To Whom It May Concern:

Overview of Proposals: We would like to propose two changes to the Data Science undergraduate degree, which is a joint program of the Department of Computer Science and the Department of Mathematics. In brief, the first change we are requesting is that the prerequisites be adjusted for the capstone course to better reflect the standard overrides that are routinely granted to students. Second, we are proposing to remove Calculus 2 from the degree requirements as the purpose of its inclusion was because it was a prerequisite for linear algebra. This is no longer the case and we would like to update the data science curriculum to reflect this change.

Details of the Proposals:

1. Currently, MATH 441 and CSCI 470 are often overridden as prerequisites for DATA 495. The justification for this has always been that the breadth of knowledge obtained in other data science, computer science, and mathematics courses is sufficient in addition to taking MATH 441 and CSCI 470 concurrently with DATA 495. For example, many of the topics covered in MATH 441 are also taught in CSCI 334. Similarly, many of the topics in CSCI 470 are taught in CSCI 334 and CSCI 230. We propose that MATH 441 and CSCI 470 become co-requisites or prerequisite for DATA 495.

2. MATH 220 has been selected for removal from the curriculum because its inclusion in the original curriculum was based on it being a prerequisite for Linear Algebra (MATH 203). This is no long the case. The prerequisite for MATH 203 is now MATH 120 (Calc I).

In parallel to these proposals, the Math Department has submitted a proposal changing the prerequisite of MATH 440 to no longer include MATH 220.

Data Science Program Director (Paul Anderson)
FACULTY CURRICULUM COMMITTEE
SIGNATURE PAGE

- In section A, list ALL of the forms covered by this signature page. If you submit a form that is not listed in A, your proposal will be held back until we receive a new, updated signature page.
- You must obtain the signature of your department chair and dean before submitting your proposal.

A. FORMS COVERED BY THIS SIGNATURE PAGE. List each form you are submitting—for instance, PSYC 383, Course Form; PSYC, Change of Major Form; PSYC, Change of Minor Form.

1. Course form: Change the Prereq for DATA 495
2. Change of major form: Remove Calculus 2 from degree

B. APPROVAL AND SIGNATURES.

1. Signature of Department Chair or Program Director:

Date: March 4, 2015

2. Signature of Academic Dean:

Date: 3/4/2015

3. Signature of Provost:

Date: 9/7/15

4. Signature of Business Affairs (only for course fees):

Date: 

☐ fee approved on __________
☐ BOT approval pending

5. Signature of Curriculum Committee Chair:

Date: 

6. Signature of Budget Committee Chair (only for new programs):

Date: 

7. Signature of Academic Planning Committee Chair (only for new programs):

Date: 

8. Signature of Faculty Senate Secretary:

Date: 

Date Approved by Faculty Senate: 


FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
- Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
- Fill out the parts of the form specified in part B. You must do this before your request can move forward!
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Paul Anderson Phone: (843) 953-8151 Email: andersonpe2@cofc.edu

School: SSM Department or Program: Data Science

Name and Acronym of Major: Data Science (DATA) DATA 495

Catalog Year in which changes will take effect: FALL 2016

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J)
☒ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J)

☐ Course Number (you must submit a course deactivation request for the old course number)
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☒ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)

☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

Currently, MATH 441 and CSCI 470 are often overridden as prerequisites for DATA 495. The justification for this has always been that the breadth of knowledge obtained in other data science, computer science, and mathematics courses is sufficient in addition to taking MATH 441 and CSCI470 concurrently with DATA 495. For example, many of the topics covered in MATH 441 are also taught in CSCI 334. Similarly, many of the topics in CSCI 470 are taught in CSCI 334 and CSCI 230. We propose that MATH 441 and CSCI 470 become co-requisites instead of just a prerequisite for DATA 495. So a student can take DATA 495 if they have already completed CSCI 470 and MATH 441 OR if they are current taking these courses.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

No other program requires this course.

This form was last updated on 12/13/13 and replaces all others.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Computer Science and Mathematics    School: SSM    Subject Acronym: DATA    Course Number: 495

Credit hours:    _X_ lecture    __ lab    __ seminar    __ independent study
Contact hours:    __ lecture    __ lab    __ seminar    __ independent study

Course title: Data Science Capstone

Course description (maximum 50 words, exactly as it appears in the catalog):

A capstone course for the application of knowledge discovery and data mining tools and techniques to large data repositories or data streams. This project based course provides students with a framework in which students gain both understanding and insight into the application of knowledge discovery tools and principles on data within the student’s cognate area. A data science capstone needs to include a non-trivial use of a full feature programming language and environment.

Restrictions (pre-requisites, co-requisites, majors only, etc.):  PR: DATA 210, CSCI 470, and MATH 441

Cross-listing, if any:

Is this course repeatable?  □ yes    □ no    If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use **boldface** for the information that is changing.

Department: Computer Science and Mathematics    School: SSM    Subject Acronym: DATA    Course Number: 495

Credit hours:    _X_ lecture    __ lab    __ seminar    __ independent study
Contact hours:    __ lecture    __ lab    __ seminar    __ independent study

Course title: Data Science Capstone

Course description (maximum 50 words, exactly as it appears in the catalog):

A capstone course for the application of knowledge discovery and data mining tools and techniques to large data repositories or data streams. This project based course provides students with a framework in which students gain both understanding and insight into the application of knowledge discovery tools and principles on data within the student’s cognate area. A data science capstone needs to include a non-trivial use of a full feature programming language and environment.

Restrictions (pre-requisites, co-requisites, majors only, etc.):

**Pre-requisite:** DATA 210

**Co-requisite:** CSCI 470, and MATH 441

If this is a newly-created course, is it intended to be the equivalent of an existing course?  □ yes    □ no

If so, which course? ____________________
If equivalent, will the newly-created course replace the existing course? □ yes □ no
Note: If yes, you must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department): ______________________
Note: Cross-listed courses are equivalent.

Is this course repeatable? □ yes □ no If yes, how many total credit hours may the student earn? ____

Is there an activity, lab, or other fee associated with this course? □ yes □ no What is the fee? $_____
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

None.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>What will students know and be able to do when they complete the course?</td>
<td>How will each outcome be measured? Who will be assessed, when, and how often? How well should students be able to do on the assessment?</td>
</tr>
<tr>
<td>1. Students gain competency in computer science, including programming, data organization, data mining, data structures, and algorithms.</td>
<td>Competency will be measured via a comprehensive examination administered when the student is registered in the capstone course (DATA 495). The questions included will be pulled from representative courses. For this core competency that includes CSCI 221, CSCI 334, and DATA 210.</td>
</tr>
<tr>
<td>2. Students gain competency in core area of mathematics and statistics, including pre-calculus, calculus, and statistical inference.</td>
<td>Competency will be measured via a comprehensive examination administered when the student is registered in the capstone course (DATA 495). The questions included will be pulled from representative courses. For this core competency that includes MATH 250, MATH 440, and MATH 441.</td>
</tr>
<tr>
<td>3. Synthesize the knowledge students acquired in math, stats, and computer science applied through a senior level capstone experience.</td>
<td>Competency will be measured via a formal write-up and presentation of their capstone project.</td>
</tr>
</tbody>
</table>
How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? ☐ yes ☒ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.

J. CHECKLIST.

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☐ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
CHANGE/DELETE PROGRAM FORM

Instructions:
- Please fill out all of the portions of the form that are specified in section B. You must do this before your request can move forward!
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, please start by checking the detailed instructions on the website.
- Please feel free to contact the committee chair with any remaining questions you might have.

A. CONTACT INFORMATION.

Name: Paul Anderson          Phone: (843) 953-8151          Email: andersonpe2@cofc.edu

School: SSM                   Department or Program: Data Science

Name and Acronym of Major: Data Science (DATA)

B. CATEGORY OF REVIEW. Please check all that apply, then fill out the specified parts of the form.

☒ Change Request (fill out all sections)
☐ Add an existing course to requirements or electives
☐ Add a new course to requirements or electives (attach completed course form for each)
☒ Delete courses from requirements or electives
☐ Add or modify concentration*
☐ Add or modify cognate*

*Note: Only concentrations and cognates requiring 18 or more credit hours will be tracked in Banner and Degree Works and noted on the transcript.

☐ Terminate Program (fill out E, G, H, and I)
☐ Terminate degree
☐ Terminate major
☐ Terminate concentration
☐ Terminate cognate

C. GENERAL INFORMATION

Number of Current Credit Hours (for existing program): 69+
Number of Proposed Credit Hours (for changed program): unchanged \(-=4\)
Catalog Year in which changes will take effect: FALL 2015

D. CURRICULUM. Please list every change you are making below AND attach the current Program of Study Worksheet for this major (http://registrar.cofc.edu/program-of-study-resources/program-of-study-worksheets/index.php) with changes marked in RED. Additions should show where the course will be inserted, deletions should be noted by crossing out the course, and moves indicated with arrows. Distinguish between required and elective courses, and note any prerequisites, co-requisites, sequencing, or other restrictions. Provide the catalog description and course list exactly as they should appear in the catalog. For each new course, submit the Curriculum Committee’s Course Form and a sample syllabus.

This form was last updated on 6/6/2013 and replaces all others.
This proposal is to remove the existing requirement for MATH 220 (Calculus II) in the DATA.

**E. RATIONALE AND EXPLANATION.** Please provide a narrative addressing the request you are making and why you are making it.

MATH 220 has been selected for removal because its inclusion in the original curriculum was based on it being a prerequisite for Linear Algebra (MATH 203). This is no long the case. The prerequisite for MATH 203 is now MATH 120 (Calc I).

**F. STUDENT LEARNING OUTCOMES AND ASSESSMENT.**

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<td>1. Students gain competency in computer science, including programming, data organization, data mining, data structures, and algorithms.</td>
<td>Competency will be measured via a comprehensive examination administered when the student is registered in the capstone course (DATA 495). The questions included will be pulled from representative courses. For this core competency that includes CSCI 221, CSCI 334, and DATA 210.</td>
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<td>3. Synthesize the knowledge students acquired in math, stats, and computer science applied through a senior level capstone experience.</td>
<td>Competency will be measured via a formal write-up and presentation of their capstone project.</td>
</tr>
</tbody>
</table>

This form was last updated on 6/6/2013 and replaces all others.   Page 2 of 3
G. IMPACT ON EXISTING PROGRAMS AND COURSES. Please describe the impact of this request on other programs and courses. If you are deleting a program, please describe the effect on all programs that will be impacted; if you are adding or changing a program, please explain any overlap with existing programs at the College.

The enrollment in Calculus II will decrease as the 30+ data science majors will no longer be required to take this course.

H. COSTS ASSOCIATED WITH THE REQUESTED ACTION. List all of the new costs or cost savings (including new faculty/staff requests, library, or equipment) associated with your request.

No net new faculty is requested.

I. CHECKLIST

☐ I have completed all relevant parts of the form.

☐ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ I have attached a Course Form for each newly-created or modified course.

☐ (For proposals that affect other departments in any way) I have attached an acknowledgement from the relevant department.

☐ I have provided the complete curriculum for the program, concentration, emphasis, etc., including the description and course list, exactly as it should appear in the catalog.

☐ I have submitted one Signature Form that lists all of the different forms I am submitting.
Data Science Major Requirements

Degree: Bachelor of Science

Credit Hours: 65+

"PR" indicates a pre-requisite. "CO" indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses

DATA 101 Introduction to Data Science (3) PR: None

DATA 210 Dataset Organization and Management (3) PR: None

DATA 495 Data Science Capstone (3) PR: DATA 210, CSCI 470, and MATH 441 PR or CO: CSCI 470 and MATH 441

Math Requirement

MATH 120 Introductory Calculus (4) PR: C- or better in MATH 111 or placement

MATH 203 Linear Algebra (3) PR: MATH 120 or instructor permission

MATH 207 Discrete Structures I (3) PR: MATH 105, MATH 111, or MATH 120

MATH 220 Calculus II (4) PR: MATH 120 or HONS 115

MATH 250 Statistical Methods (3) PR: MATH 105 with a C- or better or MATH 111 or MATH 120 or instructor permission

MATH 350 Statistical Methods II (3) PR: MATH 120, MATH 250

MATH 440 Statistical Learning I (3) PR: MATH 203, MATH 220, MATH 350

MATH 441 Statistical Learning II (3) PR: MATH 440

Computer Science Requirement

CSCI 220 Computer Programming I (3) PR: CSCI 120 or CSCI 180 or CSCI 210 or MATH 111 or higher or department permission; CO: CSCI 220L

CSCI 220L Computer Programming I Lab (1) CO: CSCI 220

CSCI 221 Computer Programming II (3) PR: CSCI 220, CSCI 220L; CO or PR: MATH 207

CSCI 230 Data Structure and Algorithms (3) PR: CSCI 221, MATH 207
CSCI 310 Advanced Algorithms (3) PR: CSCI 230, MATH 207

CSCI 334 Data Mining (3) PR: CSCI 221, MATH 207, MATH 250

CSCI 470 Principles of Artificial Intelligence (3) PR: CSCI 230, MATH 307

** Everything from here on down is unchanged **

Select a cognate from the following (Accounting, Biomechanics, Customer Relationship Management, e-Commerce, Economics, Exercise Physiology, Finance, Geoinformatics, Molecular Biology, Organismal Biology, Physics and Astronomy, Psychology, Sociology and Supply Chain Management)

**Accounting Cognate Requirements (15 credit hours)**

ACCT 203 Financial Accounting (3) PR: Sophomore standing

ACCT 204 Managerial Accounting (3) PR: ACCT 203, sophomore standing

ACCT 316 Intermediate Accounting (3) PR: Junior standing, ACCT 203, ACCT 204

ACCT 317 Intermediate Accounting II (3) PR: Junior standing, ACCT 203, ACCT 204, ACCT 316

ACCT 409 Auditing Theory (3) PR: Senior standing, ACCT 203, ACCT 204, ACCT 316; CO or PR: ACCT 317 with instructor permission

**Biomechanics Cognate Requirements (22+ credit hours)**

BIOL 111 Introduction to Cell and Molecular Biology (3) CO: BIOL 111L

BIOL 111L Introduction to Cell and Molecular Biology Lab (1) CO: BIOL 111

BIOL 112 Evolution, Form, and Function of Organisms (3) PR: BIOL 111/111L; CO: BIOL 112L

BIOL 112L Evolution, Form, and Function of Organisms Lab (1) CO: BIOL 112

BIOL 202 Human Anatomy (4) PR: BIOL 111/111L, BIOL 112/112L

PHYS 101 Introductory Physics I (3) CO: PHYS 101L

PHYS 101L Introductory Physics Laboratory (1) CO: PHYS 101

EXSC 330 Kinesiology (3) PR: BIOL 202; EXSC or PEHD 201

EXSC 440 Biomechanics (3) PR: EXSC 291 or PEHD 201; PEHD 330, BIOL 202, PHYS 101

**Customer Relations Management Cognate Requirements (15 credit hours)**

ECON 200 Principles of Microeconomics (3) PR: None

ECON 201 Principles of Macroeconomics (3) PR: ECON 200
DSCI 232 Business Statistics (3) PR: MATH 104 or MATH 250

MKTG 302 Marketing Concepts (3) PR: Junior standing, ECON 200, ECON 201

MKTG 320 Marketing Research (3) PR: Junior standing, ECON 200, ECON 201, MATH 103, DSCI 232, MKTG 302

e-Commerce Cognate Requirements (18 credit hours)

ACCT 203 Financial Accounting (3) PR: Sophomore standing

ACCT 204 Managerial Accounting (3) PR: ACCT 203, sophomore standing

DSCI 232 Business Statistics (3) PR: MATH 104 or MATH 250

DSCI 320 Management Information Systems (3) PR: Junior standing, ACCT 203, ACCT 204, DSCI 232, MATH 104 or MATH 250

DSCI 306 Introduction to Electronic Commerce (3) PR: Junior or senior standing, MATH 104, ACCT 203, ACCT 204, DSCI 232, DSCI 320

MKTG 333 Purchasing and Supply Chain Management (3) PR: Junior standing

Economics Cognate Requirements (15 credit hours)

ECON 200 Principles of Microeconomics (3) PR: None

ECON 201 Principles of Macroeconomics (3) PR: ECON 200

ECON 317 Microeconomics Analysis (3) PR: Junior standing, ECON 200, ECON 201, MATH 120

ECON 318 Macroeconomic Analysis (3) PR: Junior standing, ECON 200, ECON 201, MATH 120

ECON 419 Introduction to Econometrics (3) PR: Senior standing, ECON 200, 201, 317, 318; MATH 120, 250;

MATH 350 or DSCI 232; or instructor permission

Exercise Physiology Cognate Requirements (19 credit hours)

BIOL 111 Introduction to Cell and Molecular Biology (3) CO: BIOL 111L

BIOL 111L Introduction to Cell and Molecular Biology Lab (1) CO: BIOL 111

BIOL 112 Evolution, Form, and Function of Organisms (3) PR: BIOL 111/111L; CO: BIOL 112L

BIOL 112L Evolution, Form, and Function of Organisms Lab (1) CO: BIOL 112
BIOL 201 Human Physiology (4) PR: BIOL 111/111L, BIOL 112/112L
EXSC 340 Exercise Physiology and Lab (4) PR: BIOL 201, EXSC 201 or PEHD 201

Finance Cognate Requirements (24 credit hours)
ACCT 203 Financial Accounting (3) PR: Sophomore standing
ACCT 204 Managerial Accounting (3) PR: ACCT 203, sophomore standing
FINC 303 Business Finance (3) PR: Junior standing, ACCT 203, ACCT 204, ECON 200, ECON 201, MATH 104 or MATH 250
FINC 315 Intermediate Business Finance (3) PR: Junior standing ACCT 203, ACCT 204, ECON 200, ECON 201, FINC 303, MATH 104 or MATH 250
FINC 400 Investment Analysis (3) PR: Junior standing, ACCT 203, ACCT 204, ECON 200, ECON 201, FINC 303, DSCI 232, MATH 104 or MATH 250

Geoinformatics Cognate Requirements (22+ credit hours).
GEOL 101 Dynamic Earth (3) PR: None; CO: GEOL 101L
GEOL 101L Dynamic Earth Lab (1) CO: GEOL 101
OR
GEOL 103 Environmental Geology (3) PR: None; CO: GEOL 103L
GEOL 103L Environmental Geology Lab (1) CO: GEOL 103
AND
GEOL 105 Earth History (3) PR: GEOL 101 and 101L or GEOL 103 and 103L or HONS 155 and 155L; CO: GEOL 105L
GEOL 105L Earth History Lab (1) PR: GEOL 101L or GEOL 103L or HONS 155L; CO: GEOL 105

This cognate has three tracks to choose from: Geospatial Informatics, Hydro-Geophysical, and Applied Environmental Geoinformatics.

Geospatial Informatics Track
GEOL 314 Introduction to Remote Sensing (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156
GEOL 442 Geological Application of Remote Sensing (4) PR: PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156

GEOL 449 Geographical Information Systems (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; or instructor permission

GEOL XXX A geophysics elective, chosen in consultation with cognate advisor.

Hydro-Geophysical Track

GEOL 412 Crustal Geophysics (3) PR: MATH 120; GEOL 101 or 103 or HONS 155; GEOL 105 or HONS 156; and GEOL 352; or instructor permission

GEOL 438 Hydrogeology (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; MATH 111 or 120; or instructor permission

GEOL 441 Pollution in the Environment (4) PR: CHEM 111 and CHEM 112 or GEOL 250; or CHEM 101 and GEOL 250; or the equivalent; or instructor permission

GEOL 444 Quantitative Hydrogeology (3) PR: MATH 220, GEOL 438, or instructor permission

Applied Environmental Geoinformatics Track

GEOL 314 Introduction to Remote Sensing (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156

GEOL 438 Hydrogeology (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; MATH 111 or 120; or instructor permission

GEOL 441 Pollution in the Environment (4) PR: CHEM 111 and CHEM 112 or GEOL 250; or CHEM 101 and GEOL 250; or the equivalent; or instructor permission

GEOL 449 Geographical Information Systems (4) PR: GEOL 101 or 103; GEOL 105 or HONS 155 and 156; or instructor permission

Molecular Biology Cognate Requirements (28 credit hours)

BIOL 111 Introduction to Cell and Molecular Biology (3) CO: BIOL 111L

BIOL 111L Introduction to Cell and Molecular Biology Lab (1) CO: BIOL 111

BIOL 112 Evolution, Form, and Function of Organisms (3) PR: BIOL 111/111L; CO: BIOL 112L

BIOL 112L Evolution, Form, and Function of Organisms Lab (1) CO: BIOL 112

BIOL 305 Genetics (3) PR: BIOL 111/111L, BIOL 112/112L; CO or PR: BIOL 211/211D, MATH 250, or instructor permission
BIOL 305L Genetics Lab (1) PR: BIOL 111/111L, BIOL 112/112L; CO or PR: BIOL 211/211D, BIOL 305, MATH 250, or instructor permission

BIOL 312 Molecular Biology (3) PR: BIOL 111/111L, BIOL 112/112L, BIOL 211/211D, BIOL 305, CHEM 101 and CHEM 102 or CHEM 111 and CHEM 112

AND

BIOL 312L Molecular Biology Laboratory (1) CO or PR: BIOL 312, MATH 250, or instructor permission

OR

BIOL 453 Special Topics (1-4) PR: BIOL 111/111L, 112/112L, BIOL 211/211D; CO or PR: BIOL 305, MATH 250

Organismal Biology Cognate Requirements (22 credit hours)

BIOL 111 Introduction to Cell and Molecular Biology (3) CO: BIOL 111L

BIOL 111L Introduction to Cell and Molecular Biology Lab (1) CO: BIOL 111

BIOL 112 Evolution, Form, and Function of Organisms (3) PR: BIOL 111/111L; CO: BIOL 112L

BIOL 112L Evolution, Form, and Function of Organisms Lab (1) CO: BIOL 112

BIOL 211 Biodiversity, Ecology, and Conservation Biology (4) PR: BIOL 111/111L, BIOL 112/112L; CO: BIOL 211D

BIOL 341 General Ecology (4) PR: BIOL 111/111L, BIOL 112/112L, BIOL 211/211D; CO or PR: BIOL 305 or MATH 250

BIOL 350 Evolution (3) PR: BIOL 111/111L, BIOL 112/112L, BIOL 211/211D, BIOL 305; CO or PR: MATH 250

Physics and Astronomy Cognate Requirements (18+ credit hours)

PHYS 111 General Physics I (3) PR or CO: MATH 120 or equivalent or instructor permission; CO: PHYS 111L

PHYS 111L General Physics I Lab (1) CO: PHYS 111 or instructor permission

PHYS 112 General Physics II (3) PR: PHYS 111 or HONS 157; PR or CO: MATH 220; CO: PHYS 112L

PHYS 112L General Physics II Lab (1) CO: PHYS 112 or instructor permission
PHYS 230 Introduction to Modern Physics (3) PR: PHYS 112 or HONS 158; CO or PR: MATH 221 or instructor permission

PHYS 331 Introduction to Modern Physics II (3) PR: PHYS 230 or instructor permission

PHYS 370 Experimental Physics (4) PR: PHYS 230 or instructor permission

Psychology Cognate Requirements (18+ credit hours)

PSYC 103 Introduction to Psychology Science (3) PR: None

Select 15 credit hours from the following, with at least 6 credit hours at the 300-level or higher:

PSYC 211 Psychological Statistics (3) PR: PSYC 103

PSYC 213 Conditioning and Learning (3) PR: PSYC 103

PSYC 214 Behavioral Neuroscience (3) PR: PSYC 103

PSYC 215 Cognitive Psychology (3) PR: PSYC 103

PSYC 216 Sensation and Perception (formerly PSYC 313) (3) PR: PSYC 103

PSYC 220 Research Methods (3) PR: PSYC 103 and 211

PSYC 221 Abnormal Psychology (formerly PSYC 307) (3) PR: PSYC 103

PSYC 222 Psychology of Personality (formerly PSYC 308) (3) PR: PSYC 103

PSYC 223 Social Psychology (formerly PSYC 310) (3) PR: PSYC 103

PSYC 224 Lifespan Development (formerly PSYC 311) (3) PR: PSYC 103

PSYC 250* Psychological Statistics and Research Methods (6) PR: PSYC 103 (NOTE: This course can be taken in lieu of PSYC 211 and 220.)

PSYC 315 Special Topics in Psychology I (3) PR: PSYC 103

PSYC 318 Comparative Psychology (3) PR: PSYC 103

PSYC 321 Industrial Psychology (3) PR: PSYC 103

PSYC 329 Environmental Psychology (3) PR: PSYC 103

PSYC 333 Health Psychology (3) PR: PSYC 103

PSYC 334 Psychology of Stress (3) PR: PSYC 103

PSYC 335 Positive Psychology: Optimizing Psychological Well-being (3) PR: PSYC 103
PSYC 344 Psychology of Substance Abuse (formerly PSYC 388) (3) PR: PSYC 103 and 221 (formerly 307)

PSYC 349 Psychology of Entrepreneurship (3) PR: MATH 104, or PSYC 211 or DSCI 232 and junior standing or instructor permission. Note: This course is cross-listed with MGMT 377. If a student has received credit for MGMT 377, the student may not receive credit for PSYC 349.

PSYC 350 Psychology of Gender (3) PR: PSYC 103

PSYC 351 Principles of Neurobiology (3) PR: PSYC 103, BIOL 111, 112, and BIOL 211 or PSYC 214, or instructor permission. Note: This course is cross-listed with BIOL 351. If a student has received credit for BIOL 351, the student may not receive credit for PSYC 351.

PSYC 352 Neurobiology and Behavior (3) PR: BIOL/PSYC 351 or PSYC 214, or instructor permission. Note: This course is cross-listed with BIOL 352. If a student has received credit for BIOL 352, the student may not receive credit for PSYC 352.

PSYC 353 Hormones and Behavior (Cross-listed with BIOL 353) (3) PR: PSYC 103 and 214 or 216, or instructor permission. Note: This course is cross-listed with BIOL 353. If a student has received credit for BIOL 353, the student may not receive credit for PSYC 353.

PSYC 355 Sport Psychology (3) PR: PSYC 103, 211, 220 (or 250 in lieu of 211 and 220) or instructor permission. Note: This course is cross-listed with PEHD 355. If a student has received credit for PEHD 355, the student may not receive credit for PSYC 355

PSYC 356 Behavioral Genetics (3) PR: PSYC 103 and BIOL 111, or instructor permission

PSYC 358 Nonverbal Communication (formerly PSYC 340) (3) PR: PSYC 103, 211, 220 (or 250 in lieu of 211 and 220) or instructor permission

PSYC 370 Tests and Measurements (3) PR: PSYC 103, 211, 220 (or 250 in lieu of 211 and 220)

PSYC 372 Applied Behavior Analysis (3) PR: PSYC 103, 211, 213, 220 (or 250 in lieu of 211 and 220)

PSYC 374 Sins of Memory (3) PR: PSYC 103, 211, 220 (or 250 in lieu of 211 and 220), and 215

PSYC 375 Topics in Child and Adolescent Development (3) PR: PSYC 103 and 224 (formerly 311), 211, 220 (or 250 in lieu of 211 and 220)

PSYC 376 Mass Media and Human Development (3) PR: PSYC 103 and 224 (formerly 311), 211, 220 (or 250 in lieu of 211 and 220)

PSYC 378 Psychology of Language (3) PR: PSYC 103 and 215, 211, 220 (or 250 in lieu of 211 and 220) or instructor permission

PSYC 385 Cognitive Neuroscience (3) PR: PSYC 103; PSYC 214 or BIOL/PSYC 351 or BIOL/PSYC 352;
PSYC 211 and 220 (or 250 in lieu of 211 and 220) or BIOL 211 and MATH 250; or instructor permission

PSYC 386 Behavioral Pharmacology (3) PR: PSYC 103; PSYC 214 or BIOL/PSYC 351; PSYC 211 and 220 (or 250 in lieu of 211 and 220) or BIOL 211 and MATH 250; or instructor permission

PSYC 387 Neuropsychology (3) PR: PSYC 103; PSYC 214 or BIOL/PSYC 351; PSYC 211 and 220 (or 250 in lieu of 211 and 220) or BIOL 211 and MATH 250; or instructor permission

PSYC 389 Child Psychopathology (3) PR: PSYC103, 221, 211, 220 (or 250 in lieu of 211 and 220)

PSYC 390 Research Design and Interpretation (3) PR: PSYC 103, 211, 220 (or 250 in lieu of 211 and 220)

PSYC 391 Foundations of Psychotherapy (3) PR: PSYC 103; PSYC 111 and 220 (or 250 in lieu of 211 and 220); PSYC 221

PSYC 392 Scientific Foundations of Clinical Psychology (3) PR: PSYC 103, 221 (formerly 307), 211, 220 (or 250 in lieu of 211 and 220)

PSYC 394 History and Systems of Psychology (3) PR: PSYC 103, 211, 220 (or 250 in lieu of 211 and 220) and at least 12 additional credit hours in psychology

PSYC 397 Internship Experience (3) PR: This class is open to junior or senior psychology majors with an overall and major minimum GPA of 3.00. Students must have successfully completed the following courses before they are eligible to apply: PSYC 103, 213, 214, 215, 211 and 220 (or 250 in lieu of 211 and 220)

PSYC 404 Teaching Mentorship (3) PR: 103, 211, 220 (or 250 in lieu of 211 and 220) and open only to junior and senior PSYC majors with a minimum PSYC GPA of 3.00 or instructor permission

PSYC 410 Special Topics II (1-4) PR: PSYC 103; PSYC 211 and 220 (or 250 in lieu of 211 and 220); declared psychology major or instructor permission for non-majors. (No more than 6 credit hours in special topics may be applied to meet the requirements for the major.)

PSYC 446 Special Topics in Neuroscience (3) PR: Junior or senior standing and instructor permission

PSYC 447 Seminar in Neuroscience (3) PR: BIOL/PSYC 351/352; CO: BIOL/PSYC 448 or instructor permission. Students engaged in independent research or a bachelor's essay will be given priority for enrollment.

PSYC 448 Bachelor's Essay in Neuroscience (6) PR: BIOL/PSYC 351 and 352 and permission of both the student's major department and the neuroscience program director

PSYC 460 Advanced Conditioning and Learning with Lab (3) PR: PSYC 103, 213, 211, 220 (or 250 in lieu of
211 and 220) and junior or senior status

PSYC 461 Advanced Personality Psychology with Lab (3) PR: 103, 222, 211, 220 (or 250 in lieu of 211 and 220) and junior or senior status

PSYC 462 Advanced Social Psychology with Lab (3) PR: PSYC 103, 223, 211, 220 (or 250 in lieu of 211 and 220) and junior or senior status

PSYC 464 Advanced Behavioral Neuroscience with Lab (3) PR: PSYC 103, 214, 211, 220 (or 250 in lieu of 211 and 220) and junior or senior status

PSYC 466 Advanced Sensation and Perception with Lab (3) PR: PSYC 103, 216, 211, 220 (or 250 in lieu of 211 and 220) and junior or senior status

PSYC 468 Advanced Cognitive Psychology with Lab (3) PR: PSYC 103, 215, 211, 220 (or 250 in lieu of 211 and 220) and junior or senior status

PSYC 468 Advanced Developmental with Lab (3) PR: PSYC 103, 224, 211, 220 (or 250 in lieu of 211 and 220) and junior or senior status

PSYC 497 Tutorial (formerly PSYC 399) (3) PR: PSYC 103, 211 and 220 (or 250 in lieu of 211 and 220); junior or senior standing; tutor permission; and department chair permission

PSYC 498 Independent Study (formerly PSYC 400) (1-3) PR: PSYC 103, 211 and 220 (or 250 in lieu of 211 and 220); Open to junior and senior psychology majors with the permission of a faculty member as supervisor and of the department chair. Formal written application stating the nature of the project and presenting evidence of sufficient background knowledge for the enterprise must be submitted prior to registration. Open only to students having a GPA of at least 3.00 in psychology courses. (No more than 6 credit hours in independent study may be applied toward the major.)

PSYC 499 Bachelor's Essay (6) PR: PSYC 103, 211 and 220 (or 250 in lieu of 211 and 220); Open to psychology majors with an overall GPA of at least 3.40; senior standing, tutor permission and department chair approval. Formal written application stating the nature of the project and presenting evidence of sufficient background knowledge for the enterprise must be submitted prior to registration.

Sociology Cognate Requirements (15 credit hours)

SOCY 101 Introduction to Sociology (3) PR: None

OR

SOCY 102 Contemporary Social Issues (3) PR: None

AND
SOCY 260 Development of Social Thought (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 271 Introduction to Social Research (3) PR: SOCY 101 or HONS 167 or SOCY 102

Select one course from the following in consultation with the cognate director:

SOCY 331 Society and the Individual (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 332 Collective Behavior (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 335 Aging and the Family (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 336 Death and Dying (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 337 Prejudice (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 339 Special Topics in Social Psychology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 340 Medical Sociology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 341 Criminology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 342 Juvenile Delinquency (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 344 Social Gerontology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 345 Social Policy (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 346 Environmental Sociology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 348 Sociology of Alcohol and Drugs (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 349 Special Topics in Social Problems (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 351 Urban Sociology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 352 Population and Society (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 355 Science Technology and Society (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 356 Sociological Perspectives on Religion (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 357 Political Sociology (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 358 Living in an Organizational World (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 359 Special Topics in Social Organization (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 360 Class, Power, and Privilege (3) PR: SOCY 101 or HONS 167 or SOCY 102
SOCY 361 Child Welfare (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 362 Social and Cultural Change (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 364 Gender and Society (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 365 Sociology of Music (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 366 Race and Ethnic Relations (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 369 Special Topics in Social Inequality (3) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 390 Senior Seminar (3) PR: SOCY 101 or SOCY 102, SOCY 260, SOCY 271, SOCY 272, and 18 credit hours in the SOCY major, or instructor permission

Select 3 credit hours from the following in consultation with the cognate director:

SOCY 381 Internship (1-6) PR: SOCY 101 or HONS 167 or SOCY 102; junior standing; declared sociology majors only; B average in sociology and overall average of C+; 12 credit hours in sociology or instructor permission

SOCY 382 Student Research Apprenticeship in Sociology (1-6) PR: SOCY 101 or HONS 167 or SOCY 102

SOCY 399 Tutorial (3, Repeatable up to 12) PR: Junior standing, tutor permission, department chair permission

SOCY 490 Independent Study (1-6) PR: SOCY 101 or HONS 167 or SOCY 102; junior standing, overall SOCY GPA of at least 3.000, overall GPA of at least 2.50, instructor permission

SOCY 499 Bachelor’s Essay (6) PR: SOCY 101 or HONS 167 or SOCY 102; a project proposal must be submitted in writing and approved by the department prior to registration for the course

Supply Chain Management Cognate Requirements (18 credit hours)

ECON 200 Principles of Microeconomics (3) PR: None

ECON 201 Principles of Macroeconomics (3) PR: ECON 200

DSCI 232 Business Statistics (3) PR: MATH 104 or MATH 250

MKTG 302 Marketing Concepts (3) PR: Junior standing, ECON 200, ECON 201

MKTG 333 Purchasing and Supply Chain Management (3) PR: Junior standing

TRAN 312 Global Logistics (3) PR: Junior standing, ECON 200, ECON 201