REQUEST FOR ADDING, CHANGING, SUSPENDING OR DROPPING AN UNDERGRADUATE CURRICULUM

Department: Division of Computer Science & Engineering
College: Engineering
Name of Curriculum/Major: Computer Science
Type of Degree: B.S.
Date: 12-9-13

Has this change been discussed with and approved by all departments/colleges affected? Yes (X) No ( ) N/A ( )

ATTACH JUSTIFICATION for all actions: Use separate sheet.
ATTACH RESPONSE from any departments affected [i.e. any department whose course(s) are to be added.]
ATTACH FORM D ADDENDUM for all new curricula or changes involving General Education courses.

ACTION (check appropriate box):

( ) ADDING: Show the entire new curriculum by year (freshman, sophomore, etc.) using catalog format. Use plain sheets and attach.
( X ) CHANGING: On a separate sheet of paper, include the current curriculum outline (all four years) which is to be changed in the left column and the proposed changes in the right column. In proposed column, use strikeout and bold to identify deletions and additions. Explain all changes adequately on attachment.
( ) SUSPENDING: Provide an adequate explanation for suspending the curriculum on plain sheets and attach.
( ) DROPPING: Provide an adequate explanation for dropping the curriculum on plain sheets and attach.

CURRICULUM

<table>
<thead>
<tr>
<th>PRESENT</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total semester hours in current curriculum: 120</td>
<td>Total semester hours in proposed curriculum: 120</td>
</tr>
</tbody>
</table>

APPROVALS:

Department Faculty Approval Date: 12-9-13
Department Chair's Signature: [Signature]
Date: [Date]

College Faculty Approval Date: 12/10/13
College Dean's Signature: [Signature]
Date: [Date]

Chair, FS C & C Committee: [Signature]
Date: [Date]

Academic Affairs Approval: [Signature]
Date: [Date]

College Contact: __________________________
(Please print name.)

College Contact E-mail: __________________________
GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum year for all General Education courses.

<table>
<thead>
<tr>
<th>General Education Requirement</th>
<th>Course(s)</th>
<th>Credit Hours</th>
<th>Curriculum Year</th>
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</thead>
<tbody>
<tr>
<td>English Composition (6 hrs.)</td>
<td>ENGL 1001 or 1004</td>
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<td>(X) 1st</td>
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<tr>
<td></td>
<td>ENGL 2000</td>
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<td>( ) 4th</td>
<td></td>
</tr>
<tr>
<td>Analytical Reasoning (6 hrs.)</td>
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<td></td>
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<tr>
<td>Arts (3 hrs.)</td>
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<td>( ) 1st</td>
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<td>(X) 4th</td>
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<tr>
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<td></td>
<td>( ) 2nd</td>
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<td>( ) 4th</td>
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<tr>
<td>Natural Sciences (9 hrs.)</td>
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<td>General Education social science course</td>
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<td>( ) 4th</td>
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</tr>
</tbody>
</table>

(At least 3 hours credit must be from a MATH course.)

(If 2 course sequence is taken in the physical sciences, the additional 3 hour course must be from the life sciences, and vice versa.)

(At least three hours at or above the 2000-level.)
CHANGE:
The introductory material to the Division of Computer Science and Engineering is changed to delete the reference to only 3 concentrations and to now note there are 4 concentrations. The concentrations are listed by name; “Data Science and Analytics” is being added to list of concentrations.

JUSTIFICATION: Add new concentration “Data Science and Analytics”
The field of data science and analytics incorporates techniques and theories from diverse areas such as mathematics, biology, statistics, data warehousing, and artificial intelligence to name but a few. As a result of the "digital age", vast amounts of data are available for extracting actionable intelligence. Therefore, the area of data science and analytics encompasses all requirements including constraints for data management which culminates in the elicitation of knowledge to support human decision making.

When datasets are extremely large and require uncommon software tools to record, manage and process the data, the term Big Data is used. Big Data is a specified area of data science and analytics. Our Computer Science & Engineering Division has identified Big Data and related areas as a new area of expertise in which the division would like to grow. Our Industry Advisory Board (November 22, 2013) were very supportive of the proposed course topics and the technical tools utilized in them. Employment opportunities are plentiful and the expertise is lacking in most undergraduate programs.

To incorporate the concepts of Big Data and data analytics into our curricula, the division has developed a new concentration, “Data Science and Analytics” including required credits in the proposed courses:

- CSC 2730 “Data Science and Analytics” (3) and
- CSC 4740 “Big Data Technologies” (3).

Planned courses in the area are targeted for STEM-related research and career curriculum tracks.
The mission of the program is to instill in the student theoretical and applied practical skills needed to solve challenging problems using a computer. Graduates of the program use such concepts as abstraction and complexity analysis to solve innovative problems or to orchestrate evolutionary change as applied to the development of software. The program provides a strong foundation such that students can build on their skill-sets as the field rapidly evolves.

The program educational objectives for the B.S. degree candidate in Computer Science are:

- to apply and continuously acquire knowledge, both theoretical and applied, related to core areas of computer science.
- to solve diverse and unique problems in software design and development processes.
- to work productively as computer professionals (in traditional careers, graduate school, or academia) by:
  - demonstrating effective use of oral and written communication.
  - working competently as a member of a team unit.
  - adhering to ethical standards in the profession.
Present Curriculum

In order to meet the program objectives, a graduate of the program will have accomplishments consistent with the general criteria for student outcomes specified by the Computing Accreditation Commission of ABET, www.abet.org.

The undergraduate computer science curriculum is structured around basic courses in computer science and mathematics and is accredited by the Computing Accreditation Commission of ABET, www.abet.org. The curriculum is designed to allow a flexible plan of study via the mandatory selection of one of three concentrations: cloud computing and networking, software engineering, and computer science and a second discipline. A concentration should be declared at the beginning of the sophomore year. If the second discipline concentration is selected, an approval form must be completed and approved by the department and the dean’s office.

Computer Science students are cautioned to verify course descriptions in the catalog noting where duplication of course credits may be prohibited. Additionally, computer science students will not receive degree credit for the following courses: CSC 1240; ELRC 4006; EXST 2201; ISDS 2000, 2001, 2010, 2011, 3070, 3075; PSYC 4111; and SOCL 2201.

Proposed Curriculum

In order to meet the program objectives, a graduate of the program will have accomplishments consistent with the general criteria for student outcomes specified by the Computing Accreditation Commission of ABET, www.abet.org.

The undergraduate computer science curriculum is structured around basic courses in computer science and mathematics and is accredited by the Computing Accreditation Commission of ABET, www.abet.org. The curriculum is designed to allow a flexible plan of study via the mandatory selection of one of four concentrations: data science and analytics, cloud computing and networking, software engineering, and computer science and a second discipline. A concentration should be declared at the beginning of the sophomore year. If the second discipline concentration is selected, an approval form must be completed and approved by the department and the dean’s office.

Computer Science students are cautioned to verify course descriptions in the catalog noting where duplication of course credits may be prohibited. Additionally, computer science students will not receive degree credit for the following courses: CSC 1240; ELRC 4006; EXST 2201; ISDS 2000, 2001, 2010, 2011, 3070, 3075; PSYC 4111; and SOCL 2201.
Date: Tue, 10 Dec 2013 10:34:29 -0600
From: "Coretta Douglas" <douglas@csc.lsu.edu>
To: "Hutchinson (ISDS Instructional Coordinator), Laurene L" <lhutchi@lsu.edu> ..... 
CC: "Chen, Jianhua" <jianhua@csc.lsu.edu>, "Karki, Bijaya" <karki ..... 
Subject: CSC_E: RESPONSE REQUESTED Propsed Concentration Data Science and Analytics

ISDS: Laurene Hutchinson
EE/ECE: JOhn Scalzo
MATH: Charles Delzell

RE: CSC_E Proposal to add a new concentration, "Data Science and Analytics"
Attached you will see a large .pdf document containing materials related to our proposed new concentration. You are receiving this email as a request for feedback and approval of the proposed concentration. Specific ISDS and MATH courses are listed as approved elective credits for the concentration. We do not expect a large increase in enrollment in any one of your elective class sections.

The CSC proposed courses related to the concentration are targeted to all students enrolled in STEM-related curricula, but primarily intended for computer science majors and graduate students (CSC 4000-level).

Our CSC_E discussions regarding the related courses and concentration has taken longer than expected this semester and so getting the materials to you is coming at a very inconvenient time for which we sincerely apologize. We are available to discuss any questions you have regarding the attached proposal and will assist in any way we can. Your response is appreciated.

Regards,
Coretta
Coretta Douglas, Ph.D. Computer Science
Undergraduate/Instructional Coordinator and Instructor
School of Electrical Engineering and Computer Science
** Computer Science and Engineering **
Patrick Taylor #3118

Attachment 1: Concentration Data Science and Analytics Materials.pdf (1.4MB)
Subject: Re: CSC_E: RESPONSE REQUESTED Proposed Concentration Data Science and Analytics.

Hi Chip,

Many thanks to your prompt attention.

(1) Given that CSC_E has been challenged to triple our CSC enrollment, then a max estimate would be 9-12 students. And I suppose all chocolate chips could be in one cookie - i.e. at most 12 students could be in any one of your MATH elective classes. But that high enrollment of 12 students is likely exaggerated. Here is another perspective. Many of our majors who are working on MATH minors will select MATH 3355. It would be my expectation that as our CSC enrollment increases, the number of MATH minors will grow proportionally. I would guess estimate that students in the Data Science and Analytics concentration selecting MATH 3355 will actually be pursuing the Mathematics minor. Yes, increases in enrollment numbers of your MATH courses may be caused by increasing numbers of CSC majors.

(2) You bring up a good point about the mention of MATH 3355, EE 3150 and EE 3150 all as approved area electives in the Data Science and Analytics concentration.

All majors must have 3 hours credit in:

- Take ONE COURSE w/ GRADE OF C
  - EE 3302 or MATH 3355 or EE 3150 or ENGR 4050.

Needed: 3.00 LSU Hrs - 01 Course

Because the catalog description for EE 3150 says that credit will not be given for this course and MATH 3355.

And because the catalog description for MATH 3355 says credit will not be given for this course and EE 3150.

we can include all three on the elective list.

Thanks for the suggestion.

Coretta
Coretta Douglas, Ph.D. Computer Science
Undergraduate Instructional Coordinator and Instructor
School of Electrical Engineering and Computer Science
** Computer Science and Engineering **
Patrick Taylor =3118

On Wed, 11 Dec 2013 18:02:08 -0600, Charles Delzell wrote

   Dear Coretta and Warren,

   We understand that for the immediate future, math should expect no more than 3-4 additional students in MATH 3355, 4024, 4025 as a result of the proposed new concentration.

   What is your estimate (we just defined a new minor in the steady-state additional enrollment in your new concentration)?

   Also, why list MATH 3355 as an elective, as opposed to EE 3150 or EE 3302?

   All three courses are on probability.

   Sincerely,
Robert Perlis and Charles DeZell
Chair & Associate Chair
Department of Mathematics
314 C & 314 A Lockett Hall
578-1618 & 578-1619,
respectively.

Sal: Summary to help with review: CSC is: Support for Data Science and Analytics MA111 from: "Warren N. Waggenspack Jr" .. meyagg@math.isu.edu
Date: Wed, December 11, 2013 5:13 pm
To: dezell@math.isu.edu "Robert Perlis" perlis@math.isu.edu
Cc: meyagg

Chip, Robert,

To help expedite your folks review of the recently submitted packet,
I have had CSC summarized the salient elements of the proposed courses and curriculum concentrations that involve MA111.

I hope this helps.

Regards,
Warren

The recent packet submitted to your department (MA111) contains curriculum forms to propose a new concentration. Data Science and Analytics (DSA) by the Division of Computer Science and Engineering within the computer science B.S. curriculum. Two new required CSC courses for the new concentration are proposed at the same time.

From the IUC General Catalog description of MA111 courses, no single course in the MA111 department was determined to have significant overlap with the DSA concentration including the required proposed courses. As such, the only real question for concern might be increased enrollment in MA111 courses listed as approved free electives in the concentration.

APPROVED LIST:

- The DSA concentration will permit 3 courses (9 credit hours) outside of CSC. From the IUC General Catalog, the CSC curriculum committee identified the following 3 as supportive of the DSA concentration. Perhaps there are other MA111 courses you may recommend as approved area electives.

  - MATH 8555 Probability
  - MATH 4024 Mathematical Models and
  - MATH 4025 Optimization Theory and Applications

For the next 2-3 years we expect that the increase in enrollment in any one of the MA111 courses in any one semester will be slow to increase significantly. As interest in the DSA concentration grows, enrollment may increase: monitoring of the MA111 enrollment over time will be expected. A rough estimate of 5 additional students per MA111 elective would be an exaggeration for the academic year 2014-2015.
At this late time in the semester, we have an important request of you. See the attached materials. The concentration packet for "Data Science and Analytics (DSA)" including 2 new courses was approved by the College Academic Matters Committee meeting on Tuesday, Dec. 10th contingent on consenting replies from departments impacted by the program.

Based on feedback from the Mathematics Department, we have revised the list of approved area electives to now include IE 3302 and EE 3150. MATH 3355 is also on the list.

All CSC majors must select from one of IE 3302 (statistics) and EE 3150 (probability) or MATH 3355 (probability). Both EE 3150 and MATH 3355 have included statements that credit may be received in only one of the probability courses (not both). Therefore by including your courses on the elective list, we are giving the students flexibility on how courses are applied to the degree audit for the DSA concentration.

We don't expect that your enrollments in either IE 3302 or EE 3150 will change significantly in such a way to impact need for resources.

Your timely response acknowledging use of your courses on the approved elective for the DSA concentration is much appreciated. Your constructive feedback is always appreciated.

Thanks.

Coretta

Coretta Douglas, Ph.D. Computer Science
Undergraduate/Instructional Coordinator and Instructor
School of Electrical Engineering and Computer Science
** Computer Science and Engineering **

Patrick Taylor #3118

Attachment 1: Computer Science 14-15 Data Science and Analytics.vsd (163KB)
Type: application/vnd.visio
Encoding: base64

Attachment 2: FormE- CSC_E Data Science and Analytics December 2013.doc (121KB)
Type: application/msword
Encoding: base64

Attachment 3: Data Science and Analytics Concentration Critical Tracking 2014-2015.docx (35KB)
Type: application/vnd.openxmlformats-officedocument.wordprocessingml.document
Encoding: base64
REQUEST FOR ADDING, CHANGING, SUSPENDING OR DROPPING AN UNDERGRADUATE CURRICULUM

Department: Physics & Astronomy
College: College of Science
Name of Curriculum/Major: Physics
Type of Degree: B.S.
Date: 11/21/13

Has this change been discussed with and approved by all departments/colleges affected? Yes (x) No ( ) N/A ( )

ATTACH JUSTIFICATION for all actions: Use separate sheet
ATTACH RESPONSE from any departments affected [i.e. any department whose course(s) are to be added]
ATTACH FORM D ADDENDUM for all new curricula or changes involving General Education courses.

ACTION (check appropriate box):

( ) ADDING: The entire new curriculum, by semester, must be typed on plain sheets and attached to Form D. (See sample layout attached.)

( x ) CHANGING: Regardless if all semesters of a curriculum are to be changed or only parts, the present and proposed (eight-semester) recommended path should be attached on separate pages. On the Present recommended path, use strikeout and on the Proposed recommended path, highlight areas to identify deletions and additions. Do not use **boldface** to designate changes as **boldface** is reserved for critical requirements within the recommended path. Explain all changes adequately on attachment.

( ) SUSPENDING: Provide an adequate explanation for suspending the curriculum on plain sheets and attach.

( ) DROPPING: Provide an adequate explanation for dropping the curriculum on plain sheets and attach.

CURRICULUM

<table>
<thead>
<tr>
<th>PRESENT</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total semester hours in current curriculum:</td>
<td>120</td>
</tr>
</tbody>
</table>

APPROVALS:

Department Faculty Approval Date: 9/28/13

Department Chair's Signature: [Signature]

College Faculty Approval Date: 1/7/14

College Dean's Signature: [Signature]

Chair, FS C & C Committee: [Signature]

Academic Affairs Approval: 2/7/14

College Contact: ____________________________

(Please print name.)

College Contact E-mail: _______________________

(Date)

(Date)

(Date)
Physics Curriculum:

This change is to update our Physics curriculum to allow students to complete a Physics major using the new Engineering 2110, 2112, 2113 sequence instead of the 2101, 2102 sequence. The general education courses in the sample curricula have been moved to be as similar as possible for the five concentrations, and to ensure the general education requirements are completed by the seventh semester.
From: Dana Browne <browne@phys.lsu.edu>  
Sent: Friday, January 31, 2014 8:53 AM  
To: Anna M Castrillo  
Cc: Kimberly G Kubicek  
Subject: New Physics Sequence

Anna,

It is our intent that students may take the complete 9 hour PHYS 2110, 2112, 2113 sequence in lieu of the 8 hour PHYS 1201, 1202 sequence to complete a BS in physics. The one hour difference can be accounted for by adjusting the number of elective hours. Because of the way that the material in the three semester sequence is arranged, PHYS 1201 corresponds to PHYS 2110 and part of 2112. The material in PHYS 1202 comprises the remaining part of 2112 and all of PHYS 2113.

Therefore we want to add a footnote to each concentration stating "Students may take the complete PHYS 2110, 2112, 2113 sequence in place of the PHYS 1201, 1202 sequence. A student who chooses the three semester sequence will require one less credit hour from free electives."

Do you require a modified proposal, or will this email suffice?

--
Dr. Dana A. Browne  
Professor and Associate Chair  
Dept. of Physics and Astronomy  
202 Nicholson Hall  
Louisiana State University  
Baton Rouge, LA 70803-4001  

Office:  
219B Nicholson Hall  
(225) 578-6843
GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

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<th>General Education Requirement</th>
<th>Course(s)</th>
<th>Credit Hours</th>
<th>Curriculum Semester</th>
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<tbody>
<tr>
<td>English Composition (6 hrs.)</td>
<td>ENGL 1001 or 1004</td>
<td>3</td>
<td>(X) 1st (5th)</td>
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<td>4th (8th)</td>
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<tr>
<td>Analytical Reasoning (6 hrs.)</td>
<td>General Education analytical reasoning course (from mathematics department) MATH 1550 (3 of 5)</td>
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<td></td>
<td>General Education analytical reasoning course MATH 1552 (3 of 4)</td>
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<td>4th (8th)</td>
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<td>Humanities (9 hrs.)</td>
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<td>(X) 1st (5th)</td>
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<td>General Education humanities course Foreign language</td>
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<tr>
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<td>General Education natural science course BIOL 1001 or 1201</td>
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<td>2nd (6th)</td>
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<td></td>
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<td>3rd (7th)</td>
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<td>General Education social science course</td>
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<td>(X) 1st (5th)</td>
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<td></td>
<td>General Education social science course (2000-level)</td>
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<td>4th (8th)</td>
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For Astronomy Concentration
# SAMPLE 8-SEMESTER RECOMMENDED PATH (CURRICULUM) LAYOUT

## Areas of Concentration

Students planning to enter graduate school are encouraged to select a modern foreign language.

## Astronomy

### Critical Requirements

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Semester 3</th>
</tr>
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<tbody>
<tr>
<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 1022/MATH 1023 and ENGL 1001: 2.0 Cumulative, LSU and Semester GPA.</td>
<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 1550 and PHYS 1100: 2.0 Cumulative, LSU and Semester GPA.</td>
<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 1552 and PHYS 1201: 2.0 Cumulative, LSU and Semester GPA.</td>
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<tr>
<td>ENGL 1001 English Composition (3)</td>
<td>MATH 1552 Analytic Geometry and Calculus II (5)</td>
<td>PHYS 1202 General Physics for Physics Majors (4)</td>
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<tr>
<td>PHYS 1201 General Physics Laboratory for Physics Majors (1)</td>
<td>PHYS 1209 General Physics Laboratory for Physics Majors (1)</td>
<td>General Education course - Social Sciences (3)</td>
</tr>
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<td>General Education course - Social Sciences (3)</td>
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<td>Approved Electives (0-2)</td>
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<table>
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<tr>
<th>Semester 4</th>
<th>Semester 5</th>
<th>Semester 6</th>
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<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 2057 and PHYS 1202: 2.0 Cumulative, LSU and Semester GPA.</td>
<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 2090 and PHYS 2203: 2.0 Cumulative, LSU and Semester GPA.</td>
<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 2057 and PHYS 2201: 2.0 Cumulative, LSU and Semester GPA.</td>
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<td>ASTR 1102 Stellar Astronomy (3)</td>
<td>ASTR 4221 Introduction to Astrophysics (3)</td>
<td>ASTR 4222 Introduction to Astrophysics (3)</td>
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<td>MAHI 2090 Elementary Differential Equations and Linear Algebra (4)</td>
<td>PHYS 2231 Introduction to Mechanics (3)</td>
<td>PHYS 3098 Instrumentation Electronics for Scientists (3)</td>
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<td>PHYS 2221 Introduction to Mechanics (3)</td>
<td>Computer Science Programming Course (3)</td>
<td>PHYS 4132 Electromagnetism and Electromagnetic Waves (3)</td>
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<td>Total Semester Hours: 13</td>
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<td><strong>CRITICAL:</strong> &quot;C&quot; or better in MATH 2057 and PHYS 2201: 2.0 Cumulative, LSU and Semester GPA.</td>
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<td>ASTR 4221 Introduction to Astrophysics (3)</td>
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<td>PHYS 2201 General Physics Laboratory for Physics Majors (1)</td>
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<td>General Education course - Humanities (1 English/honors 2000-level) (3)</td>
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<td>General Education course - Social Sciences (2000-level) (3)</td>
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<td></td>
<td>Approved Electives (5-7)</td>
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<td>Total Semester Hours: 17-16</td>
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<td>120 Total Sem. Hrs.</td>
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PROPOSED

Areas of Concentration

Students planning to enter graduate school are encouraged to select a modern foreign language.

Astronomy

CRITICAL REQUIREMENTS

SEMESTER 1: “C” or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA

SEMESTER 2: “C” or better in MATH 1550; 2.0 Cumulative, LSU and Semester GPA

SEMESTER 3: “C” or better in MATH 1552 and PHYS 1201/PHYS 2110; Admission to the College; 2.0 Cumulative, LSU and Semester GPA

SEMESTER 4: “C” or better in MATH 2057 and PHYS 1202/PHYS 2113; 2.0 Cumulative, LSU and Semester GPA

SEMESTER 5: “C” or better in MATH 2090 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA

Semester 1

- CRITICAL: “C” or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA
- ENGL 1001 English Composition (3)
- MATH 1550 Analytic Geometry and Calculus I (5)
- PHYS 1201 General Physics for Physics Majors (4)
- PHYS 1208 General Physics Laboratory for Physics Majors (1)
- General education arts course (3)

Total Semester Hours: 16

Semester 2

- CRITICAL: “C” or better in MATH 1550; 2.0 Cumulative, LSU and Semester GPA
- ENGL 2000 Level literature course (3)
- MATH 1552 Analytic Geometry and Calculus II (4)
- PHYS 1202 General Physics for Physics Majors (4)
- PHYS 1209 General Physics Laboratory for Physics Majors (1)
- General education humanities course (3)

Total Semester Hours: 15

Semester 3

- CRITICAL: “C” or better in MATH 1552 and PHYS 1201/PHYS 2110; Admission to the College; 2.0 Cumulative, LSU and Semester GPA
- ASTR 1101 The Solar System (3)
- ENGL 2000 English Composition (3)
- MATH 2057 Multidimensional Calculus (3)
- PHYS 2203 Introductory Modern Physics (3)
- PHYS 2207 Introductory Modern Physics Laboratory (1)
- CSC 1253 or equivalent programming course (3)

Total Semester Hours: 16

Semester 4

- CRITICAL: “C” or better in MATH 2057 and PHYS 1202/PHYS 2113; 2.0 Cumulative, LSU and Semester GPA
- ASTR 1102 Stellar Astronomy (3)
- MATH 2090 Elementary Differential Equations and Linear Algebra (2)
- BIOL 1001 General Biology (3) or BIOL 1201 Biology for Science Majors I (3)
- PHYS 2221 Introduction to Mechanics (3)
- PHYS 3098 Instrumentation Electronics for Scientists (3)

Total Semester Hours: 16

Semester 5

- CRITICAL: “C” or better in MATH 2090 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA
- ASTR 4221 Introductory Astrophysics (3)
- PHYS 2231 Electricity and Magnetism (3)
- PHYS 2411 Computational Science I (3)
- PHYS 4123 Intermediate Mechanics (3)
- General education social science course (2000 level) (3)

Total Semester Hours: 15

Semester 6

- ASTR 4222 Introductory Astrophysics (3)
- PHYS 4125 Thermodynamics and Statistical Mechanics (3)
- PHYS 4133 Electromagnetism and Electromagnetic Waves (3)
- PHYS 4141 Introduction to Quantum Mechanics (3)
- Foreign Language Course (4)

Total Semester Hours: 16

Semester 7

- ASTR 4261 Modern Observational Techniques (3)
- General education social science course (3)
- Approved Electives (6)

Total Semester Hours: 12

Semester 8

- PHYS 4135 Modern Optics (3)
- Approved Electives (11)

Total Semester Hours: 14

120 Total Sem. Hrs.

1 - ASTR 4221 and ASTR 4222 are taught in alternate years with ASTR 4261 and PHYS 4135. Students are to switch the semester that these courses are taken depending on what is offered that year.
# GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

<table>
<thead>
<tr>
<th>General Education Requirement</th>
<th>Course(s)</th>
<th>Credit Hours</th>
<th>Curriculum Semester</th>
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<td><strong>English Composition (6 hrs.)</strong></td>
<td>ENGL 1001 or 1004</td>
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<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( )</td>
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<td></td>
<td>ENGL 2000</td>
<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( )</td>
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<td><strong>Analytical Reasoning (6 hrs.)</strong></td>
<td>General Education analytical reasoning course (from mathematics department) MATH 1550 (3 of 5)</td>
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<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( )</td>
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<td></td>
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<tr>
<td><strong>Arts (3 hrs.)</strong></td>
<td>General Education arts course</td>
<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( )</td>
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<tr>
<td><strong>Humanities (9 hrs.)</strong></td>
<td>General Education humanities course ENGL or HNRS 2000 on Gen. Ed. list</td>
<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( )</td>
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<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( )</td>
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<tr>
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<td>General Education humanities course</td>
<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( )</td>
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<tr>
<td><strong>Natural Sciences (9 hrs.)</strong></td>
<td>General Education natural science course sequence PHYS 1201, 1202 (6 of 8)</td>
<td>6</td>
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<td>General Education natural science course BIOL 1201</td>
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<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( ) 7th ( ) 8th ( ) 9th ( )</td>
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<tr>
<td><strong>Social Sciences (6 hrs.)</strong></td>
<td>General Education social science course</td>
<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( )</td>
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<tr>
<td></td>
<td>General Education social science course (2000-level)</td>
<td>3</td>
<td>(X) 1st ( ) 2nd ( ) 3rd ( ) 4th ( ) 5th ( ) 6th ( )</td>
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For Medical Physics Concentration
## Medical Physics

### CRITICAL REQUIREMENTS

**Semester 1**: "C" or better in MATH 1022/MATH 1023 and ENGL 1001.
- 2.0 Cumulative, LSU and Semester GPA.
**Semester 2**: "C" or better in MATH 1550 and PHYS 1104.
- 2.0 Cumulative, LSU and Semester GPA.
**Semester 3**: "C" or better in MATH 1552 and PHYS 1201/PHYS 2401.
- Admission to the College: 2.0 Cumulative, LSU and Semester GPA.
**Semester 4**: "C" or better in MATH 2057 and PHYS 1202/PHYS 2402.
- 2.0 Cumulative, LSU and Semester GPA.
**Semester 5**: "C" or better in MATH 2090 and PHYS 2203.
- 2.0 Cumulative, LSU and Semester GPA.

**Total Semester Hours: 16**

**Semester 2**

- **CRITICAL**: "C" or better in MATH 1022/MATH 1023 and ENGL 1001.
- 2.0 Cumulative, 1.5 and Semester GPA.
- CHEM 1201 General Chemistry I (5)
- MATH 1552 Analytic Geometry and Calculus II (4)
- PHYS 1202 General Physics for Physics Majors (4)
- PHYS 1209 General Physics Laboratory for Physics Majors (1)
- MEDP 2051 Radiation Science with Applications (3)

**Total Semester Hours: 15**

**Semester 3**

- **CRITICAL**: "C" or better in MATH 1552 and PHYS 1201/PHYS 2401.
- Admission to the College: 2.0 Cumulative, 1.5 and Semester GPA.
- BIOL 1201 Biology for Science Majors I (3)
- MATH 2057 Multidimensional Calculus (3)
- PHYS 2203 Introductory Modern Physics (3)
- PHYS 2207 Introductory Modern Physics Laboratory (1)
- General Education course - Arts (3)
- Computer Science Programming Course (3)

**Total Semester Hours: 16**

**Semester 4**

- **CRITICAL**: "C" or better in MATH 2057 and PHYS 1202/PHYS 2402.
- 2.0 Cumulative, 1.5 and Semester GPA.
- BIOL 1202 Biology for Science Majors II (3)
- CHEM 1202 General Chemistry (3)
- CHEM 1212 General Chemistry Laboratory (2)
- ENGL 2000 English Composition (3)
- MATH 2090 Elementary Differential Equations and Linear Algebra (4)
- PHYS 2221 Introduction to Mechanics (3)

**Total Semester Hours: 12**

**Semester 5**

- **CRITICAL**: "C" or better in MATH 2090 and PHYS 2293.
- 2.0 Cumulative, LSU and Semester GPA.
- CHEM 2060 Survey of Organic Chemistry (3)
- PHYS 2211 Electricity and Magnetism (3)
- PHYS 2411 Computational Science I (3)
- General Education course - Humanities (English/honors 2000-level) (3)

**Total Semester Hours: 16**

**Semester 6**

- BIOL 2160 Human Physiology (3)
- PHYS 3098 Instrumentation Electronics for Scientists (3)
- PHYS 4132 Electromagnetism and Electromagnetic Waves (3)
- General Education course - Social Sciences (2000-level) (3)

**Total Semester Hours: 12**

**Semester 7**

- PHYS 4123 Intermediate Mechanics (3)
- MEDP 4351 Radiation Detection and Instrumentation (2)
- General Education course - Humanities (3)
- Approved Electives (6)

**Total Semester Hours: 14**

**Semester 8**

- MEDP 4352 Radiation Detection Laboratory (1)
- NS 4411 Fundamentals of Nuclear Radiation Science (3)
- PHYS 4141 Introduction to Quantum Mechanics (3)
- PHYS 4125 Thermodynamics and Statistical Mechanics (3)
- Approved Elective (3)

**Total Semester Hours: 13**

120 Total Sem. Hrs.
CRITICAL REQUIREMENTS

SEMESTER 1: “C” or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 2: “C” or better in MATH 1550; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 3: “C” or better in MATH 1552 and PHYS 1201/PHYS 2110; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 4: “C” or better in MATH 2057 and PHYS 1202/PHYS 2113; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 5: “C” or better in MATH 2090 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA.

Semester 1
- CRITICAL: “C” or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 1001 English Composition (3)
- MATH 1550 Analytic Geometry and Calculus I (5)
- PHYS 1208 General Physics Laboratory for Physics Majors (1)
- PHYS 1201 General Physics for Physics Majors (4)
- General Education course – Arts (3)

Total Semester Hours: 16

Semester 2
- CRITICAL: “C” or better in MATH 1550; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 2000-level literature course (3)
- MATH 1552 Analytic Geometry and Calculus II (4)
- PHYS 1202 General Physics for Physics Majors (4)
- PHYS 1209 General Physics Laboratory for Physics Majors (1)
- General Education course – Humanities (3)

Total Semester Hours: 15

Semester 3
- CRITICAL: “C” or better in MATH 1552 and PHYS 1201/PHYS 2110; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 2000 English Composition (3)
- CHEM 1201 General Chemistry I (3)
- MATH 2057 Multidimensional Calculus (3)
- PHYS 2203 Introductory Modern Physics (3)
- PHYS 2207 Introductory Modern Physics Laboratory (1)
- CSC 1253 or equivalent programming course (3)

Total Semester Hours: 16

Semester 4
- CRITICAL: “C” or better in MATH 2057 and PHYS 1202/PHYS 2113; 2.0 Cumulative, LSU and Semester GPA.
- CHEM 1202 General Chemistry (3)
- CHEM 1212 General Chemistry Laboratory (2)
- MATH 2090 Elementary Differential Equations and Linear Algebra (4)
- PHYS 2221 Introduction to Mechanics (3)
- MEDP 2051 Radiation Science with Applications (3)

Total Semester Hours: 15

Semester 5
- CRITICAL: “C” or better in MATH 2090 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA.
- BIOL 1201 Biology for Science Majors I (3)
- CHEM 2060 Survey of Organic Chemistry (3)
- PHYS 2231 Electricity and Magnetism (3)
- PHYS 2411 Computational Science I (3)
- General Education course - Social Sciences (2000-level) (3)

Total Semester Hours: 15
Semester 6

- Foreign Language Course (4)
- BIOL 1202 Biology for Science Majors II (3)
- PHYS 3098 Instrumentation Electronics for Scientists (3)
- NS 4411 Fundamentals of Nuclear Radiation Science (3)
- PHYS 4132 Electromagnetism and Electromagnetic Waves (3)

Total Semester Hours: 16

Semester 7

- PHYS 4123 Intermediate Mechanics (3)
- MEDP 4351 Radiation Detection and Instrumentation (2)
- MEDP 4352 Radiation Detection Laboratory (1)
- General Education course – Social Sciences (3)
- Approved Electives (6)

Total Semester Hours: 15

Semester 8

- BIOL 2160 Human Physiology (3)
- PHYS 4141 Introduction to Quantum Mechanics (3)
- PHYS 4125 Thermodynamics and Statistical Mechanics (3)
- Approved Elective (3)

Total Semester Hours: 12

120 Total Sem. Hrs.
## GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

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<td>English Composition (6 hrs.)</td>
<td>ENGL 1001 or 1004</td>
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<td>(X) 1st (5th) 2nd (6th) 3rd (7th) 4th (8th)</td>
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<td>General Education arts course</td>
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<td>(X) 1st (5th) 2nd (6th) 3rd (7th) 4th (8th)</td>
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<td>Humanities (9 hrs.)</td>
<td>General Education humanities course</td>
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<td>(X) 1st (5th) 2nd (6th) 3rd (7th) 4th (8th)</td>
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<tr>
<td>Natural Sciences (9 hrs.)</td>
<td>General Education natural science course sequence</td>
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<td>(X) 1st (5th) 2nd (6th) 3rd (7th) 4th (8th)</td>
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<tr>
<td>(If 2 course sequence is taken in the physical sciences, the additional 3 hour course must be from the life sciences, and vice versa.)</td>
<td>PHYS 1201, 1202 (6 of 8)</td>
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<td>Social Sciences (6 hrs.)</td>
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<td>(X) 1st (5th) 2nd (6th) 3rd (7th) 4th (8th)</td>
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<td>(At least three hours at the 2000-level.)</td>
<td>General Education social science course (2000-level)</td>
<td>3</td>
<td>(X) 1st (5th) 2nd (6th) 3rd (7th) 4th (8th)</td>
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For Physics Concentration
Physics

CRITICAL REQUIREMENTS

SEMESTER 1: “C” or better in MATH 1022/MATH 1023 and ENGL 1001:
   2.0 Cumulative, LSU and Semester GPA.
SEMESTER 2: “C” or better in MATH 1150 and PHYS 1100:
   2.0 Cumulative, LSU and Semester GPA.
SEMESTER 3: “C” or better in MATH 1152 and PHYS 1201/PHYS 2104:
   Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 4: “C” or better in MATH 2057 and PHYS 1202/PHYS 2104:
   2.0 Cumulative, LSU and Semester GPA.
SEMESTER 5: “C” or better in MATH 2090 and PHYS 2203:
   2.0 Cumulative, LSU and Semester GPA.

Semester 1

• CRITICAL: “C” or better in MATH 1022/MATH 1023 and ENGL 1001:
   2.0 Cumulative, LSU and Semester GPA.
• ENGL 1001 English Composition (3)
• MATH 1550 Analytic Geometry and Calculus I (5)
• PHYS 1201 General Physics for Physics Majors (4)
• PHYS 1208 General Physics Laboratory for Physics Majors (1)

Total Semester Hours: 13

Semester 2

• CRITICAL: “C” or better in MATH 1150 and PHYS 1100:
   2.0 Cumulative, LSU and Semester GPA.
• MATH 1152 Analytic Geometry and Calculus II (4)
• PHYS 1202 General Physics for Physics Majors (4)
• PHYS 1209 General Physics Laboratory for Physics Majors (1)
• General Education course - Arts (3)
• General Education course - Social Sciences (3)

Total Semester Hours: 15

Semester 3

• CRITICAL: “C” or better in MATH 1152 and PHYS 1201/PHYS 2104:
   Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
• CHM 1201 General Chemistry I (3)
• MATH 2057 Multidimensional Calculus (3)
• PHYS 2203 Introductory Modern Physics (3)
• PHYS 2207 Introductory Modern Physics Laboratory (1)
• BIOL 1001 General Biology (3) or
• BIOL 1201 Biology for Science Majors I (3)

Total Semester Hours: 13

Semester 4

• CRITICAL: “C” or better in MATH 2057 and PHYS 1202/PHYS 2104:
   2.0 Cumulative, LSU and Semester GPA.
• CHM 1202 General Chemistry (3)
• MATH 2090 Elementary Differential Equations and Linear Algebra (4)
• PHYS 2221 Introduction to Mechanics (3)
• Computer Science Programming Course (3)

Total Semester Hours: 13

Semester 5

• CRITICAL: “C” or better in MATH 2090 and PHYS 2203:
   2.0 Cumulative, LSU and Semester GPA.
• ENGL 2000 English Composition (3)
• PHYS 4123 Intermediate Mechanics (3)
• PHYS 2231 Electricity and Magnetism (3)
• PHYS 2411 Computational Science I (3)
• Foreign Language Course (4)

Total Semester Hours: 16

Semester 6

• PHYS 3098 Instrumentation Electronics for Scientists (3)
• PHYS 4132 Electromagnetism and Electromagnetic Waves (3)
• PHYS 4141 Introduction to Quantum Mechanics (3)
• General Education course - Social Sciences (2000-level) (3)
• Approved Electives (4)

Total Semester Hours: 16

Semester 7

• PHYS 4142 Introduction to Quantum Mechanics (3)
• General Education course - Humanities (English/Honors 2000-level) (3)
• Area of Concentration Courses/Approved Electives (7)\(^1\)
• Approved Electives (4)

Total Semester Hours: 17

Semester 8

• PHYS 4399 Senior Thesis (3)
• PHYS 4125 Thermodynamics and Statistical Mechanics (3)
• General Education course - Humanities (3)
• Area of Concentration Courses/Approved Electives (4)\(^1\)
• Approved Electives (4)

Total Semester Hours: 17

120 Total Sem. Hrs.

\(^1\) - Area of Concentration Course: two 4000-level PHYS electives.
With permission, a 4000-level MATH may be substituted for one.
Physics

CRITICAL REQUIREMENTS

SEMESTER 1: “C” or better in MATH 102/1023 and English 1001; 2.0 Cumulative, LSU and Semester GPA.

SEMESTER 2: “C” or better in MATH 1201/1202 and PHYS 2110; 2.0 Cumulative, LSU and Semester GPA.

SEMESTER 3: “C” or better in MATH 1552 and PHYS 1202/1203; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.

SEMESTER 4: “C” or better in MATH 2090 and PHYS 2057; 2.0 Cumulative, LSU and Semester GPA.

SEMESTER 5: “C” or better in MATH 2110 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA.

Semester 1
- CRITICAL: “C” or better in MATH 102/1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 1001 English Composition (3)
- MATH 1550 Analytic Geometry and Calculus I (5)
- PHYS 1201 General Physics for Physics Majors (4)
- PHYS 1209 General Physics Laboratory for Physics Majors (1)
- General education arts course (3)

Total Semester Hours: 16

Semester 2
- CRITICAL: “C” or better in MATH 1550; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 2000- Level literature course (3)
- MATH 2057 Multidimensional Calculus (3)
- PHYS 2203 Introductory Modern Physics (3)
- PHYS 2207 Introductory Modern Physics Laboratory (1)
- CSC 1253 or equivalent programming course (3)
- Approved Electives (3)

Total Semester Hours: 15

Semester 3
- CRITICAL: “C” or better in MATH 1552 and PHYS 1201/1210; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 2000 English Composition (3)
- MATH 2057 Multidimensional Calculus (3)
- PHYS 2203 Introductory Modern Physics (3)
- PHYS 2207 Introductory Modern Physics Laboratory (1)
- CSC 1253 or equivalent programming course (3)
- Approved Electives (3)

Total Semester Hours: 16

Semester 4
- CRITICAL: “C” or better in MATH 2057 and PHYS 1202/1213; 2.0 Cumulative, LSU and Semester GPA.
- CHEM 1201 General Chemistry I (3)
- BIOL 1001 General Biology (3) or BIOL 1201 Biology for Science Majors I (3)
- MATH 2090 Elementary Differential Equations and Linear Algebra (3)
- PHYS 2223 Introduction to Mechanics (3)
- PHYS 2098 Instrumentation and Electronics for Scientists (3)

Total Semester Hours: 16

Semester 5
- CRITICAL: “C” or better in MATH 2090 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA.
- CHEM 1202 General Chemistry (3)
- PHYS 4123 Intermediate Mechanics (3)
- PHYS 2231 Electricity and Magnetism (3)
- PHYS 2411 Computational Science I (3)
- General education social science course (2000 level) (3)

Total Semester Hours: 15

Semester 6
- PHYS 4132 Electromagnetism and Electromagnetic Waves (3)
- PHYS 4141 Introduction to Quantum Mechanics (3)
- PHYS 4125 Thermodynamics and Statistical Mechanics (3)
- Foreign Language Course (4)

Total Semester Hours: 13

Semester 7
- PHYS 4142 Introduction to Quantum Mechanics (3)
- PHYS 4000- Level Course (3)
- General education social science course (3)
- Approved Electives (6)

Total Semester Hours: 15

Semester 8
- PHYS 4399 Senior Thesis (3)
- PHYS 4000- Level Course (3)
- Approved Electives (8)

Total Semester Hours: 14

120 Total Sem. Hrs.

1 - Area of Concentration Course: two 4000-level PHYS electives.

With permission, a 4000-level MATH may be substituted for one 4000 level PHYS course. 
GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

<table>
<thead>
<tr>
<th>General Education Requirement</th>
<th>Course(s)</th>
<th>Credit Hours</th>
<th>Curriculum Semester</th>
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<td>3rd (7) 8th</td>
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<td>3rd (7) 8th</td>
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</table>

For Physics with a Second Discipline Concentration
### Physics & Second Discipline

#### Critical Requirements

<table>
<thead>
<tr>
<th>Semester</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| **Semester 1** | - Critical: "C" or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA.  
  - ENGL 1001 English Composition (3)  
  - MATH 1550 Analytic (Geometry) and Calculus I (5)  
  - PHYS 1201 General Physics for Physics Majors (4)  
  - PHYS 1209 General Physics Laboratory for Physics Majors (1)  
  - General Education course - Social Sciences (3)  
| Total Semester Hours: 16 |

| Semester 2 | - Critical: "C" or better in MATH 1550 and PHYS 1100; 2.0 Cumulative, LSU and Semester GPA.  
  - MATH 1552 Analytic Geometry and Calculus II (4)  
  - PHYS 1702 General Physics for Physics Majors (4)  
  - PHYS 1208 General Physics Laboratory for Physics Majors (1)  
  - General Education course - Arts (3)  
  - Approved Elective (3)  
| Total Semester Hours: 15 |

| Semester 3 | - Critical: "C" or better in MATH 1552 and PHYS 1201/PHYS 2401; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.  
  - BIOL 1001 General Biology (3) or  
  - BIOL 1201 Biology for Science Majors I (3)  
  - MATH 2057 Multidimensional Calculus (3)  
  - PHYS 2203 Introduction to Modern Physics (3)  
  - PHYS 2207 Introduction to Modern Physics Laboratory (1)  
  - Approved Elective (3)  
| Total Semester Hours: 13 |

| Semester 4 | - Critical: "C" or better in MATH 2057 and PHYS 1202/PHYS 2402; 2.0 Cumulative, LSU and Semester GPA.  
  - MATH 2090 Elementary Differential Equations and Linear Algebra (4)  
  - PHYS 2221 Introduction to Mechanics (3)  
  - Computer Science Programming Course (3)  
  - Approved Electives (4)  
| Total Semester Hours: 14 |

| Semester 5 | - Critical: "C" or better in MATH 2090 and PHYS 2203; 2.0 Cumulative, LSU and Semester GPA.  
  - ENGL 2000 English Composition (3)  
  - PHYS 2231 Electromagnetsism and Magnetism (3)  
  - PHYS 2411 Computational Science (3)  
  - Area of Concentration Course (3)  
  - Foreign Language Course (4)  
| Total Semester Hours: 16 |

| Semester 6 | - PHYS 3098 Instrumentation Electronics for Scientists (3)  
  - PHYS 4132 Electromagnetsism and Electromagnetic Waves (3)  
  - General Education course - Social Sciences (2000-level) (3)  
  - Area of Concentration Course (3)  
| Total Semester Hours: 12 |

| Semester 7 | - General Education course - Humanities (English/honors 2000-level) (3)  
  - Area of Concentration Courses (9)  
  - Approved Electives (3)  
| Total Semester Hours: 17 |

| Semester 8 | - PHYS 4125 Thermodynamics and Statistical Mechanics (3)  
  - General Education course - Humanities (3)  
  - Area of Concentration Courses (9)  
  - Approved Elective (2)  
| Total Semester Hours: 17 |

120 Total Sem. Hrs.

- At least 24 semester hours from an approved discipline outside of the Department of Physics & Astronomy; any second area may be chosen with consent of the dean and department advisor. The approved area form must be submitted no later than the sophomore year.
Physics & Second Discipline

CRITICAL REQUIREMENTS

SEMESTER 1: "C" or better in MATH 1022/MATH 1023 and ENGL 1001:
  2.0 Cumulative, LSU and Semester GPA.
SEMESTER 2: "C" or better in MATH 1550:
  2.0 Cumulative, LSU and Semester GPA.
SEMESTER 3: "C" or better in MATH 1552 and PHYS 1201/PHYS 2110:
  Admission to the College: 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 4: "C" or better in MATH 2057 and PHYS 1202/PHYS 2113:
  2.0 Cumulative, LSU and Semester GPA.
SEMESTER 5: "C" or better in MATH 2090 and PHYS 2203:
  2.0 Cumulative, LSU and Semester GPA.

Semester 1
  • CRITICAL: "C" or better in MATH 1022/MATH 1023 and ENGL 1001:
    2.0 Cumulative, LSU and Semester GPA.
  • ENGL 1001 English Composition (3)
  • MATH 1550 Analytic Geometry and Calculus I (5)
  • PHYS 1201 General Physics for Physics Majors (4)
  • PHYS 1208 General Physics Laboratory for Physics Majors (1)
  • General education arts course (3)

Total Semester Hours: 16

Semester 2
  • CRITICAL: "C" or better in MATH 1550:
    2.0 Cumulative, LSU and Semester GPA.
  • MATH 1552 Analytic Geometry and Calculus II (4)
  • ENGL 2000 Level Literature Course (3)
  • PHYS 1202 General Physics for Physics Majors (4)
  • PHYS 1209 General Physics Laboratory for Physics Majors (1)
  • General education humanities course (3)

Total Semester Hours: 15

Semester 3
  • CRITICAL: "C" or better in MATH 1552 and PHYS 1201/PHYS 2110:
    Admission to the College: 2.0 Cumulative, LSU and Semester GPA.
  • ENGL 2000 English Composition (3)
  • MATH 2057 Multidimensional Calculus (3)
  • PHYS 2203 Introduction to Modern Physics (3)
  • PHYS 2207 Introductory Modern Physics Laboratory (1)
  • CSC 1253 or equivalent programming course (3)
  • Area of Concentration Course (3)

Total Semester Hours: 16

Semester 4
  • CRITICAL: "C" or better in MATH 2057 and PHYS 1202/PHYS 2113:
    2.0 Cumulative, LSU and Semester GPA.
  • MATH 2090 Elementary Differential Equations and Linear Algebra (4)
  • BIOL 1001 General Biology (3) or
    BIOL 1201 Biology for Science Majors I (3)
  • PHYS 2221 Introduction to Mechanics (3)
  • PHYS 3098 Instrumentation Electronics for Scientists (3)
  • Area of Concentration Course (3)

Total Semester Hours: 16

Semester 5
  • CRITICAL: "C" or better in MATH 2090 and PHYS 2203:
    2.0 Cumulative, LSU and Semester GPA.
  • PHYS 2231 Electricity and Magnetism (3)
  • PHYS 2411 Computational Science I (3)
  • General education social science course (2000 level) (3)
  • Area of Concentration Course (3)
  • Approved Elective (3)

Total Semester Hours: 15

Semester 6
  • PHYS 4125 Thermodynamics and Statistical Mechanics (3)
  • PHYS 4132 Electromagnetism and Electromagnetic Waves (3)
  • Area of Concentration Course (3)
  • Foreign Language Course (4)

Total Semester Hours: 13

Semester 7
  • Area of Concentration Courses (6)
  • General education social science course (3)
  • Approved Electives (6)

Total Semester Hours: 15

Semester 8
  • Area of Concentration Courses (6)
  • Approved Electives (6)

Total Semester Hours: 14

120 Total Sem. Hrs.

1 - At least 24 semester hours from an approved discipline outside of the Department of Physics & Astronomy; any second area may be chosen with consent of the dean and department advisor. The approved area form must be submitted no later than the sophomore year.
GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

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<th>General Education Requirement</th>
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<th>Curriculum Semester</th>
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<tr>
<td>English Composition (6 hrs.)</td>
<td>ENGL 1001 or 1004</td>
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<td>Analytical Reasoning (6 hrs.)</td>
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<td>Natural Sciences (9 hrs.)</td>
<td>General Education natural science course sequence PHYS 1201, 1202 (6 of 8)</td>
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<td>(X) 1st (X) 5th (X) 2nd (X) 6th (X) 3rd (X) 7th (X) 4th (X) 8th</td>
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<tr>
<td>(If 2 course sequence is taken in the physical sciences, the additional 3 hour course must be from the life sciences, and vice versa.)</td>
<td>General Education natural science course BIOL 1001 or 1201</td>
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<td>Social Sciences (6 hrs.)</td>
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<td>(At least three hours at the 2000-level.)</td>
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For Secondary Education Concentration
Secondary Education - Physics

CRITICAL REQUIREMENTS

SEMESTER 1: “C” or better in MATH 1022/MATH 1023 and ENGL 1001;
2.0 Cumulative, LSU and Semester GPA.

SEMESTER 2: “C” or better in MATH 1550 and PHYS 1100;
2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

SEMESTER 3: “C” or better in MATH 1552 and PHYS 1201;
Admission to the College; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

SEMESTER 4: “C” or better in MATH 2057 and PHYS 1202/PHYS 2140;
2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

- FDCI 3550 Classroom Interactions (3)
- MATH 2090 Elementary Differential Equations and Linear Algebra (4)
- PHYS 2221 Introduction to Mechanics (3)
- ENGL 2000 English Composition (3)
- Computer Science Programming Course (3)

Total Semester Hours: 16

Semester 5

- CRITICAL: “C” or better in MATH 2090 and PHYS 2203;
2.6 Semester GPA; 2.5 Cumulative and LSU GPA.

- PHYS 2201 Electricity and Magnetism (3)
- PHYS 2411 Computational Science I (3)
- CHIM 1201 General Chemistry I (3)
- Approved Elective (3)

Total Semester Hours: 15

Semester 6

- ASTR 1101 Stellar Astronomy (3) or
- CHIM 1202 General Chemistry (3)
- PHYS 3005 Science Research Methods (3)
- PHYS 3098 Instrumentation Electromagnetics for Scientists (3)
- PHYS 4000-level course (3)
- Foreign Language Course (4)

Total Semester Hours: 16

Semester 7

- FDCI 4500 Instructional Models for Mathematics and Science (3)
- General Education course - Humanities (English/honors 2000-bel) (3)
- Physics 4000-level course (3)
- BIOL 1001 General Biology (3) or
- BIOL 1201 Biology for Science Majors I (3)

Total Semester Hours: 12

Semester 8

- FDCI 4006 Student Teaching in Grades 6-12 Mathematics and Sciences (9)
- FDCI 3136 Reading in the Content Areas (3)

Total Semester Hours: 12

120 Total Sem. Hrs.

FDCI 12500 will count as one of the General Education social science courses, Elementary, Humanities courses.

Some general education courses are taken in different years than in the standard curriculum. Students should plan their course work so that the last semester of the senior year can accommodate the 12 hours that are required to be taken concurrently (FDCI 4006 and FDCI 3136). PHYS 1240 and PHYS 2140 are not required for this concentration, but may be used as physics 4000 electives.
Secondary Education - Physics

CRITICAL REQUIREMENTS

SEMESTER 1: "C" or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA.

SEMESTER 2: "C" or better in MATH 1550; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

SEMESTER 3: "C" or better in MATH 1552 and PHYS 1201/PHYS 2110; Admission to the College; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

SEMESTER 4: "C" or better in MATH 2057 and PHYS 1202/PHYS 2113; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

SEMESTER 5: "C" or better in MATH 2090 and PHYS 2203; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.

This concentration is part of the Geaux Teach Math and Sciences Program. Students will obtain a degree in physics and, upon completing this concentration and meeting any additional requirements of the Louisiana Department of Education, will be eligible for certification in the state of Louisiana as teachers in grades 6-12.

Semester 1

- CRITICAL: "C" or better in MATH 1022/MATH 1023 and ENGL 1001; 2.0 Cumulative, LSU and Semester GPA.
- ENGL 1001 English Composition (3)
- BASC 2010 Inquiry Approaches to Math and Science Teaching (1)
- MATH 1550 Analytic Geometry and Calculus I (5)
- PHYS 1201 General Physics for Physics Majors (4)
- PHYS 1208 General Physics Laboratory for Physics Majors (1)

Total Semester Hours: 14

Semester 2

- CRITICAL: "C" or better in MATH 1550; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.
- BASC 2011 Inquiry-Based Math and Science Lesson Design (1)
- ENGL 2000 - Level Course (3)
- MATH 1552 Analytic Geometry and Calculus II (4)
- PHYS 1202 General Physics for Physics Majors (4)
- PHYS 1209 General Physics Laboratory for Physics Majors (1)
- General education arts course (3)

Total Semester Hours: 16

Semester 3

- CRITICAL: "C" or better in MATH 1552 and PHYS 1201/PHYS 2110; Admission to the College; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.
- ENGL 2000 English Composition (3)
- EDCI 2500 Knowing and Learning in Mathematics and Science (3)
- MATH 2057 Multidimensional Calculus (3)
- CSC 1253 or equivalent programming course (3)
- PHYS 2203 Introductory Modern Physics (3)
- PHYS 2207 Introductory Modern Physics Laboratory (1)

Total Semester Hours: 16

Semester 4

- CRITICAL: "C" or better in MATH 2057 and PHYS 1202/PHYS 2113; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.
  - BIOL 1001 General Biology (3) or BIOL 1201 Biology for Science Majors I (3)
  - EDCI 3550 Classroom Interactions (3)
  - MATH 2900 Elementary Differential Equations and Linear Algebra (4)
  - PHYS 2223 Introduction to Mechanics (3)
  - PHYS 2098 Instrumentation Electronics for Scientists (3)

Total Semester Hours: 16

Semester 5

- CRITICAL: "C" or better in MATH 2090 and PHYS 2203; 2.0 Semester GPA; 2.5 Cumulative and LSU GPA.
  - PHIL 2286 Logic, Science and Society (3)
  - PHYS 2231 Electricity and Magnetism (3)
  - PHYS 2411 Computational Science I (3)
  - ASTR 1101 The Solar System (3) or CHEM 1201 General Chemistry I (3)
  - General Education Course - Humanities (3)

Total Semester Hours: 15

Semester 6

- ASTR 1102 Stellar Astronomy (3) or CHEM 1202 General Chemistry II (3)
- EDCI 4005 Science Research Methods (3)
- PHYS 4006 Level Courses (6)
- Foreign Language Course (4)

Total Semester Hours: 16

Semester 7

- EDCI 4500 Instructional Models for Mathematics and Science (3)
- General education social science course (3)
- Approved Elective (9)

Total Semester Hours: 15

Semester 8

- EDCI 4006 Student Teaching in Grades 6-12 Mathematics and Sciences (9)
- EDCI 3136 Reading in the Content Areas (3)

Total Semester Hours: 12

120 Total Sem. Hrs.

EDCI 3500 will count as one of the General Education Social Science courses.

Some general education courses are taken in different years than in the standard curriculum. Students should plan their course work so that the last semester of the senior year can accommodate the 12 hours that are required to be taken concurrently (EDCI 4006 and EDCI 3136).

PHYS 3125 and PHYS 3132 are not required for this concentration, but may be used as physics electives.
REQUEST FOR ADDING, CHANGING, SUSPENDING OR DROPPING UNDERGRADUATE CONCENTRATION

Division of Computer Science and Engineering; School of Electrical Engineering and Computer Science

Name of Concentration: Data Science and Analytics
Name of Curriculum/Major: Computer Science
Type of Degree: B.S.

Has this change been discussed with and approved by all departments/colleges affected? Yes (X) No ( ) N/A ( )

ATTACH JUSTIFICATION for all actions: Use separate sheet.
ATTACH RESPONSE from any departments affected [i.e., any department whose course(s) are to be added.]

ACTION (check appropriate box):
(X ) ADDING: List the entire catalog description of the new concentration. Use plain sheets and attach, if necessary.
( ) CHANGING: List present catalog description which is to be changed (left column) and the changes proposed (right column). In proposed column, use strikeout and bold to indicate deletions and additions. Explain all changes adequately on attachment.
( ) SUSPENDING: Provide an adequate explanation for suspending the concentration on plain sheets and attach.
( ) DROPPING: Provide an adequate explanation for dropping the concentration on plain sheets and attach.

CONCENTRATION

PRESENT PROPOSED

Total semester hours in proposed concentration: 18

Data Science and Analytics (18 hrs)

Required courses (9 hours) – CSC 2730, 4402, 4740

Approved area electives (9 hours) - No more than 2 courses (6 hours) from the same department. CSC 4501, 4512, 4610; EE 3150; IE 3302; ISDS 3105, 4118, 4141; MATH 3355, 4024, 4025; other electives subject to approval

APPROVALS:

Department Faculty Approval Date 12-9-13

Department Chair's Signature 12/12/2013

College Faculty Approval Date 12/10/13

College Dean's Signature 12/13/13

Chair, FS C & C Committee 1/30/14

Academic Affairs Approval 2/7/14

College Contact: ____________________________

(Please print name.)

College Contact E-mail: ________________________
GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

<table>
<thead>
<tr>
<th>General Education Requirement</th>
<th>Course(s)</th>
<th>Credit Hours</th>
<th>Curriculum Semester</th>
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</thead>
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<tr>
<td>English Composition (6 hrs.)</td>
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<tr>
<td></td>
<td>ENGL 2000</td>
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<tr>
<td>Analytical Reasoning (6 hrs.)</td>
<td>General Education analytical reasoning course</td>
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<tr>
<td></td>
<td>(from mathematics department)</td>
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<td></td>
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<tr>
<td></td>
<td>MATH 1550</td>
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<tr>
<td></td>
<td>General Education analytical reasoning course</td>
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<tr>
<td></td>
<td>MATH 1552</td>
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<tr>
<td>Arts (3 hrs.)</td>
<td>General Education arts course</td>
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<tr>
<td>Humanities (9 hrs.)</td>
<td>General Education humanities course</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>RESTRICTED: from CMST</td>
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<tr>
<td></td>
<td>General Education humanities course</td>
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</tr>
<tr>
<td></td>
<td>RESTRICTED: from ENGL, HNRS, CPLT</td>
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<tr>
<td></td>
<td>General Education humanities course</td>
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<td></td>
<td>RESTRICTED: from PHYS, ASTR, GEOL, CHEM</td>
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<td>Natural Sciences (9 hrs.)</td>
<td>General Education natural science course</td>
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<td></td>
<td>General Education natural science course</td>
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<td></td>
<td>RESTRICTED: from PHYS, ASTR, GEOL, CHEM</td>
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<td>Social Sciences (6 hrs.)</td>
<td>General Education social science course</td>
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<td>General Education social science course</td>
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<tr>
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JUSTIFICATION:
The field of data science and analytics incorporates techniques and theories from diverse areas such as mathematics, biology, statistics, data warehousing, and artificial intelligence to name but a few. As a result of the “digital age”, vast amounts of data are available for extracting actionable intelligence. Therefore, the area of data science and analytics encompasses all requirements including constraints for data management which culminates in the elicitation of knowledge to support human decision making.

When datasets are extremely large and require uncommon software tools to record, manage and process the data, the term “Big Data” is used. Big Data is a specified area of data science and analytics. Our Computer Science & Engineering Division has identified Big Data and related areas as a new area of expertise in which the division would like to grow. Our Industry Advisory Board (November 22, 2013) were very supportive of the proposed course topics and the technical tools utilized in them. Employment opportunities are plentiful and the expertise is lacking in most undergraduate programs.

To incorporate the concepts of Big Data and data analytics into our curricula, the division has developed a new concentration, “Data Science and Analytics” including required credits in the proposed courses CSC 2730 “Data Science and Analytics” and CSC 4740 “Big Data Technologies”. Planned courses in the area are targeted for STEM-related research and career curriculum tracks.

BUDGETARY CONCERNS:
Current size and expertise of the CSC_E faculty, whose first priority is to schedule the required core CSC classes, is limiting the effective scheduling of courses related to Big Data, data science, analytics, and other related topics. The faculty and the Office of the Dean of Engineering are supportive of faculty hiring in the research area and to support new courses along with the proposed concentration. With the Dean’s approval an adjunct instructor has been hired (Spring 2014) who is an expert practitioner in the field. CSC 2730 is the first course targeted to be scheduled.

By utilizing current faculty members and industry experts in a team teaching-paradigm, resources are available to teach CSC 2730 as early as Spring 2014 or Fall 2014. But to fully support the proposed courses and enhance the new concentration to its best potential, additional full-time faculty members are needed who are experts in the area and who can share the teaching load of the essential CSC classes.

The Division foresees that as the faculty size increases in areas related to data science analytics, additional required courses will be introduced in the curriculum. Supplemental topics with strong application in the area are: Business Intelligence and Data Integration; Predictive Analytics. Division faculty recommend that a total of at least 4 CSC courses and 2 supporting area electives would best cover the fundamental subject matter of the concentration.
ELECTIVE LIST:

**CSC 4501 Computer Networks** (3) Prereq. **CSC 3192**, Introduction to local, metropolitan and wide area networks using the standard OSI reference model as a framework; introduction to the Internet protocol suite and network tools and programming; discussion of various networking technologies.

**CSC 4512 Optimization: Modeling Approaches, Algorithms and Applications** (3) Prereq. **CSC 2364** or **MATH 2093** or permission of instructor. Optimization as a modeling tool with emphasis on modeling approaches, fundamental algorithms and applications in many diverse domains.

***proposed*** **CSC 4610 Cloud Systems and Virtualization** (3) Prereq. **CSC 4501**. Advanced problems and challenges in defining, developing, and building a cloud system; virtualization; open source computing; provisioning; fairness, reliability, security and monitoring.

**EE 3150 Probability for Electrical and Computer Engineering** (3) Credit will not be given for this course and **MATH 3355**. Prereq. **MATH 2093**. Basic concepts of probability theory and statistics with applications to electrical and computer engineering; axioms of probability, continuous, discrete, and conditional probability density and distribution functions, expectations, statistical inference, and random processes.

**IE 3302 Engineering Statistics** (3) Prereq. grade of C or better required in **IE 2259** and **CSC 2259**. Probability, discrete and continuous distributions, functions of random variables estimation theory, tests of hypotheses including goodness-of-fit and independence.

**ISDS 3105 Internet Development Tools** (3) Prereq. **ISDS 3100** or equivalent. Understanding of the Internet and its structure for use in business; technologies employed to develop Internet applications; development of business applications for the Internet.

**ISDS 4118 Web Analytics** (3) Prereq. **ISDS 3100**. Principles of web analytics: key performance indicators, benchmarks, A/B testing, personalized content, customer-centric website design, process flow analysis, usability, research design and statistical methods.

**ISDS 4141 Introduction to Data Mining** (3) Prereq. **ISDS 3100**. Fundamental methodology and techniques used in data mining, with particular emphasis on business applications; topics include market basket analysis, memory-based reasoning, cluster detection, link analysis, decision trees and rule induction, neural networks and genetic algorithms.

**MATH 3355 Probability** (3) Prereq. **MATH 2097**. Suggested for preparation for actuarial exams. Introduction to probability, emphasizing concrete problems and applications; random variables, expectation, conditional probability, law of large numbers, central limit theorem and stochastic processes.

**MATH 4024 Mathematical Models** (3) Prereq. **MATH 1522** and credit or registration in **MATH 2085** or equivalents. Construction, development and study of mathematical models for real situations: basic examples, model construction, Markov chain models, models for linear optimization, selected case studies.

**MATH 4025 Optimization Theory and Applications** (3) Prereq. **MATH 2212** and credit or registration in **MATH 2085** or equivalent. Basic methods and techniques for solving optimization problems; n-dimensional geometry and convex sets; classical and search optimization of functions of one and several variables; linear, nonlinear and integer programming.
TOTAL HOURS = 120

COMPUTER SCIENCE

2014-2015

FALL 1
(4) C CSC 1350 Intro CS1
or Majors
(5) C MATH 1550 Calc I
(3) C CSC 1351 Intro CS II
for majors
(3) C ENGL 1001 Comp I
(3) C BIXL Sequence I
(1) C SCI Seq I or II Lab

FLOWCHART LEGEND
C Credit required
Credit or registration required
Two hours of science lab is required and must be with either science sequence

SPRING 2
(4) C CSC 1350 Intro CS1
or Majors
(5) C MATH 1550 Calc I
(3) C CSC 1351 Intro CS II
for majors
(3) C ENGL 1001 Comp I
(3) C BIXL Sequence I
(1) C SCI Seq I or II Lab

SPRING 3
(3) C CSC 3202 Adv Data Str
(3) C CSC 2259 Discrete Structures
(1) C SCI Seq I or II Lab

SPRING 4
(4) C MATH 2090 DE & Lin Alg
(1) C SCI Seq I or II Lab

FALL 5
(3) C CSC 4103 G0 Design
(3) C CSC 3500 Comp. Org 
& Design
(3) C IE 3302 Statistics

SPRING 6
(3) C CSC 4402 (DSA)
(3) C CSC 2730 Data Sci. & Analytics (DSA)
(3) C CSC 4740 Big Data Tech. (DSA)

FALL 7
(3) C CSC 3580 GO Design
(3) C CSC 3580 GO Design
(3) C IE 3302 Statistics

SPRING 8
(3) C CSC 4101 Prog Lang
(3) C CSC 4103 
(3) C CSC 3380 Intra CS1
(3) C CSC 4402 Intra CS II

HOURS: 16 17 17 16 15 15 12 12 = 120

CSC Data Science & Analytics

Data Science & Analytics (18 HRS)

3127 Patrick F. Taylor Computer Science Office

Rev. 12-1-2013
Approved CSC_E Facult: 12-9-13
NOTE: Semesters 1-4 remain the same as for the recently proposed Cloud Computing and Networking concentration

CONCENTRATION: Data Science and Analytics

CRITICAL REQUIREMENTS

SEMESTER 1: MATH 1021; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 2: MATH 1022 or MATH 1023; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 3: “C” or better in ENGL 1001; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 4: “C” or better in MATH 1550/MATH 1551; 2.0 Cumulative, LSU and Semester GPA.
SEMESTER 5: “C” or better in BIOL 1001/BIOL 1201; 2.0 Cumulative, LSU and Semester GPA.

A grade of “C” or better is required in all CSC prerequisite courses; CSC 1200, CSC 4101, CSC 4103 and CSC 4330; MATH 1550 and MATH 1552; BIOL 1001 or BIOL 1201 and all science prerequisite courses including laboratory courses.

Semester 1

- CRITICAL: MATH 1021; 2.0 Cumulative, LSU and Semester GPA.
- CSC 1200 Ethics in Computing (1)
- CSC 1350 Computer Science I for Majors (4)
- ENGL 1001 English Composition (3)
- MATH 1550 Analytic Geometry and Calculus I (5)
- General Education course - Natural Sciences (3)

Total Semester Hours: 16
Semester 2

- **CRITICAL**: MATH 1022 or MATH 1023: 2.0 Cumulative, LSU and Semester GPA.
- CSC 1351 Computer Science II for Majors (4)
- MATH 1552 Analytic Geometry and Calculus II (4)
- General Education course - Natural Sciences (3)
- General Education course - Humanities (English/Honors 2000-level) (3)
- General Education course - Humanities (Communication Studies course) (3)

Total Semester Hours: 17

Semester 3

- **CRITICAL**: “C” or better in ENGL 1001; Admission to the College; 2.0 Cumulative, LSU and Semester GPA.
- CSC 2259 Discrete Structures (3)
- CSC 3102 Advanced Data Structures and Algorithm Analysis (3)
- MATH 2090 Elementary Differential Equations and Linear Algebra (4)
- General Education course - Natural Sciences (3)
- General Education course - Natural Sciences Lab (1)
- General Education course - Humanities (3)

Total Semester Hours: 17

Semester 4

- **CRITICAL**: “C” or better in MATH 1550/MATH 1551; 2.0 Cumulative, LSU and Semester GPA.
- CSC 2262 Numerical Methods (3)
- CSC 3501 Computer Organization and Design (3)
- CSC 4103 Operating Systems (3)
- ENGL 2000 English Composition (3)
- General Education course - Natural Sciences (3)
- General Education course - Natural Sciences Lab (1)

Total Semester Hours: 16
Semester 5

- **CRITICAL:** “C” or better in **BIOL 1001/BIOL 1201**: 2.0 Cumulative, LSU and Semester GPA.
- CSC 4402 **Introduction to Database Management Systems** (3)
- CSC 2730 **Data Science and Analytics** (3)
- **Approved Area Elective** (3)
- IE 3302 **Engineering Statistics** (3)
- **Approved Technical Electives** (3)

Total Semester Hours: 15

Semester 6

- CSC 3380 **Object Oriented Design** (3)
- CSC 4740 **Big Data Technologies** (3)
- **Approved Area Elective** (3)
- General Education course - Social Sciences (3)
- **Approved Technical Elective** (3)

Total Semester Hours: 15

Semester 7

- CSC 4330 **Software Systems Development** (3)
- CSC 4101 **Programming Languages** (3)
- **Approved Area Elective** (3)
- General Education course - Social Sciences (2000-level) (3)

Total Semester Hours: 12
Semester 8

- CSC (3000-level or above) Elective (3)
- Approved Elective (6)
- General Education course - Arts (3)

Total Semester Hours: 12

120 Total Sem. Hrs.

Computer science students are cautioned to verify course descriptions in the catalog noting where duplication of course credits may be prohibited. Additionally, computer science students will not receive degree credit for the following courses: ELRC 4006; EXST 2201; ISDS 2000, ISDS 2001, ISDS 2010, ISDS 2011, ISDS 3070, ISDS 3075; PHYS 1100; PSYC 4111; and SOCL 2201.

1 - For General Education Natural Science, two six-hour sequences in both physical and life sciences must be taken; one sequence must include two additional hours of lab work. One sequence must be from the Biological Sciences (BIOL) and the physical science sequence selected from Astronomy, Chemistry, Geology and Physics.

2 - APPROVED AREA ELECTIVES (9 hours required): No more than 2 courses (6 hours) from the same department. CSC 4501, 4512, 4610; EE 3150; IE 3302; ISDS 3105, 4118, 4141; MATH 3355, 4024, 4025; other electives subject to approval. The selection of the CSC (3000-level or above) elective is not restrictive to topics related to Data Analytics.

3 - APPROVED TECHNICAL ELECTIVES: Three hours of elective credits must be selected from Group A and three hours of elective credits selected from Group A or Group B.

GROUP A: 2000-level and above only chosen from CSC, BE, CHE, CE, CM, EE, ENGR, EVEG, IE, ME, PETE, EMS, ENVS, OCS, MATH, ECON, FIN, ASTR, BIOL, CHEM, GEOG, GEOL, PHYS, ISDS 31++.

GROUP B: ART 2050, ART 2055, ART 2551, ART 4020, ART 4050, ART 4055, ART 4550, ART 4560, ARTH 4466, ARTH 4468, ARTH 4480, ARTH 4482, ARTH 4484, MC 4015, MC 4260, MUS 3745, MUS 4745, MUS 4746, ENGL 2009, ENGL 2231, ENGL 4000, ENGL 4009, ENGL 7109.

4 - Students who have completed the prerequisites may substitute MATH 3355 or EE 3150 or EXST 4050 for IE 3302.
See email from Helmut via Warren giving approval for new concentration.
Need material for syllabus for CSC 4740 now.
Thanks for your patience.
Coretta

---------- Forwarded Message ----------
From: Warren N Waggenspack <mewagg@lsu.edu>
To: Adrianna N Castilla <anna_c@pacbell.net>
Cc: Coretta Douglas <douglas@csc.lsu.edu>, Bijaya Karki <karki@csc.lsu.edu>, Warren N Waggenspack <mewagg@lsu.edu>
Sent: Thu, 30 Jan 2014 13:18:31 +0000
Subject: FW: New Concentrations in Computer Science - "Data Science and Analytics"

Anna
Sorry it took so long for this. I just transitioned to Outlook And couldn't find ISDS's response to the Data Analytics concentration.

As you can see, they have no objections and are wanting to Work together on its implementation.

Warren

>-----Original Message-----
>From: Helmut Schneider
>Sent: Tuesday, December 17, 2013 8:45 AM
>To: 'Warren N. Waggenspack , Jr'
>Subject: RE: FW: New Concentrations in Computer Science
>
>Warren,
>We don't have any objections to adding this concentration.
>My only suggestion is to work together on how the two concentrations in
>Computer Science and ISDS can complement each other.
>Regards,
>Helmut
>

Helmut Schneider
Associate Dean of Research and Economic Development Ourso Family
Distinguished Professor of Information Systems and Chairman of
Information Systems and Decision Sciences at LSU Director of the
Highway Safety Research Group Louisiana State University, ISDS
Department 2200A BEC Baton Rouge, LA 70803
Ph.: 225-578-2516
Fax: 225-578-2511
Homepage: http://isds.bus.lsu.edu
The College of Engineering is aggressively trying to meet the deadline for the 2014-2015 catalog with our CSC curricula revisions & added concentrations. We will be forwarding our paperwork to FS C&C this week. I know this is a challenging time in the schedule, but may we impose upon your curricula team to take a quick pass over the proposal and provide a response so that we can move forward with the process.

Your time on this would be greatly appreciated.

We can visit more this afternoon before/after the meeting you & I are both scheduled to attend with BCBS.

Sincerely,
Warren N. Waggenspack, Jr.
Associate Dean for Academic Programs
College of Engineering

RE: CSC_E Proposal to add a new concentration, "Data Science and Analytics"
Attached you will see a large .pdf document containing materials related to our proposed new concentration. You are receiving this email as a request for feedback and approval of the proposed concentration. Specific ISDS and MATH courses are listed as approved elective credits for the concentration. We do not expect a large increase in enrollment in any one of your elective class sections.
The CSC proposed courses related to the concentration are targeted to all students enrolled in STEM-related curricula, but primarily intended for computer science majors and graduate students (CSC 4000-level).

Our CSC_E discussions regarding the related courses and concentration have taken longer than expected this semester and so getting the materials to you is coming at a very inconvenient time for which we sincerely apologize.

We are available to discuss any questions you have regarding the attached proposal and will assist in any way we can. Your response is appreciated.

Regards,

Coretta

Coretta Douglas, Ph.D. Computer Science Undergraduate/Instructional Coordinator and Instructor School of Electrical Engineering and Computer Science

** Computer Science and Engineering **

Patrick Taylor #3118

-------- End of Forwarded Message --------

Coretta Douglas, Ph.D. Computer Science
Undergraduate/Instructional Coordinator and Instructor School of Electrical Engineering and Computer Science

** Computer Science and Engineering **

Patrick Taylor #3118
From: Lawrence Rouse, Chair, Courses and Curricula Committee

At their January 16, 2014 meeting, the Faculty Senate Courses and Curriculum Committee took the following action regarding the CSC proposals:

Data Science and Analytics Concentration
- The Committee conditionally approved the proposal to add the Data Science and Analytics concentration pending a letter of support from ISDS. The Committee could not find the approval from ISDS stating that ISDS 3105, 4118, and 4141 could be offered in the program.

CSC 2730 and 4740
- The Committee conditionally approved the proposals to add CSC 2730 and 4740 pending revised syllabi that detail the projects in the courses. In CSC 4740, the Committee suggested inserting the description of the final project within the justification into the syllabus. This should also be used as an example for CSC 2730.

Please submit the requested documentation to Anna Castrillo in the Office of the University Registrar at 112 Thomas Boyd Hall or by email at acastril@lsu.edu.

If you have any questions regarding the request, please feel free to contact me at lrouse@lsu.edu.
REQUEST FOR ADDING, CHANGING, SUSPENDING OR DROPPING AN UNDERGRADUATE CONCENTRATION

Department: Kinesiology
College: Human Sciences and Education
Date: 12/6/13
Name of Concentration: Human Movement Science
Name of Curriculum/Major: Kinesiology
Type of Degree: B.S.

Has this change been discussed with and approved by all departments/colleges affected? Yes (X) No ( ) N/A ( )

ATTACH JUSTIFICATION for all actions: Use separate sheet.
ATTACH RESPONSE from any departments affected [i.e. any department whose course(s) are to be added.]
ATTACH FORM D ADDENDUM for all new concentration or changes involving General Education courses.

ACTION (check appropriate box):

( ) ADDING: The entire new concentration, by semester, must be typed on plain sheets and attached to Form E. (See sample layout attached.)
( X ) CHANGING: Regardless if all semesters of a concentration are to be changed or only parts, the present and proposed (eight-semester) recommended path should be attached on separate pages. On the Present recommended path, use strikeout and on the Proposed recommended path, highlight areas to identify deletions and additions. Do not use boldface to designate changes as boldface is reserved for critical requirements within the recommended path. Explain all changes adequately on attachment.

( ) SUSPENDING: Provide an adequate explanation for suspending the concentration on plain sheets and attach.
( ) DROPPING: Provide an adequate explanation for dropping the concentration on plain sheets and attach.

CONCENTRATION

<table>
<thead>
<tr>
<th>PRESENT</th>
<th>PROPOSED</th>
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<tr>
<td>Total semester hours in current concentration: 120</td>
<td>Total semester hours in proposed concentration: 120</td>
</tr>
<tr>
<td>(see attached sheet)</td>
<td>(see attached sheet)</td>
</tr>
</tbody>
</table>

APPROVALS:

Department Faculty Approval Date: 12/11/13
Department Chair’s Signature: (Date)
Chair, FS C & C Committee: (Date)

College Faculty Approval Date: 12/13/13
College Dean’s Signature: (Date)
Academic Affairs Approval: (Date)

College Contact: ____________________________
College Contact E-mail: ________________________
GENERAL EDUCATION REQUIREMENTS

When a department adds a new curriculum or makes changes in an existing one, a Form D Addendum must also be submitted. This form is simply a list of those courses in the curriculum that satisfy the General Education requirement. Include course rubric, number, and credit hours when curricula differ from the default values. Indicate the curriculum semester for all General Education courses.

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<th>General Education Requirement</th>
<th>Course(s)</th>
<th>Credit Hours</th>
<th>Curriculum Semester</th>
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</thead>
<tbody>
<tr>
<td>English Composition (6 hrs.)</td>
<td>ENGL 1001 or 1004</td>
<td>3</td>
<td>(1st) (5th) (2nd) (6th) (3rd) (7th) (4th) (8th)</td>
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<tr>
<td>Analytical Reasoning (6 hrs.)</td>
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<td>3</td>
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<tr>
<td>(At least 3 hours credit must be from a MATH course.)</td>
<td>General Education analytical reasoning course MATH 1022</td>
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<td>Arts (3 hrs.)</td>
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<tr>
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<td>(1st) (2nd) (6th) (3rd) (7th) (4th) (8th)</td>
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<td>(1st) (2nd) (6th) (3rd) (7th) (4th) (8th)</td>
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<td>(If 2 course sequence is taken in the physical sciences, the additional 3 hour course must be from the life sciences, and vice versa.)</td>
<td>General Education natural science course PHYS 2001</td>
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<td>(1st) (2nd) (6th) (3rd) (7th) (4th) (8th)</td>
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<td>Social Sciences (6 hrs.)</td>
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<td>(1st) (2nd) (3rd) (4th) (5th) (6th)</td>
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<td>(At least three hours at the 2000-level.)</td>
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<td>(1st) (2nd) (6th) (3rd) (7th) (4th) (8th)</td>
<td></td>
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</tr>
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</table>
Justification to changes in the B.S. in Kinesiology, Human Movement Science, Pre-kinesiology Graduate Study

The Division of Computer Science and Engineering is dropping CSC 1248 (Programming With Applications in Statistics) from the LSU General Catalog and this course was a required course in the B.S. in Kinesiology, Human Movement Science, Pre-kinesiology Graduate Study. The students were required to take CSC 1248 and PHIL 4951 along with nine hours of approved electives (list available from the school). The School of Kinesiology has decided to remove PHIL 4951 from this requirement and increase the number of approved electives to fifteen hours (list available from the school). This will allow the students in this concentration greater flexibility in courses that will appeal to their area of interest or area of study.
PRESENT

2013-2014 Catalog

Kinesiology: Human Movement —

Pre-KIN Graduate Option

120 Hours.

ADMISSION TO THE COLLEGE.

Students wishing to enter the College of Education and pursue a major in Kinesiology must satisfy the following minimum requirements:

- 24 earned semester hours with a 2.5 Cumulative and LSU GPA;
- Advanced placement credit or a "C" or better in ENGL 1001, MATH 1021 and 1022, and BIOL 1201, 1208, 1202 and 1209.

SCHOLASTIC REQUIREMENTS:

2.0 Semester GPA each semester (See "Retention" in the College of Education chapter of the LSU General Catalog for information on college probation, college drop.)

GRADUATION REQUIREMENTS: completion of an approved curriculum with Cumulative and LSU GPA of 2.5 and no grade less than "C" in specialized academic courses.

NOTE: This document is offered as an aid for planning a course of study. The LSU General Catalog contains the official requirements for graduation.

RECOMMENDED PATH & CRITICAL REQUIREMENTS.

The RECOMMENDED PATH shows how one may complete the curriculum in 4 years. CRITICAL REQUIREMENTS must be met by the indicated semester to be considered making minimal progress in the degree.

Sem 1: "C" or better in ENGL 1001 and MATH 1021; 2.2 Cumulative and LSU GPA.
Sem 2: "C" or better in MATH 1022; 2.3 Cumulative and LSU GPA.
Sem 3: "C" or better in BIOL 1201; 2.4 Cumulative and LSU GPA.
Sem 4: "C" or better in BIOL 1202, and KIN 2504; 2.5 Cumulative and LSU GPA; Admission to the College.
Sem 5: "C" or better in ENGL 2000 and KIN 2500; 2.5 Cumulative and LSU GPA.
Sem 6: 2.5 Cumulative and LSU GPA.
Sem 7: 2.5 Cumulative and LSU GPA.
Sem 8: 2.5 Cumulative and LSU GPA.
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<thead>
<tr>
<th>5th Semester -15 hours</th>
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<tr>
<td>Critical: “C” or better in KIN 2500 &amp; ENGL 2000; 2.5 LSU and Cumulative GPA</td>
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<tr>
<td>KIN 3513</td>
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<tr>
<td>KIN Activity</td>
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<tr>
<td>PHYS 2001 [MATH 1022 or 1023]</td>
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<tr>
<td>PHYS 2108 [cred/reg PHYS 2001]</td>
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<td>Pre-KIN Grad Course</td>
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<tr>
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<table>
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<th>6th Semester -15 hours</th>
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<td>KIN 3514 [MATH 1022; KIN 2500; PHYS 2001]</td>
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<td>PHYS 2002 [PHYS 2001]</td>
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<td>PHYS 2109 [PHYS 2108, cred/reg PHYS 2001]</td>
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<td>Pre-KIN Grad Course</td>
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<td>Electives</td>
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<th>7th Semester -15 hours</th>
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</tr>
<tr>
<td>KIN 3515 [KIN 2500, 2504, boil 2160]</td>
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<tr>
<td>KIN 4512</td>
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<td>Pre-KIN Grad Course</td>
</tr>
<tr>
<td>Electives</td>
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<table>
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<th>8th Semester -15 hours</th>
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<td>KIN 3534</td>
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<td>KIN 4520</td>
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<td>KIN 4571</td>
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<tr>
<td>Electives</td>
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Pre-kinesiology Graduate Study (15 hrs.) – CSC 1248; PHIL 4951; nine hours of approved electives (list available from the school)
2013-2014 Catalog

Kinesiology: Human Movement — Pre-KIN Graduate Option

120 Hours.

ADMISSION TO THE COLLEGE.

Students wishing to enter the College of Education and pursue a major in Kinesiology must satisfy the following minimum requirements:

* 24 earned semester hours with a 2.5 Cumulative and LSU GPA;
* Advanced placement credit or a "C" or better in ENGL 1001, MATH 1021 and 1022, and BIOL 1201, 1208, 1202 and 1209.

SCHOLASTIC REQUIREMENTS:

2.0 Semester GPA each semester (See "Retention" in the College of Education chapter of the LSU General Catalog for information on college probation, college drop.)

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NOTE: This document is offered as an aid for planning a course of study. The LSU General Catalog contains the official requirements for graduation.

RECOMMENDED PATH & CRITICAL REQUIREMENTS.

The RECOMMENDED PATH shows how one may complete the curriculum in 4 years. CRITICAL REQUIREMENTS must be met by the indicated semester to be considered making minimal progress in the degree.

Sem 1: "C" or better in ENGL 1001 and MATH 1021; 2.2 Cumulative and LSU GPA.
Sem 2: "C" or better in MATH 1022; 2.3 Cumulative and LSU GPA.
Sem 3: "C" or better in BIOL 1201; 2.4 Cumulative and LSU GPA.
Sem 4: "C" or better in BIOL 1202, and KIN 2504; 2.5 Cumulative and LSU GPA; Admission to the College.
Sem 5: "C" or better in ENGL 2000 and KIN 2500; 2.5 Cumulative and LSU GPA.
Sem 6: 2.5 Cumulative and LSU GPA.
Sem 7: 2.5 Cumulative and LSU GPA.
Sem 8: 2.5 Cumulative and LSU GPA.

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<th>1st Semester -16 hours</th>
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<tr>
<td>Critical: &quot;C&quot; or better in ENGL 1001 &amp; Math 1021; 2.2 LSU and Cumulative GPA</td>
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<td>BIOL 1201 (ACT of 23 or &quot;C&quot; in CHEM 1201)</td>
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<td>KIN 2504</td>
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<th>4th Semester -16 hours</th>
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<td>5th Semester - 15 hours</td>
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<td>KIN 4571</td>
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<tr>
<td>Electives</td>
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</tbody>
</table>

Pre-kinesiology Graduate Study (15 hrs.) – fifteen hours of approved electives (list available from the school)
Hi,

The CSC course was required for admission to some professional schools, but that requirement has been dropped, according to Wanda Hargroder. To be honest, I do not know why the Philosophy course was identified as a required concentration course in that option, but the course has not been offered regularly over the past few years, so we have had to use substitutions.

We believe that the flexibility in the electives will enable students to take courses that will benefit them as they pursue their career goals.

Melinda A. Solmon, Ph.D.
Roy Paul Daniels Professor and Director
School of Kinesiology
Louisiana State University
Baton Rouge, LA 70803
Phone: 225-578-2639
Fax: 225-578-3680
E-mail: msolmo1@lsu.edu

Dr. Solmon,

Thanks for the quick response. What the Committee wanted to know was why were these courses included in the past. Were these courses crucial for students in the major? Did these courses enhance their knowledge in the specified field? The Committee just wanted to know why these two courses were singled out from the other approved electives.

Thanks,

Anna Castrillo, M.A.
Coordinator
Office of the University Registrar
Louisiana State University
112 Thomas Boyd Hall
Phone: (225)578-4111
Fax (225)578 5991
The justification for the deletion of CSC 1248 and PHIL 4951 is attached. Please let me know if you need additional information.

Melinda A. Solomon, Ph.D.
Roy Paul Daniels Professor and Director
School of Kinesiology
Louisiana State University
Baton Rouge, LA 70803
Phone: 225-578-2639
Fax: 225-578-3680
Email: mso1mo1@lsu.edu

From: Anna M Castrillo
Sent: Thursday, January 16, 2014 4:06 PM
To: Melinda A Solomon; Jennifer Curry
Subject: C&C Memo regarding the Human Movement Science Concentration

Dr. Solomon,

Please find attached the actions taken by the C&C Committee regarding the Human Movement Science concentration proposal.

Sincerely,

Anna Castrillo, M.A.
Coordinator
Office of the University Registrar
Louisiana State University
112 Thomas Boyd Hall
Phone: (225)578-4111
Fax: (225)578-5991
Justification for changes in the B.S. in Kinesiology, Human Movement Science, Pre-kinesiology Graduate Study

The Division of Computer Science and Engineering is dropping CSC 1248 (Programming With Applications in Statistics) from the LSU General Catalog and this course was a required course in the B.S. in Kinesiology, Human Movement Science, Pre-kinesiology Graduate Study. The students were required to take CSC 1248 and PHIL 4951 along with nine hours of approved electives (list available from the school). The School of Kinesiology has decided to remove PHIL 4951 from this requirement and increase the number of approved electives to fifteen hours (list available from the school). This will allow the students in this concentration greater flexibility in courses that will appeal to their area of interest or area of study.
REQUEST FOR ADDING, CHANGING, SUSPENDING
OR DROPPING AN
UNDERGRADUATE CONCENTRATION

Department: Department of Marketing
College: E.J. Ourso College of Business Administration
Name of Concentration: Professional Sales Concentration
Name of Curriculum/Major: B.S. in Marketing
Type of Degree: B.S.

Has this change been discussed with and approved by all departments/colleges affected? Yes (x) No ( ) N/A ( )

ATTACH JUSTIFICATION for all actions: Use separate sheet.
ATTACH RESPONSE from any departments affected [i.e. any department whose course(s) are to be added.]
ATTACH FORM D ADDENDUM for all new concentration or changes involving General Education courses.

ACTION (check appropriate box):

( x ) ADDING: The entire new concentration, by semester, must be typed on plain sheets and attached to Form E. (See sample layout attached.)

( ) CHANGING: Regardless if all semesters of a concentration are to be changed or only parts, the present and proposed (eight-semester) recommended path should be attached on separate pages. On the Present recommended path, use strikeout and on the Proposed recommended path, highlight areas to identify deletions and additions. Do not use boldface to designate changes as boldface is reserved for critical requirements within the recommended path. Explain all changes adequately on attachment.

( ) SUSPENDING: Provide an adequate explanation for suspending the concentration on plain sheets and attach.

( ) DROPPING: Provide an adequate explanation for dropping the concentration on plain sheets and attach.

CONCENTRATION

<table>
<thead>
<tr>
<th>PRESENT</th>
<th>PROPOSED</th>
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<tbody>
<tr>
<td>Total semester hours in current concentration: 0</td>
<td>Total semester hours in proposed concentration: 9</td>
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<tr>
<td>Required courses (9 hours): MKT 3427 (Professional Selling), MKT 4423 (Sales Management), and either MKT 4478 (Professional Sales Practicum) or MKT 4479 (Professional Sales Internship).</td>
<td></td>
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</table>

APPROVALS:

Department Faculty Approval Date: 9/13/2013
Department Chair’s Signature: 12/19/13
Chair, FS C & C Committee: 1/30/14
College Faculty Approval Date: 12/6/13
College Dean’s Signature: 12/9/13
Academic Affairs Approval: 2/7/14

College Contact: -Junck
College Contact E-mail: cxjunck@lsu.edu
Marketing B. S.

Justification for Professional Sales Concentration

A Professional Sales Concentration in undergraduate marketing programs is relatively common in Universities in the United States. For example, a Professional Sales Concentration is currently offered at Virginia Tech, University of Houston, Florida State University, Nichols State University, University of Texas at Dallas, Central Michigan University, and others. It also appears that many other Universities are considering the addition of a Professional Sales Concentration. Consistent with existing programs, we recommend a three-course Professional Sales Concentration consisting of Professional Sales, Sales Management, and either the Professional Sales Practicum or the Professional Sales Internship. In addition to the apparent growth of this concentration, a number of issues motivate this concentration at LSU. First, in a survey of graduating marketing majors, nearly half are placed in sales positions, most in business-to-business markets. Second, in a separate study, undergraduate business majors expressed a strong interest in a Professional Sales Concentration. Third, according to The 2014 Occupational Outlook Handbook, Professional Sales is one the largest and highest paying occupations for college graduates with a B.S. in Marketing. Finally, a number of Businesses in the local community and LSU alumni have expressed interest in a Professional Sales program at LSU.

Due to the drivers in the previous paragraph, the Department of Marketing is proposing the Professional Sales Concentration to prepare LSU Marketing students to be more competitive as hires for these professional sales positions and prepare them for the demands of the discipline. The concentration will require students to complete MKT 3427 (Professional Selling), MKT 4423 (Sales Management), and either MKT 4478 (Professional Sales Practicum) or MKT 4479 (Professional Sales Internship). The former two courses are already taught in the marketing department and teach many of the important fundamentals of professional selling. The two new courses, MKT 4478 and 4479, both provide students the tools to learn how to effectively develop and present a professional sales presentation either through a practicum (MKT 4478) or an internship (MKT 4479) experience. The choice between MKT 4478 and MKT 4479 will be made by the student in conjunction with the internship coordinator for the Department.
Proposed Change for 2014-2015 Catalog

E.J. Ourso College of Business
Department of Marketing

Marketing, B.S.

CRITICAL REQUIREMENTS

SEMESTER 1: “C” or better in ISOS 1102 and ENGL 1001; 2.5 Cumulative GPA.
SEMESTER 2: “C” or better in ECON 2000 and MATH 1431; 2.5 Business and 2.75 Cumulative GPA.
SEMESTER 3: “C” or better in ACCT 2001; ECON 2010; 2.5 Business and 2.75 Cumulative GPA.
SEMESTER 4: ISDS 2000; ACCT 2101; 2.5 Business and 3.0 Cumulative GPA; Admission to the College.
SEMESTER 5: “C” or better in ISDS 2001 and ENGL 2000; 2.5 Business and Cumulative GPA.

Semester 1

- CRITICAL: “C” or better in ISDS 1102 and ENGL 1001; 2.5 Cumulative GPA.
- ECON 2000 Principles of Microeconomics (3)
- ENGL 1001 English Composition (3)
- ISDS 1102 Introduction to Management Information Systems for Business Majors (3)
- MATH 1021 College Algebra (3)
- General Education course - Natural Sciences (3)

Total Semester Hours: 15

Semester 2

- CRITICAL: “C” or better in ECON 2000 and MATH 1431; 2.5 Business and 2.75 Cumulative GPA.
- ACCT 2001 Introductory Financial Accounting (3)
- MATH 1431 Calculus with Business and Economic Applications (3)
- Oral and Written Communication Requirement 1 (3)
- General Education course - Humanities (3)
- General Education course - Natural Sciences (3)

Total Semester Hours: 15
Semester 3

• CRITICAL: “C” or better in ACCT 2001; ECON 2010; 2.5 Business and 2.75 Cumulative GPA.
  
• ACCT 2101 Introductory Managerial Accounting (3) 3
• ECON 2010 Principles of Macroeconomics (3)
• ISDS 2000 Introduction to Business Statistics (3)
• General Education course - Arts (3)
• General Education course - Humanities (3)

Total Semester Hours: 15

Semester 4

• CRITICAL: ISDS 2000; ACCT 2101; 2.5 Business and 3.0 Cumulative GPA; Admission to the College.
  
• ECON 2035 Money, Banking and Macroeconomic Activity (3) 3
• ENGL 2000 English Composition (3)
• ISDS 2001 Statistical Methods and Models (3)
• Oral and Written Communication Requirement 2 (3) 4
• General Education course - Natural Sciences (3) 5

Total Semester Hours: 15

Semester 5

• CRITICAL: “C” or better in ISDS 2001 and ENGL 2000; 2.5 Business and Cumulative GPA.
  
• BLAW 3201 Business Law (3)
• FIN 3716 Financial Management (3)
• ISDS 3115 Introduction to Operations Management (3)
• MGT 3200 Principles of Management (3)
• MKT 3401 Principles of Marketing (3) 3

Total Semester Hours: 15
Semester 6

- MKT 3411 Consumer Analysis and Behavior (3)
- MKT Electives (9)
- Elective (3)

Total Semester Hours: 15

Semester 7

- MKT 3413 Marketing Research (3)
- MKT Elective (3)
- General Education course - Humanities (3)
- Business Elective (3000/4000-level) (3)
- Elective (3)

Total Semester Hours: 15

Semester 8

- MKT 4451 Marketing Management (3)
- MGT 3830 Strategically Managing Organizations (3)
- MKT Elective (3)
- Business Elective (3000/4000-level) (3)
- Elective (3)

Total Semester Hours: 15
120 Total Sem. Hrs.

1 - GENERAL EDUCATION NATURAL SCIENCE REQUIREMENT: If two course sequence is taken in the physical science, the additional three hour course must be taken from the life sciences, and vice versa.

2 - Oral and Written Communication Requirement 1: Choose from CMST 2060, CMST 2061 or CMST 2064. A Communication Intensive (C-I) course may be substituted for the Oral and Written Communication Requirement with permission from an academic advisor.

3 - Business students cannot receive credit for ACCT 2000, ECON 2030, FIN 3715 or ISDS 1100.

4 - Oral and Written Communication Requirement 2: Choose from CMST 2060, CMST 2061 or CMST 4113. A Communication Intensive (C-I) course may be substituted for the Oral and Written Communication Requirement with permission from an academic advisor.

5 - BUSINESS ELECTIVES: to be selected from the 3000 or 4000 level offerings of the following departments: ACCT, BADM, BLAW, ECON, FIN, GBUS, MGT, MKT, and ISDS.

6 - ELECTIVES: See "Electives" under "Degree Requirements of the College."

MARKETING ELECTIVES: see Marketing advisor for list of Marketing Electives.

MARKETING PROFESSIONAL SALES CONCENTRATION ELECTIVES: students must complete MKT 3427 (Professional Selling), MKT 4423 (Sales Management), and either MKT 4478 (Professional Sales Practicum) or MKT 4479 (Professional Sales Internship) to satisfy the requirements of the concentration.
Anna — see Dan’s comments regarding the MKT proposal. They put the courses in footnotes because students do not have to take the courses in any particular order. The department wants students to have as much flexibility as possible. Will this be okay?

I will let you know when I receive a new syllabus from the ACC professor.

Thanks,

Ashley

From: Dan Rice  
Sent: Wednesday, December 11, 2013 11:08 AM  
To: Ashley R Junek; Lydia M Lafleur  
Cc: Richard G Stahl; Ron Niedrich  
Subject: RE: BUS C&C Proposals

Hi Ashley,

I believe the reason that we had them as footnotes was so that students had more flexibility when taking them in two critical ways.

First, (aside from any prerequisites) there isn’t necessarily a set order or semester in which these must be taken the way we had it, but there is in the new format (or at least it appears that way to me).

Second by putting them into the required courses it appears to be adding them to the total hours required. I thought the intention was to allow students to elect to take these sales electives as their marketing electives, not in addition to them. Thus, they would be able to strategically choose their courses to both satisfy their major requirements and at the same time earn their concentration in sales. These changes seem to not accomplish that to me. Am I mistaken? Assuming that I am correct (and there is a chance of approval in the original format), I think I’d prefer to have them in that format. I am however open to suggestions that would allow us to do what I have outlined and be more in line with the typical manner of presentation. Lastly, if this does change, do we need another vote on it? If so, can that happen in time to get it in the catalog for next year?

Best,

Dan

Dan H. Rice, PhD  
Assistant Professor of Marketing  
Louisiana State University, E.J. Ourso College of Business  
Business Education Complex, Room 2119  
Baton Rouge, LA 70803  
E-mail: danrice@lsu.edu  
Phone: (225) 578-8788  
Fax: (225) 578-8616
From: Ashley R Junek  
Sent: Wednesday, December 11, 2013 10:53 AM  
To: Dan Rice; Lydia M Lafleur  
Cc: Richard G Stahl  
Subject: FW: BUS C&C Proposals

Dan and Lydia,

Please see Anna's comments/requests below.

Thanks,

Ashley

From: Anna M Castrillo  
Sent: Wednesday, December 11, 2013 10:12 AM  
To: Ashley R Junek  
Subject: BUS C&C Proposals

Ashley,

The proposals are great, and they also took care of the conditionally approved ECON proposals we had. I just have two questions:

1. See attached for a revision of the new MKT concentration. I thought the proposed concentration should look like this. However, if there is any reason why it should stay the way it was sent, let me know. Required courses are always put in the semester plan not as footnotes.

2. ACCT 4237- I will need a new syllabus that shows a 14 week schedule not a 29 week schedule as well as an out of class expectations statement that is required in all syllabi now. See attached for examples.

Sincerely,

Anna Castrillo, M.A.  
Coordinator  
Office of the University Registrar  
Louisiana State University  
112 Thomas Boyd Hall  
Phone: (225)578-4111  
Fax: (225)578-5991
From: Lawrence Rouse, Chair, Courses and Curricula Committee

At their January 16, 2014 meeting, the Faculty Senate Courses and Curriculum Committee took the following action regarding the MKT proposals:

**MKT 4478**
- The Committee returned the proposal to add MKT 4478. The Committee requested a justification that states how this course is handled in regard to the option of traditional class format or internship format. Internships are usually considered individual study; in this case, it is a traditional course. If one chooses not to take the internship option, do they follow the guidelines of a traditional course? Is the 14 week schedule to be followed by both options or just the traditional course option? How is the internship and traditional course to be graded? What are the grading components? The Committee suggested that this course be separated into two courses to eliminate confusion. However, if the department would like to keep this course as a single course, it will have to provide sufficient answers to the above questions.

**Professional Sales Concentration**
- The Committee tabled the proposal to add the Professional Sales concentration pending the approval of MKT 4478.

Please submit the requested documentation to Anna Castrillo in the Office of the University Registrar at 112 Thomas Boyd Hall or by email at acastr1@lsu.edu.

If you have any questions regarding the request, please feel free to contact me at lrouse@lsu.edu.
REQUEST FOR ADDING, CHANGING, SUSPENDING OR DROPPING UNDERGRADUATE MINOR

Department: School of Art
College: Art & Design
Name of Minor: Visual Communications
Date: 10/11/12

Has this change been discussed with and approved by all departments/colleges affected? Yes (X) No ( ) N/A ( )

ATTACH JUSTIFICATION for all actions: Use separate sheet.
ATTACH RESPONSE from any departments affected (i.e. any department whose course(s) are to be added).

ACTION (check appropriate box):
( ) ADDING:
(X) CHANGING:
( ) SUSPENDING:
( ) DROPPING:

Show the entire new minor using catalog format. Use plain sheets and attach.
List present catalog description which is to be changed (left column) and the changes proposed (right column). In proposed column use strikeout and bold to indicate deletions and additions. Explain all changes adequately on attachment.
Provide an adequate explanation for suspending the minor on plain sheets and attach.
Provide an adequate explanation for dropping the minor on plain sheets and attach.

<table>
<thead>
<tr>
<th>MINOR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>Proposed</td>
<td></td>
</tr>
<tr>
<td>Total semester hours in current minor: 18</td>
<td>Total semester hours in proposed minor: 18</td>
<td></td>
</tr>
<tr>
<td><strong>Visual Communications</strong> (only for students enrolled in the School of Mass Communication)</td>
<td><strong>Visual Communications</strong> (only for students enrolled in the School of Mass Communication)</td>
<td></td>
</tr>
<tr>
<td>To graduate with a minor in visual communications, students must complete ART 1008, 1010, 2050, 2055, 2551, 4561. Laptop computer required. Continuation in the visual communications minor is subject to portfolio review of work from ART 1008 and 1010.</td>
<td>To graduate with a minor in visual communications, students must complete ART 1008, 1010, 2050, 2055, 2551, 4561, and three credit hours from: 1551, 2210, 2220, 2995, 2554, or 4020. Laptop computer required. Continuation in the visual communications minor is subject to portfolio review of work from ART 1008 and 1010.</td>
<td></td>
</tr>
</tbody>
</table>

APPROVALS:

Department Faculty Approval Date 11/19/13
Department Chair's Signature 11/23/13

College Faculty Approval Date 11/24/13
College Dean's Signature 11/24/13

Chair, FS C & C Committee 3/14
Academic Affairs Approval 2/7/14

College Contact: [Please print name.]

College Contact Email: [Please provide email address.]
REQUEST FOR CHANGING THE UNDERGRADUATE VISUAL COMMUNICATIONS MINOR

Justification:

The School of Art requests a change to the list of course offerings for the Visual Communications minor by replacing the required ART 2055 Digital Art II with a broader selection of courses options.

Students from the Manship School of Mass Communication already cover video content in MC 2700, MC 4015, MC 4260 therefore having this course within the minor was repetitive. The addition of ART 1551 Basic Design, ART 2010 Creative Web Development, ART 2220 Moving Image, ART 2995 Basic Photography, ART 2554 Introduction to Graphic Design, or ART 4020 Special Topics in Studio, provides a variety of alternatives within the sequence of course offerings for students pursuing the Visual Communications minor.

This proposal will also alleviate the problem of locating substitutions when courses are in high demand, or if students have taken similar course content in their own area.
Fwd: Change to the Viscom Minor requirements

Approval below for the Viscom Minor changes. I will add a hard copy to your mailbox. Thanks Tom Lynne

Begin forwarded message:

From: Helen S Taylor <htaylor@lsu.edu>
Date: October 29, 2012 10:28:29 AM CDT
To: Lynne Baggett <lbagge2@lsu.edu>
Subject: RE: Change to the Viscom Minor requirements

Sounds great to us. Thanks for allowing our students this opportunity.

Helen S Taylor
Assistant Dean
Manship School of Mass Communication
Louisiana State University
Baton Rouge, LA 70803
225-578-2336

This electronic message, including any attachments, is confidential and intended solely for the use of the intended recipient(s). This message may contain information that is privileged or otherwise protected from disclosure by applicable law. Any unauthorized disclosure, dissemination, use or reproduction is strictly prohibited. If you have received this message in error, please delete it and notify the sender immediately.

From: Lynne Baggett
Sent: Friday, October 26, 2012 12:27 PM
To: Helen S Taylor
Subject: Fwd: Change to the Viscom Minor requirements

Hello Helen
I'm following up on this email to see if your faculty reached a decision about the proposed school of art change to the Visual Communications minor. The School of Art approved this today (pending your departments approval) and we are waiting to submit to the College of Art and Design.

Best
Lynne

Begin forwarded message:

From: lynnebaggett <lbagge2@lsu.edu>
Date: October 11, 2012 9:27:26 AM CDT
To: Helen S Taylor <htaylor@lsu.edu>
Cc: School of Art Director <sadir@lsu.edu>, Thomas M Neff <tneff@lsu.edu>, Derick Ostrenko <dostrenko@gmail.com>, Courtney Barr <cbarr3@lsu.edu>
Subject: Re: Change to the Viscom Minor requirements
Hi Helen

I have an update on the Viscom Minor as it was tabled last semester due to changes to the Digital Art concentration within the School.

I have attached the form we are proposing for the Minor in Visual Communications. It is addressing the same issue of the repetitive course content in ART 2055 with some of your own courses. (MC 2700, MC 4015, MC 4260).

The prior proposal had ART 4560 as the solution, however ART 4060 will not be offered on a regular basis and will be replaced by new courses proposed by Digital Art: ART 2010 Creative Web Systems, and ART 2220 Moving Image. These courses will be offered regularly in the Digital Art concentration. We have also expanded the course offerings to include regularly scheduled courses 2995 Basic Photography, 1551 Basic Design (summer course), 2554 Introduction to Graphic Design. These courses will provide more options for students to take as an alternative to the deleted ART 2055. I trust this meets with your approval.

To graduate with a minor in visual communications, students must complete ART 1008, 1010, 2050, 2055, 2551, 4561, and three credit hours from: 1551, 2210, 2220, 2995 or 2554. Laptop computer required. Continuation in the visual communications minor is subject to portfolio review of work from ART 1008 and 1010.

Email approval is sufficient for us to forward to the College and University Curriculum Committee. Let me know if your department has any other questions. We envision this material will be in place by the end of the semester.

Best
Lynne

On Mar 14, 2012, at 10:28 AM, Helen S Taylor wrote:

That is fine with us. When do you think the minor degree program will be updated in the computer???

Helen S Taylor
Assistant Dean
Manship School of Mass Communciation
Louisiana State University
Baton Rouge, LA 70803
225-578-2336

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Hello Helen
The School of Art is proposing a change to the VISCOM Minor. We believe this change will omit the current problem of course content duplication. The content of ART 2055 Digital Art II duplicated material that many of your students had already covered in MC 2700, MC 3998, MC 4015, MC 4260. The proposed course ART 4560 Interactive Multi Media for Visual Communications is the most suitable course replacement. (it used to be a requirement within the old VISCOM Minor, but was not available on a regular basis) the proposed Art 4560 is offered each fall semester.

Email approval is sufficient for us to forward to the College and University Curriculum Committee. Let me know if your department has any other questions.

Many thanks
Lynne

Lynne Baggett, Professor
Area Coordinator, Graphic Design

Louisiana State University
School of Art
320 Art Building
Baton Rouge, LA 70803

phone: (225) 578 1793
lbagge2@lsu.edu

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