Missouri State University  
Curricular Proposal Program Change or Deletion

Department  Biology  
Date  4-1-2013

Title of Program Affected  Biology (comprehensive) Bachelor of Science

Major  X  Comprehensive  Major  Option  Minor  Certificate  Certification  Academic Rules  Other

| Present Catalog Description |
| (Cut and paste from web catalog or use most recent description.) |
| See attachment 1 |

| Revised Catalog Description |
| (Cut and paste description again, strikethrough all deletions, and insert and bold new information.) |
| See attachment 1 |

What is changing? Check all boxes that apply.

-  Title change
-  Course changes of under 18 hours
-  Course changes of 18 hours or more
-  From option to program (major)
-  From program (major) to option
-  Program or option deletion
-  Other

Update course lists in several sub-requirements and clarify language.

REASON FOR PROPOSED CHANGE

Three new biology courses (BIO 305, 509, and 547) have been created since the last time this degree was updated, and these
need to be added to the appropriate sub-requirements within the three options. The Department of Computer Sciences has
redesigned CSC 130 and 131, and CSC 130 is now more appropriate for students completing the Environmental Biology and
Evolution option within this degree. The language describing the Chemistry requirements has been clarified.

COMPLETE NEW CATALOG INFORMATION (Typed)

See Attachment 2

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty Senate. Forward three typed, originally signed
forms to one of the following (please check all that apply and send to first council/committee marked).

If the program needs to go through more than one committee/council, forward one additional form for each additional
council/committee marked.

-  X  College Council  (Send all undergraduate program changes through College Council as first step before
forwarding either to PEC, CEGEP, or directly to Faculty Senate)

-  Professional Education Committee  (Considers all program changes affecting BS and MS in Education and Educational
Specialist degrees)

-  Committee on General Education and  (Considers all general education and multi-college program changes)
  Intercollegiate Programs

-  Graduate Council  (Considers all graduate-level program changes)

Signature  
Department Head  Date  4-1-13

(Route on Reverse Side)  FS Program Change - 9/10/2010
## Attachment 1
Curricular Proposal – Program Change
Biology, BS, comprehensive 4/1/13

<table>
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<tr>
<th>Present Catalog Description</th>
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### A. General Education Requirements - see General Education Program and Requirements section of catalog

#### B. Major Requirements (37-46 hours)

1. BIO 121(4), 122(4), 235(4), 494(1), 550(3)
2. PHY 123(4) and 124(4) or PHY 203(5) and 204(5)
3. MTH 138(5) or 181(3), or eligibility for MTH 261 on mathematics placement test
4. BIO 310(5) or 320(4) or 361(4) or 544(4); consult options below before selecting course
5. CHM 105(5) or 160(4) and 161(1); consult options below before selecting course
6. CHM 200(5) or 302(5) or 342(5); consult options below before selecting course

7. Complete requirements in one of the following options*:
   Note: With approval of advisor, up to 3 hours of the following can be substituted for one of the BIO courses listed in any option: BIO 300, 399, 499, or 597.

   a. **Environmental Biology and Evolution (33-38 hours)**
      
      1. Required courses: BIO 369(4), 515(3)
      2. Complete courses in biodiversity and evolution totaling at least 3 hours from the following: BIO 334(3), 339(2), 370(4), 371(3), 380(5), 530(3), 571(4), 573(3), 574(2), 575(3), 576(3), 577(3); the following courses taught during the summer at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi: BIO 534(2), 535(1), 555(3), 556(3), 587(3), 588(3)
      3. Complete courses in population biology totaling at least 3 hours from the following: BIO 436(4), 532(3), 540(4), 560(3), 563(3), 587(4), 578(4), 584(3), 589(3); the following courses taught during the summer at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi: BIO 557(2), 558(2)
      4. Complete courses in community/ecosystem biology totaling at least 3 hours from the following: BIO 373(3), 485(1-3), 508(3), 533(3), 539(2), 562(4), 576(4); the following courses taught during the summer at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi: BIO 537(2), 538(2), 565(3), 566(2)
      5. Students must take at least one biology course with a substantial field component. A course used to satisfy this requirement also may be counted toward the biodiversity, population biology, and community/ecosystem biology concentration areas described above. Complete one of the following: BIO 334(3), 339(2), 370(4), 436(4), 527(1-4), 562(3), 574(2), 575(3), 576(3), 577(3), any biology course taught at the Gulf Coast Research Laboratory, any biology course taught at the Bull Shoals Field station or another field station (with the approval of your advisor)
6. Complete 0-7 hours of elective BIO courses at the level of 300 or above to total a minimum of 43 hours in biology

7. Complete at least one of the following related requirements in Mathematics, Statistics, or Computer programming: MTH 261(5) or 287(3) or 546(3) or 547(3) or CSC 125(4) or CSC 131(4) or PSY 527(3)


9. Complete one of the following related science courses: AGN 215(3), ANT 375(3); CHM 260(3) or 460(3); GLG 171(3), GRY 361(3)

10. Complete one of the following related social science courses: ECO 540(3), LAW 537(3), PHI 302(3), PLS 555(3), PSY 379(3)

b. Microbiology and Biotechnology (33-42 hours)

1. Required courses: BIO 310(5), 320(4)

2. Complete 21 additional hours in BIO courses with a minimum of 18 hours from the following: BIO 355(4), 508(3), 511(4), 512(3), 515(3), 517(4), 518(2), 520(3), 530(3), 540(4); BMS 524(3) may be substituted for one of these courses; CHM 302(5) or 502(4) or 505(4) may be substituted for one of these courses

3. Required courses in Chemistry: CHM 160(4), 161(1), 170(3), 171(1); CHM 200(5), or CHM 342(5) and 343(5), or CHM 342(5) and 344(3); CHM 352(3), or CHM 452(3) and 552(3)

4. Complete a minimum of 5 hours in management from: BIO 373(3), 485(1-3), 532(3), 562(4), 569(3)

5. Complete two courses in ecology and evolution from: BIO 436(4), 515(3), 539(2), 563(3), 567(4), 578(4), 579(4), 584(3)

6. Complete one course in human dimensions from the following: AGN 335(3), CRM 210(3), ECO 540(3), GRY 106(3), GRY 351(2), PHI 302(3), PLS 555(3), LAW 537(3)

7. Complete one course in earth/environmental science: AGN 215(3), CHM 260(3), GLG 110(4), GRY 142(4)

C. General Baccalaureate Degree Requirements - see General Baccalaureate Degree Requirements section of catalog

approval of your advisor

6. Complete 0-7 hours of elective BIO courses at the level of 300 or above to total a minimum of 43 hours in biology

7. Complete at least one of the following related requirements in Mathematics, Statistics, or Computer programming: MTH 261(5) or 287(3) or 546(3) or 547(3) or CSC 125(4) or CSC 131(4) or PSY 527(3)


9. Complete one of the following related science courses: AGN 215(3), ANT 375(3); CHM 260(3) or 460(3); GLG 171(3), GRY 361(3)

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b. Microbiology and Biotechnology (33-42 hours)

1. Required courses: BIO 310(5), 320(4)

2. Complete 21 additional hours in BIO courses with a minimum of 18 hours from the following: BIO 355(4), 508(3), 511(4), 512(3), 515(3), 517(4), 518(2), 520(3), 530(3), 540(4); BMS 524(3) may be substituted for one of these courses; CHM 302(5) or 502(4) or 505(4) may be substituted for one of these courses


4. Complete a minimum of 5 hours in management from: BIO 373(3), 485(1-3), 532(3), 562(4), 569(3)

5. Complete two courses in ecology and evolution from: BIO 436(4), 515(3), 539(2), 563(3), 567(4), 578(4), 579(4), 584(3)

6. Complete one course in human dimensions from the following: AGN 335(3), CRM 210(3), ECO 540(3), GRY 106(3), GRY 351(2), PHI 302(3), PLS 555(3), LAW 537(3)

7. Complete one course in earth/environmental science: AGN 215(3), CHM 260(3), GLG 110(4), GRY 142(4)

C. General Baccalaureate Degree Requirements - see General Baccalaureate Degree Requirements section of catalog
COMPLETE CATALOG INFORMATION (typed):

**Biology (Comprehensive)**
Bachelor of Science

A. General Education Requirements - see General Education Program and Requirements section of catalog

B. Major Requirements (37-46 hours)
   1. BIO 121(4), 122(4), 235(4), 494(1), 550(3)
   2. PHY 123(4) and 124(4) or PHY 203(5) and 204(5)
   3. MTH 136(5) or 181(3), or eligibility for MTH 261 on mathematics placement test
   4. BIO 310(5) or 320(4) or 361(4) or 544(4); consult options below before selecting course
   5. CHM 105(5), or CHM 160(4) and 161(1); consult options below before selecting course
   6. CHM 200(5) or 302(5) or 342(5); consult options below before selecting course
   7. Complete requirements in one of the following options*: Note: With approval of advisor, up to 3 hours of the following can be substituted for one of the BIO courses listed in any option: BIO 300, 399, 499, or 597.
   a. **Environmental Biology and Evolution** (33-38 hours)
      1. Required courses: BIO 369(4), 515(3)
      2. Complete courses in biodiversity and evolution totaling at least 3 hours from the following: BIO 334(3), 339(2), 370(4), 371(3), 380(5), 530(3), 571(4), 573(3), 574(2), 575(3), 576(3), 577(3); the following courses taught during the summer at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi: BIO 534(2), 535(1), 555(3), 566(3), 587(3), 588(3)
      3. Complete courses in population biology totaling at least 3 hours from the following: BIO 436(4), 532(3), 540(4), 560(3), 563(3), 567(4), 579(4), 584(3), 589(3); the following courses taught during the summer at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi: BIO 557(2), 558(2)
      4. Complete courses in community/ecosystem biology totaling at least 3 hours from the following: BIO 373(3), 485(1-3), 506(3), 509(4), 533(3), 539(2), 547(3), 562(4), 579(4); the following courses taught during the summer at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi: BIO 537(2), 538(2), 553(3), 556(2)
      5. Students must take at least one biology course with a substantial field component. A course used to satisfy this requirement also may be counted toward the biodiversity, population biology, and community/ecosystem biology concentration areas described above. Complete one of the following: BIO 334(3), 339(2), 370(4), 436(4), 509(4), 527(1-4), 562(3), 574(2), 575(3), 579(3), 577(3); any biology course taught at the Gulf Coast Research Laboratory, any biology course taught at the Bull Shoals Field station or another field station (with the approval of your advisor)
      6. Complete 0-7 hours of elective BIO courses at the level of 300 or above to total a minimum of 43 hours in biology
      7. Complete at least one of the following related requirements in Mathematics, Statistics, or Computer programming: MTH 261(5) or 287(3) or 546(3) or 547(3) or CSC 125(4) or CSC 130(3) or PSY 527(3)
      8. **Related requirements in Chemistry:** CHM 160(4), 161(1), 170(3), 171(1)
      9. Complete one of the following related science courses: AGN 215(3), ANT 375(3); CHM 260(3) or 460(3); GLG 171(3), GRY 351(3)
      10. Complete one of the following related social science courses: ECO 540(3), LAW 537(3), PHI 302(3), PLS 555(3), PSY 379(3)
   b. **Microbiology and Biotechnology** (33-42 hours)
      1. Required courses: BIO 310(5), 320(4)
      2. Complete 21 additional hours in BIO courses with a minimum of 18 hours from the following: BIO 355(4), 506(3), 511(4), 512(3), 515(3), 517(4), 518(2), 620(3), 630(3), 540(4); BMS 524(3) may be substituted for one of these courses; CHM 302(5) or 502(4) or 505(4) may be substituted for one of these courses
      3. Related requirements in Chemistry: CHM 160(4), 161(1), 170(3), 171(1); CHM 200(5), or CHM 342(5) and 343(5), or CHM 342(5) and 344(3); CHM 352(3), or CHM 452(3) and 552(3)
   c. **Wildlife Biology** (30-47 hours)
      1. Required courses: BIO 320(4) or 361(4), 369(4)
      2. Complete two courses in plant biology from: BIO 334(3), 339(2), 530(3), 544(4)
      4. Complete a minimum of 5 hours in management from: BIO 373(3), 485(1-3), 509(4), 532(3), 562(4), 589(3)
      5. Complete two courses in ecology and evolution from: BIO 436(4), 515(3), 539(2), 563(3), 567(4), 578(4), 579(4), 584(3)
      6. Complete one course in human dimensions from the following: AGN 335(3), BIO 547(3), CRM 210(3), ECO 540(3), GRY 106(3), GRY 351(2), PHI 302(3), PLS 555(3), LAW 537(3)
      7. Complete one course in earth/environmental science: AGN 215(3), CHM 260(3), GLG 110(4), GRY 142(4)

C. General Baccalaureate Degree Requirements - see General Baccalaureate Degree Requirements section of catalog
Missouri State University
Curricular Proposal Course Change or Deletion

Department  Biology  Date  4-1-2013

Check one: This is a change to  X  an existing COURSE

Present Catalog Description
(Cut and paste from web catalog or use most recent description.)

BIO 515 Evolution
Prerequisite: BIO 235 and MTH 135 or higher. A survey of modern evolutionary biology, including the evidence that supports the theory of evolution, the natural processes that cause evolution, patterns and mechanisms of speciation, and methods for estimating evolutionary relationships. May be taught concurrently with BIO 616. Cannot receive credit for both BIO 618 and BIO 515. 3(3-0) F,S

Revised Catalog Description
(Cut and paste description again, strikethrough all deletions, and insert and bold new information.)

BIO 515 Evolution
Prerequisite: BIO 235 or BMS 231 or BMS 230, and MTH 135 or higher. A survey of modern evolutionary biology, including the evidence that supports the theory of evolution, the natural processes that cause evolution, patterns and mechanisms of speciation, and methods for estimating evolutionary relationships. May be taught concurrently with BIO 616. Cannot receive credit for both BIO 616 and BIO 515. 3(3-0) F,S

What is changing? Check all boxes that apply.

☐ Course Deletion  ☐ Course Code  ☐ Course Number  ☐ Title  ☐ Prerequisite
☐ Credit Hours/Contact Hours  ☐ Periodicity  ☐ Description

Reason for Proposed Change or Deletion

BMS 231 and 230 are suitable alternative prerequisites for this course and are being added.

How Did You Determine the Need For This Change or Deletion?

I am frequently asked to provide prerequisite overrides by CMB majors who have completed BMS 231 or BMS 230.

COMPLETE NEW CATALOG INFORMATION (typed)

BIO 515 Evolution
Prerequisite: BIO 235 or BMS 231 or BMS 230, and MTH 135 or higher. A survey of modern evolutionary biology, including the evidence that supports the theory of evolution, the natural processes that cause evolution, patterns and mechanisms of speciation, and methods for estimating evolutionary relationships. May be taught concurrently with BIO 616. Cannot receive credit for both BIO 616 and BIO 515. 3(3-0) F,S

☐ X  Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

Substantive Change: Department routes according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Forward three originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If proposal needs to go through more than one council/committee, forward one additional form for each additional council/committee marked. See Senate Action 11-93/94 for definitions of substantive/non-substantive changes.

☐ College Council  ☐ Professional Education Committee  ☐ Committee on General Education and Intercollegiate Programs  ☐ Graduate Council

(All substantive course changes numbered 100-599 must go through College Council first. After approval, College Council will forward appropriate number of copies to the next committee/council or directly to the Faculty Senate if no further committee approval is needed. The last level of committee/council will forward two originally signed copies to the Faculty Senate.)

(Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)

(Considers all substantive course changes for General Education and Intercollegiate Program proposals.)

(Considers all 600-900 level course changes.)

Signature  Date  4-10-10

(Routing on Reverse Side)  FS Course Change - 9/10/2010
Missouri State University
Curricular Proposal Course Change or Deletion

Department: Biology                                Date: April 2, 2013

Check one:  This is a change to  _X_ an existing COURSE

____ an existing REGULAR (i.e. permanent) SECTION of a variable content course

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BIO 540 Applications of Molecular Markers
Prerequisite: BIO 235 and permission. Introduction to the use of molecular markers in biological research. Topics covered include methods for identifying genetic variation at the molecular level (protein electrophoresis, automatic DNA sequencing, RAPDs, RFLPs, AFLPs, microsatellites) and their applications to research in systematics, ecology, evolution, conservation biology, forensics, and gene mapping. Students will complete research projects using one or more of the techniques learned. Supplemental course fee. May be taught concurrently with BIO 640. Cannot receive credit for both BIO 640 and BIO 540. 4(2-4) FO

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<td>☐ Credit Hours/Contact Hours  ☐ Periodicity</td>
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Reason for Proposed Change or Deletion

- At present students are granted permission to take this course primarily based on their grade in the prerequisite course BIO 235. The proposed change will clarify for students the criteria on which permission is granted and will simplify the registration process by eliminating the need to seek an instructor override. From experience we know that most students who earn a grade of C or lower in BIO 235 (Principles of Genetics) will struggle with the more conceptual and mathematical material in BIO 540. By selecting students who already have a good grasp of genetic concepts, we are able to teach a more engaging course and reduce the number of students who will perform poorly in BIO 540.

- The list of specific types of markers and assay techniques has been eliminated from the description because the techniques that are available are in constant flux as the technology improves.

- For clarification, the ambiguous term “systematics” has been replaced with “phylogenetics”.

- The list of applications has been re-ordered to reflect the amount of time devoted to each, with those receiving more extensive coverage listed first. This provides the student with a more accurate overview of the course content.

How Did You Determine the Need For This Change or Deletion? Explained above.

COMPLETE NEW CATALOG INFORMATION (typed)

BIO 540 Applications of Molecular Markers
Prerequisite: Grade of B or higher in BIO 235. Introduction to the use of molecular markers in biological research. Topics covered include methods for identifying genetic variation at the molecular level and their applications to gene discovery, gene mapping, phylogenetics, forensics, conservation biology, and research in ecology and evolution. Students will complete research projects using one or more of the techniques learned. Supplemental course fee. May be taught concurrently with BIO 640. Cannot receive credit for both BIO 640 and BIO 540. 4(2-4) FO

X. Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

Substantive Change: Department routes according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Forward three originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If proposal needs to go through more than one council/committee, forward one additional form for each additional council/committee marked. See Senate Act 11-93/94 for definitions of substantive/non-substantive changes.

- _College Council_  
  (All substantive course changes numbered 100-599 must go through College Council first. After approval, College Council will forward appropriate number of copies to the next committee/council or directly to the Faculty Senate if no further committee approval is needed. The last level of committee/council will forward two originally signed copies to the Faculty Senate.)

- _Professional Education Committee_  
  (Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)

- _Committee on General Education and Intercollegiate Programs_  
  (Considers all substantive course changes for General Education and Intercollegiate Program proposals.)

- _Graduate Council_  
  (Considers all 600-900 level course changes.)

Signature: [Signature]
Department Head

Date: 4-4-13

(Routing on Reverse Side)  
FS Course Change - 9/10/2010
Missouri State University  
Curricular Proposal Course Change or Deletion

Department: Biology  
Date: 4-1-2013

Check one:  This is a change to  
☐ an existing COURSE  
☒ an existing REGULAR (i.e. permanent) SECTION of a variable content course

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| BIO 551 Advanced Statistical Methods for Biologists  
  Prerequisite: BIO 550. The design and analysis of biological experiments, with an emphasis on the choice and interpretation of inferential statistics. Topics covered include causal inference, statistical power, general linear models, repeated measures designs, log-linear models, nonparametric procedures, and computer-intensive techniques. The use of computer software to analyze real data sets from the biological literature is emphasized. May be taught concurrently with BIO 651. Cannot receive credit for both BIO 551 and BIO 551. 2(1-2) S | BIO 551 Advanced Statistical Methods Experimental Design for Biologists  
  Prerequisite: BIO 550. The design and analysis of biological experiments, with an emphasis on the choice and interpretation of inferential statistics. Topics covered include causal inference, statistical power, general linear models, and repeated measures designs, log-linear models, nonparametric procedures, and computer-intensive techniques. The use of computer software to analyze real data sets from the biological literature is emphasized. May be taught concurrently with BIO 651. Cannot receive credit for both BIO 551 and BIO 551. 2(1-2) S |

What is changing? Check all boxes that apply.  
☐ Course Deletion  ☐ Course Code  ☐ Course Number  ☐ Title  ☐ Prerequisite  ☐ Credit Hours/Contact Hours  ☐ Periodicity  ☐ Description

Reason for Proposed Change or Deletion

The modified course description more accurately reflects the content of this course as it has been taught in recent years and will continue to be taught in the future. Some topics listed in the current course description are no longer covered, allowing the primary topics to be covered in greater depth. The change in course title reflects the fact that courses and textbooks covering these topics traditionally are called "Experimental Design".

How Did You Determine the Need For This Change or Deletion?

Clarification of the course content was required.

COMPLETE NEW CATALOG INFORMATION (typed)

BIO 551 Experimental Design for Biologists  
Prerequisite: BIO 550. The design and analysis of biological experiments, with an emphasis on the choice and interpretation of inferential statistics. Topics covered include causal inference, statistical power, general linear models, and repeated measures designs. The use of computer software to analyze real data sets from the biological literature is emphasized. May be taught concurrently with BIO 651. Cannot receive credit for both BIO 551 and BIO 551. 2(1-2) S

☐ Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 500- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

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☐ College Council

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Professional Education Committee

Committee on General Education and Intercollegiate Programs

Graduate Council

Signature ____________________________
Department Head

Date 4-4-13

(Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)

(Considers all substantive course changes for General Education and Intercollegiate Program proposals.)

(Considers all 600-900 level course changes.)

(Routing on Reverse Side)

FS Course Change - 9/10/2010
Missouri State University
Curricular Proposal Course Change or Deletion

Department: Biology
Date: April 2, 2013

Check one: This is a change to ___X___an existing COURSE
___ an existing REGULAR (i.e. permanent) SECTION of a variable content course

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| BIO 640 App of Molecular Markers  
Prerequisite: permission. Recommended Prerequisite: genetics course. Introduction to the use of molecular markers in biological research. Topics covered include methods for identifying genetic variation at the molecular level (protein electrophoresis, automatic DNA sequencing, RAPDs, RFLPs, AFLPs, microsatellites) and their applications to research in systematics, ecology, evolution, conservation biology, forensics, and gene mapping. Students will complete research projects using one or more of the techniques learned. Supplemental course fee. May be taught concurrently with BIO 540. Cannot receive credit for both BIO 540 and BIO 640. 4(2-4) FO | BIO 640 App Applications of Molecular Markers  
Prerequisite: permission. Recommended Prerequisite: genetics course. Introduction to the use of molecular markers in biological research. Topics covered include methods for identifying genetic variation at the molecular level (protein electrophoresis, automatic DNA sequencing, RAPDs, RFLPs, AFLPs, microsatellites) and their applications to gene discovery, gene mapping, phylogenetics, forensics, conservation biology, and research in ecology and evolution research in systematics, ecology, evolution, conservation biology, forensics, and gene mapping. Students will complete research projects using one or more of the techniques learned. Supplemental course fee. May be taught concurrently with BIO 540. Cannot receive credit for both BIO 540 and BIO 640. 4(2-4) FO |

What is changing? Check all boxes that apply.

- [ ] Course Deletion
- [ ] Course Code
- [ ] Credit Hours/Contact Hours
- [ ] Course Number
- [ ] Periodicity
- [X] Title
- [X] Prerequisite
- [X] Description

Reason for Proposed Change or Deletion

- The new title is actually the original title that was approved for this course. When this course was entered into the catalog there was an error of transcription, with “Applications” being shortened to “App”.
- There is no reason to require graduate students to seek permission before enrolling in this course. When this course was first created the cost of the laboratory dictated that the class be capped at a small number, but the lab has since been restructured to eliminate this problem.
- The list of specific types of markers and assay techniques has been eliminated from the description because the techniques that are available are in constant flux as the technology improves.
- For clarification, the ambiguous term “systematics” has been replaced with “phylogenetics”.
- The list of applications has been re-ordered to reflect the amount of time devoted to each, with those receiving more extensive coverage listed first. This provides the student with a more accurate overview of the course content.

How Did You Determine the Need For This Change or Deletion? Explained above.

COMPLETE NEW CATALOG INFORMATION (typed)

BIO 640 Applications of Molecular Markers

Recommended Prerequisite: genetics course. Introduction to the use of molecular markers in biological research. Topics covered include methods for identifying genetic variation at the molecular level and their applications to gene discovery, gene mapping, phylogenetics, forensics, conservation biology, and research in ecology and evolution. Students will complete research projects using one or more of the techniques learned. Supplemental course fee. May be taught concurrently with BIO 540. Cannot receive credit for both BIO 540 and BIO 640. 4(2-4) FO

__X__ Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

Substantive Change: Department routes according to ART VI, SEC 38(1-4) of Bylaws of the Faculty. Forward three originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If proposal needs to go through more than one council/committee, forward one additional form for each additional council/committee marked. See Senate Action 11-93/94 for definitions of substantive/non-substantive changes.

__ College Council

__ Professional Education Committee

__ Committee on General Education and Intercollegiate Programs

__ Graduate Council

(All substantive course changes numbered 100-599 must go through College Council and/or Professional Education Committee and/or Committee on General Education and Intercollegiate Programs. For changes numbered 600-900 level course changes, committee approval and signature is not required. These changes are handled by the Department Head.)

Signature ___________________________ Date __4-4-13___

(Routing on Reverse Side)
Missouri State University  
Curricular Proposal Course Change or Deletion

Department  Biology  
Date  4-1-2013

Check one: This is a change to  X  an existing COURSE  
___ an existing REGULAR (i.e. permanent) SECTION of a variable content course

<table>
<thead>
<tr>
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<tbody>
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<td>(Cut and paste from web catalog or use most recent description.)</td>
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</tr>
<tr>
<td>BIO 551 Advanced Statistical Methods for Biologists</td>
<td>BIO 551 Advanced Statistical Methods Experimental Design for Biologists</td>
</tr>
<tr>
<td>Recommended Prerequisite: statistics course. The design and analysis of biological experiments, with an emphasis on the choice and interpretation of inferential statistics. Topics covered include causal inference, statistical power, general linear models, repeated measures designs, log-linear models, nonparametric procedures, and computer-intensive techniques. The use of computer software to analyze real data sets from the biological literature is emphasized. May be taught concurrently with BIO 551. Cannot receive credit for both BIO 551 and BIO 651. 2(1-2) S</td>
<td>Recommended Prerequisite: statistics course. The design and analysis of biological experiments, with an emphasis on the choice and interpretation of inferential statistics. Topics covered include causal inference, statistical power, general linear models, and repeated measures designs, log-linear models, nonparametric procedures, and computer-intensive techniques. The use of computer software to analyze real data sets from the biological literature is emphasized. May be taught concurrently with BIO 551. Cannot receive credit for both BIO 551 and BIO 651. 2(1-2) S</td>
</tr>
</tbody>
</table>

What is changing? Check all boxes that apply.  
☐ Course Deletion  ☐ Course Code  ☐ Course Number  ☐ Credit Hours/Contact Hours  ☐ Periodicity  ☐ Title  ☐ Prerequisite  ☐ Description

Reason for Proposed Change or Deletion

The modified course description more accurately reflects the content of this course as it has been taught in recent years and will continue to be taught in the future. Some topics listed in the current course description are no longer covered, allowing the primary topics to be covered in greater depth. The change in course title reflects the fact that courses and textbooks covering these topics traditionally are called “Experimental Design”.

How Did You Determine the Need For This Change or Deletion?

Clarification of the course content is required.

COMPLETE NEW CATALOG INFORMATION (typed)

BIO 551 Experimental Design for Biologists

Recommended Prerequisite: statistics course. The design and analysis of biological experiments, with an emphasis on the choice and interpretation of inferential statistics. Topics covered include causal inference, statistical power, general linear models, and repeated measures designs. The use of computer software to analyze real data sets from the biological literature is emphasized. May be taught concurrently with BIO 551. Cannot receive credit for both BIO 551 and BIO 651. 2(1-2) S

☐ Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

Substantive Change: Department routes according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Forward three originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If proposal needs to go through more than one council/committee, forward one additional form for each additional council/committee marked. See Senate Action 11-93/94 for definitions of substantive/non-substantive changes.

☐ College Council  
(All substantive course changes numbered 100-599 must go through College Council first. After approval, College Council will forward appropriate number of copies to the next committee/council or directly to the Faculty Senate if no further committee approval is needed.)
Professional Education Committee
Committee on General Education and Intercollegiate Programs
Graduate Council

Signature: [Signature]
Department Head

Date: 4-4-13

The last level of committee/council will forward two originally signed copies to the Faculty Senate.
(Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)
(Considers all substantive course changes for General Education and Intercollegiate Program proposals.)
(Considers all 600-900 level course changes.)

(Routing on Reverse Side)

FS Course Change - 9/10/2010
Missouri State University
Curricular Proposal Program Change or Deletion

Department  Computer Science                          Date 4/2/2013

Title of Program Affected  Computer Science (Non-Comprehensive) Bachelor of Science

<table>
<thead>
<tr>
<th>Major</th>
<th>Comprehensive Major</th>
<th>Option</th>
<th>Minor</th>
<th>Certificate</th>
<th>Certification</th>
<th>Academic Rules</th>
<th>Other</th>
</tr>
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<tbody>
<tr>
<td>X</td>
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</tbody>
</table>

Present Catalog Description
(Cut and paste from web catalog or use most recent description.)

Revised Catalog Description
(Cut and paste description again, strikethrough all deletions, and insert and bold new information.)

Attached

What is changing? Check all boxes that apply.

- Title change
- X. Course changes of under 18 hours
- __ Course changes of 18 hours or more

From option to program (major)  Other

From program (major) to option  Program or option deletion

REASON FOR PROPOSED CHANGE
1. Accrediting agency and professional standards body have essentially eliminated material of PHY 220 within a CS curriculum.
2. Professional practice and expectation now includes material of CSC 365.
3. Note is no longer true.

These changes maintain number of expected number of hours in all categories.

COMPLETE NEW CATALOG INFORMATION (Typed)

Attached

Total Hours 74 majors hours in degree

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty Senate. Forward three typed, originally signed forms to one of the following (please check all that apply and send to first council/committee marked).

If the program needs to go through more than one committee/council, forward one additional form for each additional council/committee marked.

X. College Council
(Send all undergraduate program changes through College Council as first step before forwarding either to PEC, CGEIP, or directly to Faculty Senate)

Professional Education Committee
(Considers all program changes affecting BS and MS in Education and Educational Specialist degrees)

Committee on General Education and Intercollegiate Programs
(Considers all general education and multi-college program changes)

Graduate Council
(Considers all graduate-level program changes)

Signature  

Date 4/3/13

(Routing on Reverse Side)  FS Program Change - 9/10/2010
Present Catalog Description

Computer Science (Non-Comprehensive)
Bachelor of Science
A. General Education Requirements – see General Education Program and Requirements section of catalog
B. Major Requirements
1. CSC 130(3), 131(4), 232(4), 320(4), 325(3), 333(4), 335(3), 365(3), 450(3), 460(3), 482(1)
2. Select nine additional hours from eligible CSC courses numbered 300 or above with at least six hours from courses other than CSC 399 and CSC 596.
3. Related science and mathematics requirements: MTH 215(3), 261(5)*, 280(5)*, MTH 345(3) or 540(3); PHY 203(5)*, 204(5), 220(4); and one of the following courses: BIO 121(4)*, BMS 110(4)*, CHM 160(4)*, GLG 110(4)*, GRY 135(4)*, GRY 142(4)*

*May also count toward General Education Requirements
C. Minor Required (Note: The major requirements for Computer Science automatically satisfy the requirements for a minor in Mathematics, and all but two hours of the requirements for a minor in Physics.)
D. General Baccalaureate Degree Requirements – see General Baccalaureate Degree Requirements section of catalog.

Revised Catalog Description

Computer Science (Non-Comprehensive)
Bachelor of Science
A. General Education Requirements – see General Education Program and Requirements section of catalog
B. Major Requirements
1. CSC 130(3), 131(4), 232(4), 320(4), 325(3), 333(4), 335(3), 365(3), 450(3), 460(3), 482(1)
2. Select nine additional hours from eligible CSC courses numbered 300 or above with at least six hours from courses other than CSC 399 and CSC 596.
3. Related science and mathematics requirements: MTH 215(3), 261(5)*, 280(5)*, MTH 345(3) or 540(3); PHY 203(5)*, 204(5), 220(4); and one of the following courses: BIO 121(4)*, BMS 110(4)*, CHM 160(4)*, GLG 110(4)*, GRY 135(4)*, GRY 142(4)*

*May also count toward General Education Requirements
C. Minor Required (Note: The major requirements for Computer Science automatically satisfy the requirements for a minor in Mathematics, and all but two hours of the requirements for a minor in Physics.)
D. General Baccalaureate Degree Requirements – see General Baccalaureate Degree Requirements section of catalog.

COMPLETE NEW CATALOG INFORMATION

Computer Science (Non-Comprehensive)
Bachelor of Science
A. General Education Requirements – see General Education Program and Requirements section of catalog
B. Major Requirements
1. CSC 130(3), 131(4), 232(4), 320(4), 325(3), 333(4), 335(3), 365(3), 450(3), 460(3), 482(1)
2. Select nine additional hours from eligible CSC courses numbered 300 or above with at least six hours from courses other than CSC 399 and CSC 596.
3. Related science and mathematics requirements: MTH 215(3), 261(5)*, 280(5)*, MTH 345(3) or 540(3); PHY 203(5)*, 204(5); and one of the following courses: BIO 121(4)*, BMS 110(4)*, CHM 160(4)*, GLG 110(4)*, GRY 135(4)*, GRY 142(4)*

*May also count toward General Education Requirements
C. Minor Required (Note: The major requirements for Computer Science automatically satisfy the requirements for a minor in Mathematics.
D. General Baccalaureate Degree Requirements – see General Baccalaureate Degree Requirements section of catalog.
Missouri State University
Curricular Proposal Course Change or Deletion

Department: Computer Science
Date: 4/2/2013

Check one: This is a change to

- [x] an existing COURSE
- [ ] an existing REGULAR (i.e. permanent) SECTION of a variable content course

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<tr>
<td><strong>CSC 320 Computer Architecture</strong></td>
<td><strong>CSC 320 Computer Architecture</strong></td>
</tr>
<tr>
<td>Prerequisite: PHY 220 and CSC 131. Introduction to the architecture and internal operation of computers, including assembly language. A study of the major components, functional organization, and sequential operation of digital computers during program execution. Several computer architectures will be studied. 4(4-0) F,S</td>
<td>Prerequisite: PHY 220 and CSC 131. Introduction to the architecture and internal operation of computers, including assembly language. A study of the major components, functional organization, and sequential operation of digital computers during program execution. Several computer architectures will be studied. 4(4-0) F,S</td>
</tr>
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What is changing? Check all boxes that apply.
- [ ] Course Deletion
- [ ] Course Code
- [ ] Course Number
- [ ] Title
- [x] Prerequisite
- [ ] Credit Hours/Contact Hours
- [ ] Periodicity
- [ ] Description

Reason for Proposed Change or Deletion
Accrediting agency and professional standards body have essentially eliminated material of PHY 220 within a CS curriculum;

How Did You Determine the Need For This Change or Deletion?
Regular review of CS curriculum.

COMPLETE NEW CATALOG INFORMATION (typed)

**CSC 320 Computer Architecture**

Prerequisite: CSC 131. Introduction to the architecture and internal operation of computers, including assembly language. A study of the major components, functional organization, and sequential operation of digital computers during program execution. Several computer architectures will be studied. 4(4-0) F,S

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Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

**Substantive Change:** Department routes according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Forward three originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If proposal needs to go through more than one council/committee, forward one additional form for each additional council/committee marked. See Senate Action 11-93/94 for definitions of substantive/non-substantive changes.

- [x] College Council
  (All substantive course changes numbered 100-599 must go through College Council first. After approval, College Council will forward appropriate number of copies to the next committee/council or directly to the Faculty Senate if no further committee approval is needed. The last level of committee/council will forward two originally signed copies to the Faculty Senate.)
- [ ] Professional Education Committee
  (Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)
- [ ] Committee on General Education and Intercollegiate Programs
  (Considers all substantive course changes for General Education and Intercollegiate Program proposals.)
- [ ] Graduate Council
  (Considers all 600-900 level course changes.)

Signature: [Signature]
Department Head

Routing on Reverse Side

Date: 4/3/13

FS Course Change - 9/10/2010
Missouri State University
Curricular Proposal Course Change or Deletion

Department: Computer Science
Date: 4/2/2013

Check one: This is a change to  
X an existing COURSE

X an existing REGULAR (i.e. permanent) SECTION of a variable content course

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<tr>
<td><strong>CSC 450 Introduction to Software Engineering</strong></td>
<td></td>
</tr>
<tr>
<td>Prerequisite: CSC 325 and CSC 335. Principles, techniques and tools used to effect the orderly production of medium and large scale computer programs will be studied. These techniques will be applied to programming projects with students working in teams and managing all phases of a programming project. 3(3-0) F.</td>
<td><strong>CSC 450 Introduction to Software Engineering</strong></td>
</tr>
<tr>
<td>Prerequisite: CSC 325, and CSC 335, and <strong>CSC 365</strong>. Principles, techniques and tools used to effect the orderly production of medium and large scale computer programs will be studied. These techniques will be applied to programming projects with students working in teams and managing all phases of a programming project. 3(3-0) F.</td>
<td></td>
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What is changing? Check all boxes that apply.

- [ ] Course Deletion
- [ ] Course Code
- [ ] Course Number
- [ ] Title
- [ ] Prerequisite
- [X] Credit Hours/Contact Hours
- [ ] Periodicity
- [ ] Description

Reason for Proposed Change or Deletion

Expand the range of projects available to CSC 450 by requiring student familiarity with internet programming.

How Did You Determine the Need For This Change or Deletion?

Regular review of CS curriculum

COMPLETE NEW CATALOG INFORMATION (typed)

**CSC 450 Introduction to Software Engineering**

Prerequisite: CSC 325, CSC 335 and CSC 385. Principles, techniques and tools used to effect the orderly production of medium and large scale computer programs will be studied. These techniques will be applied to programming projects with students working in teams and managing all phases of a programming project. 3(3-0) F.

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☐ Check if this is a **non-substantive** change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

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X College Council

TO FS 4/13

Professional Education Committee

(Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)

Committee on General Education and Intercollegiate Programs

(Considers all substantive course changes for General Education and Intercollegiate Program proposals.)

Graduate Council

(Considers all 600-900 level course changes.)

Signature: Kenneth Vollmar
Department Head

Date: 4/3/13

Routing on Reverse Side

FS Course Change - 9/10/2010
Missouri State University  
Curricular Proposal Course Change or Deletion  

Department: Hospitality and Restaurant Administration  
Date: 03/29/13

Check one: This is a change to  
XX an existing COURSE  
____ an existing REGULAR (i.e. permanent) SECTION of a variable content course

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<tr>
<td>HRA 480 Global Strategic Management in the Hospitality Industry</td>
<td>HRA 480 Global Strategic Management in the Hospitality Industry</td>
</tr>
<tr>
<td>Prerequisite: senior standing; and HRA 410 or concurrent enrollment. This is an integrative course that focuses on managing the various components of the hospitality industry at both the business and the corporate level. Students use case studies as well as current events in the industry to understand the nature of strategic issues and their management in the hospitality industry. 3(3-0) F,S</td>
<td>Prerequisite: senior standing; HRA 310; and HRA 410 or concurrent enrollment. This is an integrative course that focuses on managing the various components of the hospitality industry at both the business and the corporate level. Students use case studies as well as current events in the industry to understand the nature of strategic issues and their management in the hospitality industry. 3(3-0) F,S</td>
</tr>
</tbody>
</table>

What is changing? Check all boxes that apply.  
☐ Course Deletion  ☐ Course Code  ☐ Course Number  ☐ Title  XX Prerequisite  
☐ Credit Hours/Contact Hours  ☐ Periodicity  ☐ Description

Reason for Proposed Change or Deletion:  
The proposed change closes a loop hole that allows students to concurrently enroll in HRA 310, HRA 410, and HRA 480. Because HRA 480 is a capstone course designed to tie the quantitative content of the degree program together, it is imperative for students’ success that they complete HRA 310 prior to enrolling in HRA 480.

How Did You Determine the Need For This Change or Deletion?  
The HRA faculty determined the need for this during a recent departmental meeting to review prerequisites.

COMPLETE NEW CATALOG INFORMATION (typed)

HRA 480 Global Strategic Management in the Hospitality Industry

Prerequisite: senior standing; HRA 310; and HRA 410 or concurrent enrollment. This is an integrative course that focuses on managing the various components of the hospitality industry at both the business and the corporate level. Students use case studies as well as current events in the industry to understand the nature of strategic issues and their management in the hospitality industry. 3(3-0) F,S

XX Check if this is a non-substantive change. Distribution for non-substantive changes of 100- through 500-level courses: two originally-signed copies to Faculty Senate; 600- through 900-level courses: three originally-signed copies to Graduate Council. Graduate Council will give two copies to Faculty Senate after approval.

Substantive Change: Department routes according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Forward three originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If proposal needs to go through more than one council/committee, forward one additional form for each additional council/committee marked. See Senate Action 11-03-94 for definitions of substantive/non-substantive changes.

--- College Council  
(All substantive course changes numbered 100-599 must go through College Council first. After approval, College Council will forward appropriate number of copies to the next committee/council or directly to the Faculty Senate if no further committee approval is needed. The last level of committee/council will forward two originally signed copies to the Faculty Senate.)

--- Professional Education Committee  
(Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)

--- Committee on General Education and Intercollegiate Programs  
(Considers all substantive course changes for General Education and Intercollegiate Program proposals.)

--- Graduate Council  
(Considers all 600-900 level course changes.)

Signature: ___________________________  
Department Head  

Date: 4/1/2013  
(Routing on Reverse Side)  
FS Course Change - 9/10/2010