B: ARTS/HUMANITIES (6 CR)
Choose two courses from the following:
L*** 201 [3-5]  L*** 250 [3]
MU 100 [3]  MU 111 [3]
MU 131 [3]  PHIL 100 [3]
PHIL 120 [3]  SPCM 100 [3]

3C: SOCIAL/BEHAVIORAL SCIENCE (3 CR)
Choose one course from the following:
EDUC 275 [3]  GR 100 [3]

3D: HISTORICAL PERSPECTIVES (3 CR)
Choose one course from the following:
NR 320 [3]

3E: GLOBAL & CULTURAL AWARENESS (3 CR)
Choose one course from the following:
ECON 211 [3]  ETST 100 [3]

HONORS PROGRAM REQUIREMENTS
HONR 192 [4]
HONR 193 [3]
HONR 392 [3]
HONR 492 [3]
Completion of the above Honors courses fulfills AUCC Categories IA, IIA, and IIIA-IIF requirements.

Honors section/option in 200-level and upper-division courses:
LIFE 201B OR LIFE 210 [3]
300- or 400-level BC Honors Option Course [3]

Honors thesis:
HONR 399 [1]
HONR 499 [3]

CATEGORY 4: DEPTH AND INTEGRATION
[Fulfills AUCC Category 4 requirements]

4A: USING COMPETENCIES
BC 401 [3]

4B: BUILDING UPON FOUNDATIONS

4C: CAPSTONE COURSE
<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
<th>TITLE</th>
<th>SEMESTER</th>
<th>PREREQUISITES</th>
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<tbody>
<tr>
<td>BC192</td>
<td>02(1-0-1)</td>
<td>BC Freshman Seminar</td>
<td>F</td>
<td>None</td>
</tr>
<tr>
<td>BC295</td>
<td>var cr</td>
<td>Intro Independent Study</td>
<td>F, S</td>
<td>LIFE102; CHEM112 or concurrent registration; written consent of instructor.</td>
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<tr>
<td>BC401</td>
<td>03(3-0-0)</td>
<td>Comp Biochem I</td>
<td>F</td>
<td>CHEM245 or CHEM343 or concurrent registration or CHEM346 or concurrent registration; MATH155 or MATH160</td>
</tr>
<tr>
<td>BC403</td>
<td>03(3-0-0)</td>
<td>Comp Biochem II</td>
<td>S</td>
<td>CHEM245 or CHEM341 or CHEM345</td>
</tr>
<tr>
<td>BC404</td>
<td>02(0-6-0)</td>
<td>Comp Lab</td>
<td>F, S</td>
<td>BC401 or concurrent registration; CHEM246 or CHEM344 or CHEM 346; LIFE203; LIFE212</td>
</tr>
<tr>
<td>BC411</td>
<td>04(3-0-1)</td>
<td>Physical Biochemistry</td>
<td>F</td>
<td>BC401; CHEM113; MATH161 or MATH255</td>
</tr>
<tr>
<td>BC463</td>
<td>03(3-0-0)</td>
<td>Molecular Genetics</td>
<td>F</td>
<td>BC351 or BC401 with a C or better; BC350 with a C or better or LIFE201B with a C or better</td>
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<tr>
<td>BC465</td>
<td>03(3-0-0)</td>
<td>Molec Reg of Cell Funct</td>
<td>S</td>
<td>LIFE210; BC403 or concurrent registration or BC351</td>
</tr>
<tr>
<td>BC467</td>
<td>03(3-0-0)</td>
<td>Biochem of Hum Disease</td>
<td>S</td>
<td>BC401</td>
</tr>
<tr>
<td>BC475</td>
<td>03(0-6-1)</td>
<td>Mentored Research</td>
<td>F, S, SS</td>
<td>BC404</td>
</tr>
<tr>
<td>BC484</td>
<td>var cr</td>
<td>Sup College Teach</td>
<td>F, S, SS</td>
<td>Written consent of supervising instructor and department chair</td>
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<tr>
<td>BC487A</td>
<td>var cr</td>
<td>Internship</td>
<td>F, S, SS</td>
<td>BC401; BC403; BC404; minimum GPA of 2.0; written consent of department</td>
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<tr>
<td>BC487B</td>
<td>var cr</td>
<td>Internship-Internat'l</td>
<td>F, S, SS</td>
<td>BC401; BC463; senior standing; BC495 in lab of host liaison faculty member</td>
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<tr>
<td>BC493</td>
<td>01(0-0-1)</td>
<td>Senior Seminar</td>
<td>F, S</td>
<td>Minimum GPA of 3.0; written consent of laboratory mentor</td>
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<tr>
<td>BC495</td>
<td>var cr</td>
<td>Independent Study</td>
<td>F, S, SS</td>
<td>Written consent of research mentor and department chair</td>
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<tr>
<td>BC498</td>
<td>var cr</td>
<td>Research</td>
<td>F, S, SS</td>
<td>None</td>
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<tr>
<td>BC499A</td>
<td>03(0-3-0)</td>
<td>Thesis Lab Res-based</td>
<td>F, S, SS</td>
<td>BC493 or concurrent registration</td>
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<tr>
<td>BC499B-D</td>
<td>03(0-0-3)</td>
<td>Thesis Lit-based</td>
<td>F, S, SS</td>
<td>BC493 or concurrent registration</td>
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<tr>
<td>BMS300</td>
<td>04(4-0-0)</td>
<td>Princ of Human Phys</td>
<td>F, S, SS</td>
<td>BZ101 or BZ110 or LIFE102; CHEM103 or CHEM107 or CHEM111</td>
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<tr>
<td>BMS301</td>
<td>05(3-2-1)</td>
<td>Human Gross Anatomy</td>
<td>F</td>
<td>BZ110 or LIFE102</td>
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<tr>
<td>BMS302</td>
<td>02(1-3-0)</td>
<td>Princ of Physio Lab</td>
<td>F, S</td>
<td>BMS300 or concurrent registration or BMS360 or concurrent registration</td>
</tr>
<tr>
<td>BMS305</td>
<td>04(3-3-0)</td>
<td>Dom Animal Gross Anat</td>
<td>S</td>
<td>BZ110 or LIFE102</td>
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<tr>
<td>BMS360</td>
<td>04(4-0-0)</td>
<td>Fund of Physiology</td>
<td>S</td>
<td>BZ110 or LIFE102; CHEM245 or concurrent regist. or CHEM345 or concurrent regist.</td>
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<tr>
<td>CHEM111</td>
<td>04(3-0-1)</td>
<td>General Chemistry I</td>
<td>F, S, SS</td>
<td>MATH118 or placement in MATH155 or higher. Students should complete the sequence: CHEM111/CHEM112/CHEM113/CHEM114. Credit allowed for only CHEM107, CHEM111, or CHEM117</td>
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<td>CHEM112</td>
<td>1(0-3-0)</td>
<td>Gen Chemistry Lab I</td>
<td>F, S, SS</td>
<td>CHEM101 or CHEM111 or CHEM117; MATH124 or placement in MATH155 or higher</td>
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<td>CHEM113</td>
<td>03(3-0-0)</td>
<td>Gen Chemistry II</td>
<td>F, S, SS</td>
<td>CHEM107 or CHEM112 or CHEM117; MATH124 or placement in MATH155 or higher</td>
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<tr>
<td>CHEM114</td>
<td>01(0-3-0)</td>
<td>Gen Chemistry Lab II</td>
<td>F, S, SS</td>
<td>CHEM111; credit allowed for only CHEM245 or CHEM345 or CHEM346</td>
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<tr>
<td>CHEM341</td>
<td>03(3-0-0)</td>
<td>Mod Organic Chem I</td>
<td>F, S, SS</td>
<td>CHEM245 or CHEM341 or CHEM345; credit allowed for only CHEM343 or CHEM346</td>
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<tr>
<td>CHEM342</td>
<td>03(3-0-0)</td>
<td>Mod Organic Chem II</td>
<td>F, S, SS</td>
<td>CHEM245 or CHEM341 or CHEM345; credit allowed for only CHEM343 or CHEM346</td>
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<tr>
<td>CHEM344</td>
<td>02(0-6-0)</td>
<td>Mod Org Chem Lab</td>
<td>F, S, SS</td>
<td>CHEM343 or concurrent registration or CHEM346 or concurrent registration; credit allowed for only CHEM344 or CHEM246</td>
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<tr>
<td>CO150</td>
<td>03(3-0-0)</td>
<td>College Comp</td>
<td>F, S, SS</td>
<td>Satisfactory Composition Placement Examination scores (SAT 600 or ACT 26 or AP Exam score 3, 4, or 5) or CO130</td>
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<tr>
<td>CO301B</td>
<td>03(3-0-0)</td>
<td>Writing in Disciplines--Sci</td>
<td>F, S, SS</td>
<td>CO150 or HONR193</td>
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<tr>
<td>ECON202</td>
<td>03(2-0-1)</td>
<td>Princ of Microeconomics</td>
<td>F, S, SS</td>
<td>MATH117 or MATH118 or MATH141 or MATH155 or MATH160</td>
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<tr>
<td>LIFE102</td>
<td>04(3-3-0)</td>
<td>Attributes Living Systems</td>
<td>F, S, SS</td>
<td>High school chemistry; prerequisite for additional higher-level science courses</td>
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<tr>
<td>LIFE201B</td>
<td>03(3-0-0)</td>
<td>Intro Genetics</td>
<td>F, S</td>
<td>LIFE102 or college-level introductory biology course</td>
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<tr>
<td>LIFE203</td>
<td>02(0-3-1)</td>
<td>Intro Genetics-Lab/Rec</td>
<td>S</td>
<td>LIFE201B or concurrent registration</td>
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<tr>
<td>LIFE210</td>
<td>03(3-0-0)</td>
<td>Intro Eukaryotic Cell Biol</td>
<td>F</td>
<td>LIFE102; CHEM111 or concurrent registration; CHEM112 or concurrent registration</td>
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<tr>
<td>LIFE212</td>
<td>02(0-3-1)</td>
<td>Eukar Cell Bio-Lab/Rec</td>
<td>F</td>
<td>CHEM112 or concurrent registration; LIFE210 or concurrent registration</td>
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<tr>
<td>MATH155</td>
<td>04(4-0-0)</td>
<td>Calc for Biol Scientists I</td>
<td>F, S, SS</td>
<td>MATH124; MATH125; credit allowed for only MATH141, MATH155, or MATH160</td>
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<tr>
<td>MATH161</td>
<td>04(3-2-0)</td>
<td>Calc for Phys Sci I</td>
<td>F, S, SS</td>
<td>MATH124; MATH125; credit allowed for only MATH141, MATH155, or MATH160</td>
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<tr>
<td>MATH162</td>
<td>03(3-2-0)</td>
<td>Calc for Phys Sci II</td>
<td>F, S</td>
<td>MATH124; MATH126; MATH161; credit allowed for only MATH255 or MATH161</td>
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<td>MATH255</td>
<td>04(4-0-0)</td>
<td>Calc for Bio Sci II</td>
<td>F</td>
<td>MATH126 or concurrent registration; MATH155; credit allowed for only MATH255 or MATH161</td>
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<td>MIP300</td>
<td>03(3-0-0)</td>
<td>Gen Microbiology</td>
<td>F, S, SS</td>
<td>BZ110 or BZ120 or LIFE102; CHEM245 or concurrent registration or CHEM341 or concurrent registration or CHEM345 or concurrent registration</td>
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<tr>
<td>MIP302</td>
<td>02(0-4-0)</td>
<td>Gen Microbiology Lab</td>
<td>F</td>
<td>MIP300 or concurrent registration</td>
</tr>
<tr>
<td>MIP342</td>
<td>04(3-0-1)</td>
<td>Immunology</td>
<td>F, S</td>
<td>MIP300 or concurrent registration or CHEM245 or concurrent registration or CHEM341 or concurrent registration or CHEM345 or concurrent registration or CHEM346 or concurrent registration or CHEM246 or concurrent registration or LIFE201B or LIFE210 or MIP300</td>
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<tr>
<td>PH121</td>
<td>05(3-2-1)</td>
<td>General Physics I</td>
<td>F, S, SS</td>
<td>MATH125 or concurrent registration; credit allowed for only PH121 or PH141</td>
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<tr>
<td>PH122</td>
<td>05(3-2-1)</td>
<td>General Physics II</td>
<td>F, S</td>
<td>PH121; credit allowed for only PH122 or PH142</td>
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<tr>
<td>PH141</td>
<td>05(3-2-1)</td>
<td>Phys Sci &amp; Engineers I</td>
<td>F, S, SS</td>
<td>MATH126; MATH155 or concurrent registration; MATH160 or concurrent registration; credit allowed for only PH141 or PH121</td>
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<tr>
<td>PH142</td>
<td>05(3-2-1)</td>
<td>Phys Sci &amp; Engineers II</td>
<td>F, S</td>
<td>PH141; MATH161 or concurrent registration or MATH255 or concurrent registration; credit allowed for only PH142 or PH122</td>
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<tr>
<td>SPCM200</td>
<td>03(3-0-0)</td>
<td>Public Speaking</td>
<td>F, S, SS</td>
<td>MATH117 or higher; credit allowed for only STAT301, STAT307, STAT311, or STAT315</td>
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<tr>
<td>STAT301</td>
<td>03(3-0-0)</td>
<td>Intro Statistical Methods</td>
<td>F, S, SS</td>
<td>MATH117 or higher; credit allowed for only STAT301, STAT307, STAT311, or STAT315</td>
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<td>STAT307</td>
<td>03(3-0-0)</td>
<td>Intro to Biostatistics</td>
<td>F, S, SS</td>
<td>MATH117 or higher; credit allowed for only STAT301, STAT307, STAT311, or STAT315</td>
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</table>

*(SEE NEXT PAGE FOR MINOR PROGRAM IN MOLECULAR BIOLOGY)*
MINOR PROGRAM IN MOLECULAR BIOLOGY

REQUIRED COURSES:

BC401, Comprehensive Biochemistry I [3 cr]
BC403, Comprehensive Biochemistry II [3 cr]
BC404, Comprehensive Biochemistry Lab [2 cr]
BC463, Molecular Genetics [3 cr] OR MIP450, Microbial Genetics [3 cr]
BC493, Senior Seminar [1 cr]
CHEM111, General Chemistry I [4 cr]
CHEM112, General Chemistry I Laboratory [1 cr]
CHEM113, General Chemistry II [3 cr]
CHEM114, General Chemistry II Laboratory [1 cr]
CHEM341, Organic Chemistry I [3 cr]
CHEM343, Organic Chemistry II [3 cr]
CHEM344, Organic Chemistry Lab [2 cr]
LIFE102, Attributes of Living Systems [4 cr]
LIFE201B, 203, Intro Genetics/Lab/Rec [5 cr]; LIFE210, 212 Eukaryotic Cell Biology/Lab/Rec, [5 cr] OR
   BZ310, Cell Biology [4 cr] and either SOCR330/331, Principles of Genetics/Lab [4 cr] or BZ350,
   Molecular and General Genetics [4 cr]
MATH155, Calculus for Biological Scientists I [4 cr] OR MATH160, Calculus for Physical Scientists I [4 cr]
MIP300, General Microbiology [3 cr]
MIP342, Immunology [4 cr]
PH121/122, General Physics I/II [10 cr] OR PH141/142, Physics for Scientists and Engineers I/II [10 cr]

COURSE ELECTIVES (MINIMUM OF ONE COURSE):

BC465, Molecular Regulation of Cell Function [3 cr.]
BZ346, Population & Evolutionary Genetics [3 cr]
BZ402, Molecular Cytogenics [4 cr]
BZ403, Comparative Endocrinology [3 cr]
BZ433, Behavioral Genetics [3 cr]
MIP420, Medical and Molecular Virology [4 cr]
MIP443, Microbial Physiology [4 cr]

LAB ELECTIVES (MINIMUM OF 4 CREDITS):

BC475, Mentored Research [3 cr]
BC495, Independent Study [var. cr]
BC499A, Thesis—Lab Research Based [3 cr]
BC499B-D, Thesis—Literature Based [3 cr]
BZ495, Independent Study [var. cr]
MIP302, General Microbiology Lab [2 cr]
MIP343, Immunology Lab [2 cr]
MIP425, Virology and Cell Culture Lab [2 cr]
MIP495, Independent Study [var. cr]