Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

Department Computer Science **Date** 10/31/2012

Check one: __X__ **New COURSE** ____ **New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached?** _____

PROPOSED CATALOG DESCRIPTION

CSC 211 Computational Data Analysis

Prerequisite: Eligible for MTH 135. General Education course (Foundations). An introduction to the theory and techniques of computational data analysis. Students will use software tools to access and analyze data drawn from various sources and will make written and oral presentations describing conclusions drawn from their analyses. 3(3-0) F,S

PURPOSE OF COURSE

To satisfy Quantitative Literacy requirement of General Education Foundations.

RELATIONSHIP TO OTHER DEPARTMENTS

Students from any department may take this course to satisfy the Quantitative Literacy requirement.

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

__X__ **College Council**	(All new course proposals 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**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
__X__ **Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
_____ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature Kenneth Vollmar **Date** 11/1/12

Department Head

(Routing on Reverse Side)

NEW COURSE RESOURCE INFORMATION

Department Computer Science Date 10/31/2012

Course Number and Title CSC 211 Computational Data Analysis

Anticipated Average Enrollment 300 (semester) Maximum Enrollment Limit 300

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

No

2 What will this course require in the way of:

Additional library holdings? None

Additional computer resources? None

Additional or remodeled facilities? None

Additional equipment or supplies? None

Additional travel funds? None

Additional faculty--general vs specialized? None

Other additional expenses? None

3 If additional faculty are not required, how will faculty be made available to teach this course?

This course will largely replace CSC 101 as a general education course. While there will still be a place for CSC 101, there will be many fewer sections. Furthermore, because this course will fill a different role than CSC 101 in the general education curriculum, there will not be as many sections of it as there were for CSC 101. The result is that the number of sections of CSC 101 + CSC 211 will be less than the current number of sections of CSC 101.

List names of current faculty qualified to teach this course:
Michael Scroggins, Harry Shea, Hui Liu, Jamil Saquer, Eric Shade, Lloyd Smith, Ken Vollmar, Yang Wang

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

Students from any department may take this course to fulfill the Quantitative Literacy requirement of the new General Education Foundations. At this point, it is difficult to say which courses in other departments would most likely be affected because this is a new General Education requirement.

5 Other comments:

CSC 211, Computational Data Analysis

Instructor: Dr Lloyd Smith **Office:** CHEK 316 **Phone:** 836-4834 **Email:** lloydsmith@missouristate.edu

Class meeting times: TBA

Course Description: General Education course (Foundations). An introduction to the theory and techniques of computational data analysis. Students will use software tools to access and analyze data drawn from various sources and will make written and oral presentations describing conclusions drawn from their analyses. 3 credit hours (3-0).

Course Pre-requisites: Eligible for MTH 135

Required Texts: There is no standard text for this course. Course materials will include pointers to freely available resources on the web.

GENERAL LEARNING GOALS

This course fulfills the Quantitative Literacy requirement in General Education Foundations. Students will be able to reason and solve quantitative problems from a wide array of contexts and everyday life situations, understand and create logical arguments supported by quantitative information, and clearly communicate those arguments in appropriate formats.

SPECIFIC LEARNING OUTCOMES

Students will be able to

1. Interpret and communicate information presented in mathematical forms (e.g., equations, functions, graphs, diagrams, tables, or words).
2. Convert relevant information into various mathematical forms (e.g., equations, functions, graphs, diagrams, tables, or words).
3. Analyze data quantitatively as the basis for competent, valid, and reliable inferences in order to draw reasonable and appropriate conclusions.
4. Express evidence in support of an argument by employing an appropriate form of presentation (e.g., equations, functions, graphs, diagrams, tables, or words).

MAJOR TOPICS

1. History of data analysis
2. Sources of data
3. Computational tools for analyzing data: spreadsheets and beyond
4. Creating and using mathematical models
5. Simulation: Monte Carlo methods, etc
6. Data mining: prediction, classification, and clustering
7. Visualizing data
8. Presenting results and conclusions

EVALUATION

1. Reports and presentations: 40%
2. Quizzes: 20%
3. Tests (midterm and final exam): 40%
   Tests will be open book; you may use course learning resources, defined by the instructor, and your class notes

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Missouri State University
Curricular Proposal Course Change or Deletion

Department Geography, Geology, and Planning **Date** November 2, 2012

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

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.)
GLG 115 Life of the Past Origin, evolution, and major extinctions of life forms set in the context of 3.5 billion years of earth history. Discussion of plants, invertebrate animals, and vertebrates (emphasizing dinosaurs and mammals). Laboratory exercises acquaint the student with representatives of the major fossil groups. Optional fossil collecting trip. Credit may not be applied toward any major or minor in geology. 4(3-2) D	**GLG 115 Life of the Past General Education Course (Knowledge of the Natural World, Life Sciences) Addresses the** ~~O~~origin, evolution, and ~~major~~ extinctions of life forms ~~set in the context of~~ **within the** 3.5 billion years ~~of earth~~ history **of life on earth. Topics of** ~~D~~discussion ~~of plants, invertebrate animals, and vertebrates (emphasizing dinosaurs and mammals).~~ **will include the basic principles of evolution, stratigraphy, and plate tectonics.** ~~Laboratory exercises acquaint the student with representatives of the major fossil groups.~~ Optional fossil collecting **field** trip. ~~Credit may not be applied toward any major or minor in geology.~~ ~~4(3-2) D~~ **3(3-0) F,S**

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

Reason for Proposed Change or Deletion

To position GLG 115 to serve as a non-lab science course in the Life Sciences category in the new General Education program.

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

GLG 115 has been in the Catalog for over two decades, and it used to be included as an option in the General Education program. It was "kicked out" of the General Education program about a decade ago when, because of the retirement and non-replacement of Dr. Stan Fagerlin, we were no longer able to offer this course on a regular basis. With the current proposal to reduce GLG 171 (Environmental Geology) from 4 credit hours to 3, we will be freeing up faculty teaching load that can be re-directed so that we can offer GLG 115 once again.

COMPLETE NEW CATALOG INFORMATION (typed)

GLG 115 Life of the Past General Education Course (Knowledge of the Natural World, Life Sciences) Addresses the origin, evolution, and extinction of life forms within the 3.5 billion year history of life on earth. Topics of discussion will include the basic principles of evolution, stratigraphy, and plate tectonics. Optional fossil collecting field trip. 3(3-0) F,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.

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.)

X **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 Thomas G Algeo Department Head **Date** 11/2/2012

(Routing on Reverse Side)

COURSE POLICY STATEMENT – Proposed for Fall 2012

GLG 115: Life of the Past	**Geography, Geology, and Planning**
Section XXX: MWF or TR	**Instructor:** Damon Bassett
Credit Hours: 3	**Office:** Temple 367
Classroom: Temple 345	**Phone:** 836-4897
Office Hours: MTWRF or by appointment	**Email:** dbassett@missouristate.edu

Course Description:

GLG 115 Life of the Past General Education Course (Knowledge of the Natural World, Life Sciences. Addresses the origin, evolution, and extinction of life forms within the 3.5 billion year history of life on earth. Topics of discussion will include the basic principles of evolution, stratigraphy, and plate tectonics. Optional fossil collecting field trip. 3(3-0) F,S

Required Textbooks: History of Life, Richard Cowen, 2005, 4th edition.
Fossil Hunting, Steve Parker, 2009, 1st edition

Purpose: The objective of this course is to develop a basic understanding of the biological and geological processes as they are related to the evolution of life through time. We will discuss the ways that organisms can become fossilized and the methods biologists and geologists use to classify life. We will investigate the evolutionary history of plants, invertebrates, vertebrates (emphasizing dinosaurs & mammals) as it is preserved in the fossil record. Topics of discussion will also include the controlling factors on the evolution and extinction of life (including plate tectonics, climate change, & natural selection). We will investigate the evidence for human evolution and discuss the current environmental impacts human activities are having on the factors that influence evolution and extinction. This will include a discussion on modern climate change and the associated decrease in the diversity of life. After taking this course, you should have a better understanding of the origin and evolution of life, geologic time, and the complex relationship between geology and biology that exists in the natural world.

General Education Instructional Goals and Student Learning Outcomes:

Instructional Goal: GLG 115--Life of the Past	Student Learning Outcomes
Knowledge of the Natural World: Life Sciences: Students will understand basic concepts of living things, the nature of scientific knowledge, and relevance of biological knowledge to human affairs.	Understand living systems by describing their nature, organization, and evolution.
	Understand and use the processes by which scientific knowledge of living things is generated.
	Develop knowledge of living things through hypothesis testing and gain the ability to draw defensible conclusions regarding living things.
	Make logical connections between key concepts in the life sciences and describe the interaction between human lives and other living things.
	Understanding the human species as a biological organism
	Understand the ways the environment impacts humanity and how human actions affect the environment.

Course Assessment: The success of this class in meeting the Student Learning Outcomes of the General Education program will be assessed with a pre-test/post-test instrument and an additional attitudinal survey administered during the final exam period.

Examinations: Five exams will be given during the semester, including the final examination, which is comprehensive. There will be four regular exams worth 100 points each and a comprehensive final exam worth 100 points. The final exam will cover material from previous exams and partly from new material covered after the 4th regular exam. The

scheduled dates for each exam, including the final, are provided in the tentative schedule. The material covered on examinations will be taken from classroom lectures, exercises, field trips, presentations, and reading assignments.

Make-up Examinations: If you miss an exam due to illness or family emergency, special consideration may be granted. Each case will be dealt with individually and advance notice (if possible) would be greatly appreciated. If you miss two exams, there will be no provisions for a second make-up exam.

Assignments & Quizzes: During the course of the semester I will hand out assignments that will highlight subjects that we are covering at the time. In some cases these assignments will be finished in class and at other times they will serve as homework. In addition, there will be unannounced quizzes over the reading assignments.

Field Trip: There will be one optional local field trip during the semester that will visit an outcrop where we can practice fossil collection and identification. The date of the field trip is subject to weather postponement.

Grading: *Summary of Points Possible*: There are 600 points possible in this course, distributed as:

(4) Examinations	100 points each (400 total points)
(1) Final examination	100 points
(~10) In-class Assignments & Quizzes	100 points (5 to 10 points each)
TOTAL	**600 points**

Grading Scale:

B+ = 89.99 - 87.50%	**A** = 100 - 92.50%	**A-** = 92.49 - 90.00%
C+ = 79.99 - 77.50%	**B** = 87.49 - 82.50%	**B-** = 82.49 - 80.00%
D+ = 69.99 - 67.50%	**C** = 77.49 - 72.50%	**C-** = 72.49 - 70.0%
	D = 67.49 – 60.00%	
	F = 59.99 – 0.00%	

As the instructor of this course, I reserve the option of curving grade boundaries downward to adjust for class performance, but the boundaries will not be adjusted upward for any reason.

Absence and Tardiness Policies: Success in this course, as with any other, is heavily dependent on regular attendance. The university places responsibility for attendance policies in the hands of instructors. Accordingly, attendance will be taken at the discretion of the instructor. Please notify me in advance if you will not be able to attend class. Tardiness disrupts the class, as does leaving early.

Drop Policy: It is your responsibility to understand the University's procedure for dropping a class. If you stop attending this class but do not follow proper procedure for dropping the class, you will receive a failing grade and will also be financially obligated to pay for the class. For information about dropping a class or withdrawing from the university, contact the Office of the Registrar at 836-5520.

Last day to Drop or Withdraw is XXXX XX, 20XX.

Academic Integrity: Missouri State University is a community of scholars committed to developing educated persons who accept the responsibility to practice personal and academic integrity. You are responsible for knowing and following the university's student honor code, Student Academic Integrity Policies and Procedures, available at www.missouristate.edu/policy/academicintegritystudents.htm and also available at the Reserves Desk in Meyer Library. Any student participating in any form of academic dishonesty will be subject to sanctions as described in this policy.

Use of Cell Phones, Pagers and Text-Messaging Devices in Classes: As a member of the learning community, each student has a responsibility to other students who are members of the community. When cell phones or pagers ring and students respond in class or leave class to respond, it disrupts the class. Therefore, the Office of the Provost prohibits the use by students of cell phones, pagers, PDAs, or similar communication devices during scheduled classes. All such devices must be turned off or put in a silent (vibrate) mode and ordinarily should not be taken out during class. Given the fact that these same communication devices are an integral part of the University's emergency notification system, an exception to this policy would occur when numerous devices activate simultaneously. When this occurs, students may consult their devices to determine if a university emergency exists. If that is not the case, the devices should be

immediately returned to silent mode and put away. Other exceptions to this policy may be granted at the discretion of the instructor.

Audio and Video Recording: Students must request permission from the instructor before making any audio or video recordings of course activity. However, the redistribution of audio or video recordings from the course to individuals who are not students in the class is prohibited without the express permission of the faculty member and any of the students who are recorded.

Accommodating Students: To request academic accommodations for a disability, contact the Director of the Disability Resource Center, Plaster Student Union, Suite 405, (417) 836-4192 or (417) 836-6792 (TTY), www.missouristate.edu/disability. Students are required to provide documentation of disability to the Disability Resource Center prior to receiving accommodations. The Disability Resource Center refers some types of accommodation requests to the Learning Diagnostic Clinic, which also provides diagnostic testing for learning and psychological disabilities. For information about testing, contact the Director of the Learning Diagnostic Clinic, (417) 836-4787, http://psychology.missouristate.edu/ldc.

Nondiscrimination Statement: Missouri State University is an equal opportunity/affirmative action institution, and maintains a grievance procedure available to any person who believes he or she has been discriminated against. At all times, it is your right to address inquiries or concerns about possible discrimination to the Office for Equity and Diversity, Park Central Office Building, 117 Park Central Square, Suite 111, (417) 836-4252. Other types of concerns (i.e., concerns of an academic nature) should be discussed directly with your instructor and can also be brought to the attention of your instructor's Department Head. Please visit the OED website at www.missouristate.edu/equity/.

Emergency Response: Students who require assistance during an emergency evacuation must discuss their needs with their professors and the Disability Resource Center. If you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible.

For additional information students should contact the Disability Resource Center, 836-4192 (PSU 405), or Donald Clark, Director of Public Safety and Transportation at 836-6576.

For further information on Missouri State University's Emergency Response Plan, please refer to the following web site: http://www.missouristate.edu/safetran/erp.htm

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GLG 115 – Course Schedule – Fall 2012 Section 001 (MWF –Time--)

Week of:	Day & Topic	Reading Assignment
Aug. 20	M: Introduction to Paleontology	1
	W: Scientific Method & Fossilization	1
	F: Origin of Life	1
Aug. 27	M: Dating Techniques & Earth's Oldest Fossils	2
	W: Sex Cells	3
	F: Evolution & Natural Selection	3
Sept. 3	M: **No Class – Labor Day Holiday**	
	W: Evolution & Natural Selection	3
	F: Classification of Life	3
Sept. 10	M: Metzoan Evolution	4
	W: Metazoans & Snowball Earth	4
	F: **Exam 1 (Chapters 1, 2, 3, & 4)**	
Sept. 17	M: Cambrian Explosion	5
	W: Cambrian Explosion	5
	F: Diversity of Life	6
Sept. 24	M: Mass Extinctions	6
	W: Plate Tectonics	6
	F: Early Vertebrates	7
Oct. 1	M: Fishes	7
	W: Life on Land (First Plants)	8
	F: Life on Land (1st Tetrapods)	8
Oct. 8	M: **Exam 2 (Chapters 5, 6, 7, & 8)**	
	W: Tetrapods & Amniotes	9
	F: Carboniferous Ecology	9
Oct. 15	M: Thermoregulation in Amniotes	10
	W: Therapsid Evolution	10
	F: Triassic Takeover (Diapsid Evolution)	11
Oct. 22	M: Locomotion, metabolism, & respiration	11
	W: Dinosaurs (Ornithischians, Theropods, & Sauropods)	12
	F: Dinosaur Paleobiology & Behavior	12
Oct. 29	M: **Exam 3 (Chapters 9, 10, 11, & 12)**	
	W: The Evolution of Flight	13
	F: The Origin of Mammals	15
Nov. 5	M: Cretaceous Mass Extinction	16
	W: Cenozoic Mammals	17
	F: The Savanna Story	17
Nov. 12	M: Geography & Evolution	18
	W: Island Effects	18
	F: **Exam 4 (Chapters 13, 15, 16, 17, & 18)**	

Nov. 19	M: Primate Evolution	19
	W: **Thanksgiving Holiday – No Class**	
	F: **Thanksgiving Holiday – No Class**	
Nov. 26	M: Hominid evolution	20
	W: *Homo sapiens* – Human Evolution	20
	F: The Ice Age	21
Dec. 3	M: Modern Climate Change & Evolution	21
	W: Modern Extinctions	21

Final Exam – (Day), December XX @ --Time--

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Missouri State University

Curricular Proposal Course Change or Deletion

Department Geography, Geology, and Planning **Date** November 2, 2012

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

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

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.)
GLG 171 Environmental Geology General Education Course (Natural World). Treats those aspects of geology that interface directly with humanity. Past, present and future of geologic hazards, geologically related environmental health problems, mineral resources and energy resources. Human dependence on geologic resources is examined and interrelated with problems of humanity. Field trips required. 4(4-0) F,S	**GLG 171 Environmental Geology** General Education Course (**Knowledge of the** Natural World, **Physical Sciences**). Treats those aspects of geology that interface directly with humanity. ~~Past, present and future of~~ **Key concepts of Earth processes and how they relate to** geologic hazards, ~~geologically related environmental health problems,~~ mineral ~~resources~~ and energy resources, **and sustainability**. Human dependence on geologic resources is examined and ~~inter~~related ~~with problems of humanity~~ **to issues confronting society**. **Optional** ~~F~~field trips ~~required~~. ~~4(4-0)~~ **3(3-0)** F,S

What is changing? Check all boxes that apply.

□Course Deletion □Course Code □Course Number □Title □Prerequisite

X Credit Hours/Contact Hours □Periodicity X Description

Reason for Proposed Change or Deletion

So that GLG 171 can remain a viable option as a non-lab science course in the new General Education program.

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

This change was essentially forced on us by the new General Education program, which will require a minimum of seven credit hours in the Natural World rather than the current eight credit hours.

COMPLETE NEW CATALOG INFORMATION (typed)

GLG 171 Environmental Geology General Education Course (Knowledge of the Natural World, Physical Sciences). Treats those aspects of geology that interface directly with humanity. Key concepts of Earth processes and how they relate to geologic hazards, mineral and energy resources, and sustainability. Human dependence on geologic resources is examined and related to issues confronting society. Optional field trips. 3(3-0) F,S

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____**Professional Education Committee**	(Considers all substantive course changes for Professional Education courses and Teaching Methods courses.)
X **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 Thomas O'Hanlon **Date** 11/2/2012

Department Head

(Routing on Reverse Side)

POLICY STATEMENT – PROPOSED FOR FALL 2012

GEOLOGY-171 - ENVIRONMENTAL GEOLOGY

Dr. Charles Rovey

OFFICE HOURS: M,W: 12:35 - 1:35 Th: 11:00-12:00
T: 10:00 - 12:00

Temple 302, 836-6890
Fall 2013
charlesrovey@missouristate.edu

CATALOG DESCRIPTION:

GLG 171 Environmental Geology
General Education Course (Knowledge of the Natural World, Physical Sciences). Treats those aspects of geology that interface directly with humanity. Key concepts of Earth processes and how they relate to geologic hazards, mineral and energy resources, and sustainability. Human dependence on geologic resources is examined and related to issues confronting society. Optional field trips. 3(3-0) F,S.

REQUIRED TEXTBOOK:

Living with Earth by Hudson is required. I recommend that you bring your copy to class, because I frequently refer to figures in the text during lecture. Also, a number of in-class assignments are based on materials in your text.

COURSE OBJECTIVES:

1. To recognize how geologic processes are relevant to understanding various environmental issues.

2. To understand the history and nature of energy and mineral resources and the implications for future scarcity/abundance.

3. To understand and recognize the physical processes that account for various geologic hazards.

4. How public policies may help or worsen the outlook for future resource availability.

GENERAL EDUCATION INSTRUCTIONAL GOALS AND STUDENT LEARNING OUTCOMES:

Instructional Goal: GLG 171 Environmental Geology	Student Learning Outcomes
Knowledge of the Natural World: Physical Sciences: Teach and explore fundamental principles in physical sciences and methods of developing and testing hypotheses used in the analysis of the physical universe.	Demonstrate knowledge of the physical universe and planet earth, including its origin and physical processes.
	Understand and use the processes by which knowledge of the physical world is generated.
	Make logical connections between key concepts in the physical sciences and describe the interaction between human lives and the physical world.
	Understand the ways the environment impacts humanity and how human actions affect the environment.

COURSE ASSESSMENT:

The success of this class in meeting the Student Learning Outcomes of the General Education program will be assessed with a pre-test/post-test instrument and an additional attitudinal survey administered during the final exam period.

ABOUT THE COURSE:

If you want an effortless class, this is not it. We will analyze and critically examine a number of environmental issues. We will occasionally undertake a Devil's advocacy and not merely parrot prevailing attitudes. Why? **"He who knows only his own side of the case, knows little of that."** (J.S. Mill). Restated, unexamined beliefs aren't worth having.

One aspect of education is an attempt to model beliefs and opinion in accordance with reason and facts, so far as they are known. The intensity of a belief does not make it correct or valid no matter how widely shared.

EXAMS:

There will be five exams. Four of these exams will be given during regularly scheduled class periods; the fifth will be given during the Terminal Class Period on Finals Week. Each of the first four exams will cover material since the last exam (or beginning of class for exam 1) and will be some combination of multiple choice and short answer. Any item mentioned in lecture or in the assigned reading is fair game. Of these 4 exams, your top 3 scores will count toward your final grade. The final will consist of multiple choice questions on material since the last exam, and several comprehensive essays.

ASSIGNMENTS:

Assignments will be given each week. These assignments include a review of lecture and reading materials along with problem sets that relate these concepts to environmental issues. The assignments constitute 20% of your final grade. Late assignments will be penalized 10% per day.

GRADING:

I calculate the median score for each of the first four (regular-semester) exams. If the median is below 75%, the score of each student will be adjusted upward until the class median reaches 75%. The purpose of this adjustment is to provide an equal basis for evaluation on all exams. The purpose is not to soften the impact of low exam scores resulting from lack of effort or poor attendance on the part of disinterested students. Therefore, scores that fall more than two standard deviations below the mean and scores for students who were absent two or more class periods will not be included in the calculation of the median.

Under **no circumstances** will an individual be allowed to take an exam later than the rest of the class. If you miss an exam, no matter how legitimate your reason, that automatically becomes your dropped score. If you know well in advance that you will have to miss an exam for a school function, it may be possible (not guaranteed) to take it early. See me as soon as possible.

ATTENDANCE:

Following university policy, I will take attendance each class period. You must be seated within 10 minutes of the class starting time, and remain until the end of class to be counted as present.

FINAL GRADES

Your final grade will be based on the following (each midterm exam is weighted equally, as are the assignments): midterm exams: 55%, (13.75% each), final: 25%, assignments: 20%.

EXAMPLE

Exam Scores

	Individual Raw Score	Median	Curve	Adjusted Score	
Exam I	76	73	+2	78	
Exam II	71	77	0	71	-Low score is not used in calculating final grade
Exam III	84	74	+1	85	
Exam IV	82	70	+5	89	

84.0% = final midterm average.

Final 65, Assignments 80.

We now multiply the midterm average by .55, the final by .25, and the assignments by .20, to obtain the final weighted average:

84.0 x .55 = 46.4
65.0 x .25 = 16.2
80.0 x .20 = 16.0
78.6 = final average

After calculating your final score, final letter grades will be assigned on the following scale. Thus, the letter grade for the example above would be a C+.

A	100%	- 92.5%	C+	79.9%	- 77.5%		
A-	92.4%	- 90.0%	C	77.4%	- 72.5%		
B+	89.9%	- 87.5%	C-	72.4%	- 70.0%		
B	87.4%	- 82.5%	D+	69.9%	- 67.5%		
B-	82.4%	- 80.0%	D	67.4%	- 60.0%	F	< 60.0%

STUDENT RESPONSIBILITIES:

Academic Honesty: You are responsible for knowing and following MSU's student honor code, *Student Academic Integrity Policies and Procedures*. MSU Faculty expect that each student will be honest in submitting work for grading. Among other things, this means that work submitted for grades will be the work of the students whose names are on the paper. When the work or words of others are incorporated into assignments, appropriate recognition must be given to the original sources. Failure to provide appropriate acknowledgement constitutes plagiarism, a serious academic offense. Remember, **changing one or two words in a written sentence is not enough to avoid plagiarism; the words must be substantially your own, unless they are included within quotation marks**. Likewise, if you closely paraphrase another, you must give some indication of the original source. "Academic honesty" also implies that students will not utilize nor provide unauthorized help such as verbal or nonverbal clues from others, or outright copying on exams. In the case of academic dishonesty, the student will automatically receive a grade of zero on that particular test or assignment with no further penalty. Upon a second case of academic dishonesty both cases will be documented and forwarded to the Department Head and the Academic Integrity Council for assignment of an XF grade, failure due to academic dishonesty.

BUDGETING TIME FOR STUDY. One of your primary responsibilities is to budget enough time to study effectively for each course. Generally class time is either the initiation or the culmination of the learning process; the complete process requires substantial personal effort on your part outside of class devoted to reading, discussing and contemplating the assignments. This is why the general rule holds that you should plan for at least 2 hours of out-of-class-study for each hour of class. In other words, you should expect to spend at least eight hours per week reading and studying for GLG-171. However, the specific amount of study time needed to obtain a passing grade in this course will vary from one student to another depending on many different factors, and in no case will grades be determined on how hard the student tries or how long the student has studied. **In the final analysis, nothing will substitute for your individual effort**.

OBTAINING NOTES FOR MISSED LECTURES. If you miss a lecture, it is your responsibility to obtain notes from some other class member.

SEEKING EXTRA HELP. It is your responsibility to seek additional help in understanding the course material before irreparable damage is done. I will provide additional help during my office hours or any other mutually convenient time. Nevertheless, you should prepare as best you can for this extra help by thoroughly reading the assigned material, carefully reviewing class notes, and patiently comparing the two, before going to my office so that you can communicate in a coherent fashion and ask specific questions on the material which has not been understood.

AVOIDING CLASS DISRUPTIONS. It is easy for an individual to disrupt and disturb a large number of people. Instructors at MSU have authority of suspend or drop any student who disrupts a class. Examples of possible disruptions are:
-- **reading outside material during class.** (This is not tolerated)
-- **using cell phones, texting, Facebooking, etc.** (This is a very effective way to reduce your grade to an F!)
-- excessive talking or joking during class. (Please don't talk while the professor is addressing the class)
-- swearing.
-- consistently arriving late for class.
-- leaving class early (without notifying the professor beforehand).

--rustling papers, notebooks, etc. during the last few minutes of class.

HOW TO DO WELL:
The single most important thing for you to do is come to class punctually. Each semester there is a very clear relationship between students' final grades and attendance. But if you come to class without paying attention or taking notes you will be wasting your time and would be better off not coming to class at all. So you also need to pay attention.

Lectures are a smorgasbord of ideas. You cannot fully digest them during class time alone. Real learning occurs in your mind between classes as you ponder, grapple, and struggle with the terms, concepts, and ideas presented in the lectures and readings. Therefore, the third, fourth and fifth things are STUDY, STUDY AND STUDY.

DROP POLICY:
The University's deadline for a no-penalty withdrawal is Nov. 9th. ???

You are not automatically dropped for non-attendance. If you stop coming to class without following the proper procedures for dropping the class, you will still be enrolled and will receive an "F" at the end of the semester.

EXTRA CREDIT:
Limited extra credit (maximum 2%) may be obtained by attending a departmental field trip, in conjunction with our Physical Geology classes. This is the only extra credit allowed.

CELL PHONES:
The use by students of cell phones, pagers, or similar communication devices during scheduled classes is prohibited. All such devices must be turned off or put in a silent (vibrate) mode and should not be taken out during class.

DISABILITY ACCOMMODATION:
To request academic accommodations for a disability, contact the Director of Disability Services, Plaster Student Union, Suite 405, (417)836-4192 or (417) 836-6792 (TTY). Students are required to provide documentation of disability to Disability Services prior to receiving accommodations. Disability Services refers some types of accommodation requests to the Learning Diagnostic Clinic, which also provides diagnostic testing for learning and psychological disabilities. For information about testing, contact the Director of the Learning Diagnostic Clinic, (417) 83604787, http://psychology.mossouristate.ede/ldc.

Missouri State University is an equal opportunity/affirmative action institution, and maintains a grievance procedure available to any person who believes he or she has been discriminated against. At all times, it is your right to address inquiries or concerns about possible discrimination to the Office for Equity and Diversity.

3

GLG 171 Syllabus, Fall 2013 – Save This!

WEEK BEGINNING	TOPIC	READING
Aug. 18th	Env. Movement Population	1.1, 1,2, 1.5
Aug. 25th	Chemistry Minerals	4.1, 4.2
Sept. 1st	No class, Monday the 2nd Rocks	4.3, 2.1, 2.5
Sept. 8th	Rocks (continued)	
Sept. 15th	**Exam I, Monday the 16th** Plate Tectonics	Ch. 3
Sept. 22nd	Earthquakes	Ch. 5
Sept. 29th	Volcanoes River Systems	Ch. 6 7.1
Oct. 6th	**Exam II, Monday the 7th** Coastlines	Ch. 9
Oct. 13th	Channel Manipulation Flooding	7.2-7.4, 10.3
Oct. 20th	Groundwater	Ch. 10
Oct. 27th	Climate change	14.3 - 14.6
Nov. 3rd	**Exam III, Monday the 4th** Resource economics, Mineral Resources	Ch. 12
Nov. 10th	Mineral Res. (continued) Glaciers	p. 35-36, 14.3, 14.4
Nov. 17th	Soils & erosion **Exam IV, Weds. the 20th**	Ch. 11,
Nov. 24th	Acid Rain Thanksgiving Break the 26th & 27th	14.2
Dec. 1st	Fossil Fuels Alternative energy,karst	13.1-13.3 13.4-13.6, p. 94-95, 8.2,8.3

FINAL EXAM: ??

4

Missouri State University
Curricular Proposal Course Change or Deletion

Department Geography, Geology, and Planning **Date** November 2, 2012

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

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.)
GRY 108 Principles of Sustainability General Education Course (Culture and Society/Social Sciences Perspective). Multidisciplinary problem study of population pressures, environmental degradation and socio-political perils and opportunities, through an integrated approach by a staff drawn chiefly from the natural and social sciences. 3(3-0) F,S	**GRY 108 Principles of Sustainability** General Education Course (~~Culture and Society~~/Social **and Behavioral** Sciences ~~Perspective~~). **An introduction to the** Mmultidisciplinary ~~problem study of population pressures, environmental degradation and socio-political perils and opportunities, through an integrated approach by a staff drawn chiefly from the natural and social sciences~~ **concept of "sustainability," including the difficulty of defining sustainability and implementing sustainable development programs. Emphasis is placed on understanding basic environmental and social processes and patterns and how they relate to current events**. 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 X Description

Reason for Proposed Change or Deletion

To more clearly indicate how GRY 108 supports the Social and Behavioral Sciences requirement in the new General Education program.

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

To more clearly indicate how GRY 108 supports the Social and Behavioral Sciences requirement in the new General Education program.

COMPLETE NEW CATALOG INFORMATION (typed)

GRY 108 Principles of Sustainability General Education Course (Social and Behavioral Sciences). An introduction to the multidisciplinary concept of "sustainability," including the difficulty of defining sustainability and implementing sustainable development programs. Emphasis is placed on understanding basic environmental and social processes and patterns and how they relate to current events. 3(3-0) F,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.

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.)

X **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** 11/2/2012

(Routing on Reverse Side)

5

Missouri State University
Curricular Proposal – New Program
(MAJOR, OPTION, MINOR, CERTIFICATE, OR CERTIFICATION)

This form is to be used for internal Missouri State approval of any proposal for a new program involving two or more courses, including any new graduate program, new undergraduate major (whether comprehensive or non-comprehensive), new option within an existing program (whether graduate or undergraduate), new minor, new certificate, or new certification program.
New graduate programs, new undergraduate majors, and certificate programs involving more than 18 credit hours require approval by the CBHE as well as approval through the Missouri State curricular process. CBHE applications for such programs are processed through the Office of the Graduate College, regardless of whether the program is graduate or undergraduate. Contact the Graduate College, CARR 306, for a copy of the CBHE policies and information concerning proposal development. All proposals for new programs requiring CBHE approval should progress through the Missouri State curricular process accompanied by a draft of the required CBHE documentation.

Department Hospitality and Restaurant Administration **Date** October 29, 2012

Attach on separate sheets (1) statement of rationale and objectives, (2) estimated costs for first five years, and (3) complete catalog description (including new courses and course changes pending approval). [Note: For new programs requiring CBHE approval, CBHE forms NP, PS, and PG will satisfy #1 and CBHE form FP will satisfy #2.]

PROPOSED PROGRAM Bachelor of Applied Science in Hospitality and Restaurant Administration

Major__X_ Comprehensive Major____ Option____ Minor____ Certificate____ Certification____ Academic Rules____ Other____

Degree Applicability_____

General Education Courses Required None Total Hours N/A

General Education Courses Recommended None Total Hours N/A

Requirements (including Admission) and Limitations for Specific Degree 1.Associate of Science or Associate of Applied Science degree from an accredited institution. 2. HRA 210, HRA 215, HRA 218, HRA 321, ACC 201, and MKT 150. 3. Thirty-seven (37) credit hours of upper-division courses, thirty (30) of which are satisfied by departmental requirements below. 4. Fulfillment of General Baccalaureate Degree requirements including General Education requirements.

Courses Required in Department HRA 310, HRA 354, HRA 428, HRA 490, HRA 499, and twelve (12) additional credit hours of upper-division HRA courses

Total Hours 30

Courses Required in Other Departments None

Total Hours 0

Prerequisites for Required Courses See attached prerequisite sheet.

Recommended Electives in Department_____ Total Hours_____

Recommended Electives in Other Departments_____ Total Hours_____

Limitations on Electives_____

DEPARTMENT Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty Senate. Attach New Program Resource Information form (FS-302a/06) and forward three typed, originally signed forms to one of the following (please mark all that apply). If the program needs to go through more than one committee/council, forward one additional form for each additional council/committee marked.

_____ **College Council** (Send all new undergraduate programs through College Council as first step before forwarding either to PEC, CGEIP, or directly to Faculty Senate)

_____ **Professional Education Committee** (All proposals affecting BS and MS in Education and Educational Specialist degrees)

_____ **Committee on General Education and Intercollegiate Programs** (All general education and multi-college programs)

_____ **Graduate Council** (All graduate programs)

Signature_____ Date 10/30/12

Department Head

Missouri Department of Higher Education

Building Missouri's future...by degrees

NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s): Missouri State University

Program Title: Hospitality and Restaurant Administration

Degree/Certificate: Bachelor of Applied Science

Options: None

Delivery Site(s): Springfield, MO and partially online

CIP Classification: 52.0901 (Please provide a CIP code)

Implementation Date: August 19, 2013

Cooperative Partners: None

AUTHORIZATION:

Frank Einhellig, Interim Provost

Name/Title of Institutional Officer Signature Date

Melissa Dallas, HRA Department Head 417-836-4409

Person to Contact for More Information Telephone

Missouri Department of Higher Education

Building Missouri's future...by degrees

PROGRAM STRUCTURE

A. Total credits required for graduation: 125

B. Residency requirements, if any: 1. Complete a minimum of at least 30 hours of courses administered by the Springfield Campus. 2. Complete at least 12 hours of upper division credit in the major in courses administered by the Springfield Campus. 3. Complete at least 20 out of the last 30 hours in courses administered by the Springfield Campus.

C. General education: Total credits: 41-50

Courses (specific courses OR distribution area and credits):

Basic required courses	12-19cr.	_____ ___cr.	_____ ___cr.
Natural World	8-10 cr.	_____ ___cr.	_____ ___cr.
Culture and Society	6 cr.	_____ ___cr.	_____ ___cr.
Self Understanding	9 cr.	_____ ___cr.	_____ ___cr.
Public Affairs	6 cr.	_____ ___cr.	_____ ___cr.

D. Major requirements: Total credits: 48

HRA 210	3 cr.	HRA 354	3 cr.	MKT 150	3 cr.
HRA 215	3 cr.	HRA 428	3 cr.	Upper division HRA electives	12 cr.
HRA 218	3 cr.	HRA 490	3 cr.		cr.
HRA 310	3 cr.	HRA 499	6 cr.		cr.
HRA 321	3 cr.	ACC 201	3 cr.		cr.

E. Free elective credits: 27-36 (Sum of C, D, and E should equal A.)

F. Requirements for thesis, internship or other capstone experience:
HRA 499 (Internship in Hospitality): Supervised experience in a cooperative program in hospitality. Student must gain experience/exposure in at least three positions during the internship. The student must be paid for the internship and must work a minimum of 750 hours.

G. Any unique features such as interdepartmental cooperation:
This is primarily a transfer degree designed to improve access for AAS and AS graduates. Internal cooperation exists with the College of Business for major course requirements.

Missouri Department of Higher Education

Building Missouri's future...by degrees

PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Institution Name	Missouri State University
Program Name	Bachelor of Applied Science degree in Hospitality and Restaurant Administration
Date	October 29, 2012

(Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below. Quantification of performance goals should be included wherever possible.)

Student Preparation

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.
  No special admissions procedures or student qualifications will be required.

- Characteristics of a specific population to be served, if applicable.
  The purpose of this degree is to provide the hospitality industry with more supervisors and managers who hold bachelor degrees by increasing accessibility for those who currently hold AAS or AS degrees.

Faculty Characteristics

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.
  The requirements are dictated by MSU's Faculty Handbook as follows: For the rank of assistant professor, associate professor, or professor, a terminal degree or equivalent is required as determined by appropriate department faculty with the approval of the Provost. In exceptional cases, individuals with doctoral course work complete and dissertation in progress may be appointed with the stipulation that the degree must be completed within the first year of appointment to be specified in the contract letter. Instructors shall have earned a terminal degree or possess the degree required for teaching in hospitality administration, have potential or demonstrated teaching ability, and a willingness to serve the academic unit, college, and University. An Instructor who has demonstrated excellence in teaching and service at Missouri State University for at least five years (not necessarily consecutive) may be appointed as a Senior Instructor.

- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.

Approximately 78% of all major coursework will be taught by full time faculty who teach between 12 and 24 hours each academic year depending on their administrative and research activity.

- Expectations for professional activities, special student contact, teaching/learning innovation.
  Expectations for professional activities include participation in routine Department, College, and University functions; service on Department, College, and University committees; participation in Department, College, and University governance, and all activities contributing to the advancement of the Department outside of the University. This can include, but is not limited to, serving on boards and committees of professional organizations, participation in government advisory panels, reviewing papers submitted to professional journals, reviewing hospitality text books, recruitment on behalf of the Department, and contributions to the international, national, state, and local communities in matters of public concern. Expectations for special student contact require that all faculty hold regular office hours and be available by email if they must be out of the office. Expectations for teaching and learning include, but are not limited to, successful instruction of students in the classroom, advisements of students, direction of undergraduate research and independent readings, revision of courses, use of innovative and effective teaching methods, and participation in workshops and seminars devoted to the instruction of students. Designing new courses, materials, and teaching methods for classroom use is also expected as is providing high quality education based to a diverse student body.

Enrollment Projections

- Student FTE majoring in program by the end of five years.
  55

- Percent of full time and part time enrollment by the end of five years.
  100% full time

Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.
  In the third year, 21 students are projected to graduate, and in the fifth year, 37 students are projected to graduate.

- Special skills specific to the program.
  Graduates who earn a Bachelor of Applied Science degree from the Hospitality and Restaurant Administration Department at Missouri State University will possess skills in and knowledge of the following areas: the various segments of the hospitality industry as well as professional opportunities in each segment, operations relative to lodging management, operations relative to food service management, human resources,

marketing of hospitality goods and services, accounting procedures and practices, the legal environment, the economic environment, management information systems, organizational theory and foundations of management, facility operations maintenance and management, financial management, ethical considerations and socio-political influences affecting organizations, strategic management, and leadership theory.

- Proportion of students who will achieve licensing, certification, or registration.
  90% of the students will hold a ServSafe certification they earn in HRA 218 or its equivalent course (Safety and Sanitation). Students enrolling in an elective class, HRA 409 (Beverage Operations), have the opportunity to earn a TIPS - Training for Intervention ProcedureS – certification for responsible alcohol service.

- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.
  Performance on the university-wide exit examination (ETS Proficiency Profile) is expected to be 440/500, or 88%, which is the current average score achieved by hospitality students with 90 credit hours or more. Performance on the departmental exit examination, based on the body of knowledge as defined by our accrediting body, is expected to be the same as current hospitality students pursuing a Bachelor of Science degree, 68% overall. At least 90% of students are predicted to score a 60% or higher on this examination.

- Placement rates in related fields, in other fields, unemployed.
  The placement rate is projected to be 85% in related fields, 12% in other fields, and 3% unemployed.

- Transfer rates, continuous study.
  This degree will attract only transfer students.

Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide reasons.
  The Hospitality and Restaurant Administration's Bachelor of Science degree has been continuously accredited by the Accreditation Commission for Programs in Hospitality Administration (ACPHA) since 1992 and was most recently reaffirmed in July 2012. The Bachelor of Applied Science degree with be put forth for accreditation during the next ACPHA cycle when the Bachelor of Science degree goes forward for reaccreditation in 2018.

Alumni and Employer Survey

- Expected satisfaction rates for alumni, including timing and method of surveys.
  The Hospitality and Restaurant Administration Department has been continuously accredited by the Accreditation Commission for Programs in Hospitality Administration (ACPHA) since 1992 and was most recently reaffirmed in July 2012.

- Expected satisfaction rates for employers, including timing and method of surveys.
  The expected satisfaction rates for employers is projected to be at or above 90% as based on evaluations administered in HRA 499, Hospitality Internship, in which the students' supervisor complete assessments on their knowledge, skills, and abilities in the workplace. These are conducted at the end of every semester including summers.

MDHE
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FINANCIAL PROJECTIONS

Total for One-time Expenditures	0	0	0	0	0
B. Recurring:					
Faculty	0	0	70,000	71,400	72,828
Staff	0	0	0	0	0
Benefits	0	0	21,000	21,420	21,848
Equipment	0	0	0	0	0
Library	0	0	0	0	0
Other	0	0	0	0	0
Total for Recurring Expenditures	0	0	91,000	92,820	94,676
TOTAL (A + B)	0	0	91,000	92,820	94,676
2. Revenues					
*State Aid - CBHE	0	0	0	0	0
*State Aid - DESE	0	0	0	0	0
Tuition/Fees	55,500	114,330	182,928	257,243	314,408
Institutional/Resources	0	0	0	0	0
Other	0	0	0	0	0
TOTAL REVENUES	55,500	114,330	182,928	257,243	314,408

* Please provide a brief description of the nature of the state aid. Is "new" money requested or is "old" money going to be used? What is the nature of the "old" money? Click here to enter text.

Department of Hospitality and Restaurant Administration

Professional Building, Room 440, Phone: (417) 836-4409, Fax: (417) 836-7673
Email: hra@missouristate.edu
Website: http://www.Missouristate.edu/hra
Department Head: Professor Melissa B. Dallas, J.D.

Faculty (as of July 12, 2012)

Professor: Carl D. Riegel, Ed.D.

Associate Professor: Daniel Crafts, Ed.D.

Assistant Professors: Melanie Grand, M.S.Ed.; Stephanie G. Hein, Ed.D.

Senior Instructor: Abigale S. Ehlers, M.S.Ed.

Emeritus Professors: Henry C. Huitt, M.S.Ed.; Loanna Thompson, Ph.D.

Accreditation

- Accreditation Commission for Programs in Hospitality Administration – Hospitality and Restaurant Administration (B.S.)

Mission Statement

The Hospitality and Restaurant Administration Department at Missouri State University is committed to creating an environment of academic excellence. We prepare our students to be ethical leaders in the hospitality and tourism industries by providing an environment where meaningful learning and development is a priority. We serve our constituencies through quality teaching, community engagement, and relevant focused research.

Majors

Hospitality and Restaurant Administration (Comprehensive)

Bachelor of Science

A. General Education Requirements - see General Education Program and Requirements section of catalog
   Specific General Education Requirement: GRY 100(3)
B. Major Requirements
   1. Core Courses: HRA 210(3), 215(3), 218(3), 310(3), 321(3), 354(3), 410(3), 426(3), 428(3), 480(3), 490(3), 499(6)
   2. Related Requirements: MKT 150(3) or 350(3); and ACC 201(3)
   3. Complete one of the following options (9 hours):
      a. **Club Management:** HRA 330(3), 345(3), 430(3)
      b. **Food and Beverage:** HRA 330(3), 409(3), 435(3)
      c. **General Operations:** HRA 340(3), 430(3); HRA 315(3) or 435(3)
      d. **Lodging:** HRA 315(3), 360(3); HRA 430(3) or 436(3)
      e. **Senior Living Management:** HRA 330(3); GER 310(3), 365(3)
      f. **Tourism:** GRY 310(3), 328(3); HRA 340(3)

C. Electives to bring total number of hours to 125. Students are encouraged to use these hours to complete more than one track and to take HRA electives.
D. General Baccalaureate Degree Requirements - see General Baccalaureate Degree Requirements section of catalog

Hospitality and Restaurant Administration

Bachelor of Applied Science

A. General Education Requirements - see General Education Program and Requirements section of catalog
B. Major Requirements
   1. Associate of Science or Associate of Applied Science degree from an accredited institution. Contact the department for details.
   2. HRA 210(3), HRA 215(3), HRA 218(3), and HRA 321(3)
   3. Related Requirements: ACC 201(3), and MKT 150(3)
   4. Core Courses: HRA 310(3), 354(3), 428(3), 490(3), and 499(6)
   5. Major Electives: 12 hours of upper-division HRA courses
C. Seven hours of advisor approved upper-division courses
D. General Baccalaureate Degree Requirements - see General Baccalaureate Degree Requirements section of catalog

Hospitality and Restaurant Administration Courses

HRA 210 Introduction to Hospitality Leadership

This course is designed to examine the leadership processes, concepts, and principles and to improve personal competence in decision-making, problem solving, motivation, and communication as they relate to the hospitality industry. 3(3-0) F,S

HRA 215 Introduction to Lodging Management

Prerequisite: HRA 210 or concurrent enrollment. A study of the fundamentals of how lodging operations are managed from a rooms perspective. Practical examples are used to familiarize students with the line management aspects of reservations, registration, occupancy, and checkout and the settlement procedures in various lodging market segments. 3(3-0) F,S

HRA 218 Safety and Sanitation

Prerequisite: HRA 210 or concurrent enrollment or permission. Introduction to food service sanitation and safety practices pertinent to hospitality management. Emphasis on sanitation requirements, safe food handling, storage practices and accident prevention. 3(3-0) F,S

HRA 300 Special Topics in Hospitality and Restaurant Administration

Prerequisite: permission of Department Head. Selected topics of contemporary interest in hospitality and restaurant administration. Offered when resources and demand allow. May be repeated for a total of 6 hours when topics change. Variable Content Course. 1-3 D

HRA 302 Hospitality and Restaurant Administration Study Tour

Prerequisite: permission of Department Head. Study of and visits to museums, international hospitality tours, historic sites, trade shows, conferences, and conventions related to the hospitality industry. May be taken for a total of 6 hours. 1-3 D

HRA 310 Analyzing Financial Performance in Hospitality Operations

Prerequisite: HRA 210 and HRA 215 and ACC 201. Financial techniques in forecasting, budgeting, and performance measurement, and the application of the hospitality industry uniform system of accounts are covered in this course as they apply to operational and fiscal decision making. 3(3-0) F,S

HRA 315 Advanced Lodging Management

Prerequisite: HRA 210 and HRA 215 and ACC 201. Students in this course will analyze the lodging industry in depth. Critical thinking skills are stressed as students are exposed to different viewpoints within a coherent theoretical structure, enabling them to formulate their own ideas and solutions. Current trends and challenges in lodging are also studied in depth. 3(3-0), S

HRA 321 Principles of Food Preparation

Prerequisite: HRA 218. Students in this course study the scientific principles and techniques in the selection, preparation and preservation of food including fundamental principles of nutrition and diet. Supplemental course fee. 3(1-4) F,S

HRA 325 Cultural Cuisine

Prerequisite: permission of instructor. A course designed to extensively explore various cultures through a hands-on culinary experience. May be repeated for a total of 6 hours. Supplemental course fee (variable by section.) 1-3 D

HRA 330 Banquet Operations

Prerequisite: HRA 210 and HRA 321. This course provides students with practical skills and knowledge for effective management of food and beverage practices, from the preparation of quantity foods to its service. Laboratory arranged. Supplemental course fee. 3(2-2) F,S

HRA 340 Destination Development

Prerequisite: HRA 410 or concurrent enrollment; or GRY 310. This course offers a systematic study of hospitality businesses and attractions as they apply to destination development. The role of government agencies, private developers, and investors as they pertain to destination development will be studied. Case studies are used extensively which offer examples of successful and unsuccessful development efforts. 3(3-0) S

HRA 345 Club Management

Prerequisite: HRA 210 and HRA 215 and HRA 218. Students study governance, strategy, marketing membership, human resources, and operations that are specific to the private club segment of the hospitality industry. 3(3-0) F

HRA 354 Hospitality Human Resource Development

Prerequisite: HRA 210 and HRA 215 and junior standing. Study of concepts and applications of interpersonal skills as it relates to the hospitality industry; communication; leadership styles; product enhancement; labor market shortage; conflict resolution; recruitment, training and retention. 3(3-0) F,S

HRA 360 Hospitality Facilities Management

Prerequisite: HRA 210 and HRA 215 and ACC 201. Students in this course study the management of the physical plant of various hospitality enterprises, with a focus on systems, sustainability, design and layout, equipment, development, and renovation. Current facility-related challenges are also addressed 3(3-0) F

HRA 400 Problems in Hospitality and Restaurant Administration

Prerequisite: permission of Department Head. Independent study for those who wish additional work in specific subject areas. 1-3 D

HRA 409 Beverage Operations

Prerequisite: senior standing; and Hospitality and Restaurant Administration major. Principles and methods of operating a profitable beverage component in a foodservice business. Topics range from inventory control, accounting, equipment and pricing, to legal responsibilities and liability. Supplemental course fee. 3(3-0) F,S

HRA 410 Hospitality Marketing and Revenue Management

Prerequisite: HRA 310 or concurrent enrollment; and MKT 150 or MKT 350. The course is designed to provide students with theory and knowledge which will enable them to develop and interpret strategic marketing plans for hospitality enterprises properties. 3(3-0) F,S

HRA 426 Food and Beverage Management

Prerequisite: HRA 321; and junior standing. A continuation of the student's familiarization with food service components in the hospitality industry. Menu, planning, pricing, food service accounting, wage and labor cost control, purchasing, portion control, advertising, sales and other food service principles, practices and techniques are analyzed. 3(3-0) F,S

HRA 428 Hospitality Law

Prerequisite: junior standing; and Hospitality and Restaurant Administration major. The study of the legal aspect of lodging and food service operations. Problem-solving approach applied to liability and litigation problems confronting hospitality executives. 3(3-0) F,S

HRA 430 Special Event Planning

Prerequisite: MKT 150 or MKT 350; and HRA 321. In-depth analysis of management and operational challenges involved in planning and deploying events as they relate to the hospitality industry. 3(3-0) F,S

HRA 435 Restaurant Management

Prerequisite: HRA 321. This course is designed to allow students to experience the step-by-step process of operating "Carrie's" Restaurant in the Professional Building. Students will design the menu, prepare and serve the food and market the restaurant. In addition, students may participate in the planning and execution of various special events in the program. May be repeated to a total of 6 hours. 3(1-4) F,S

HRA 436 Casino Operations

Prerequisite: HRA 354 or concurrent enrollment. This course provides an overview of the gaming industry with an emphasis on casino hotel operations as an integral part of the hospitality industry. Topics include the history of gaming, casino layout and design, surveillance, demographic profiles, psychological profiles, and economic impact. 3(3-0) F,S

HRA 480 Global Strategic Management in the Hospitality Industry

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

HRA 490 Advanced Hospitality Leadership

Prerequisite: senior standing; and HRA 354 or concurrent enrollment; and Hospitality and Restaurant Administration major. An in-depth investigation into leadership principles and practices required of professionals in the hospitality industry. 3(3-0) F,S

HRA 497 International Hospitality Field Study

Prerequisite: HRA 210 and HRA 215 and HRA 218 and permission. Provides students with first-hand exposure to international issues in hospitality administration. This Study Away experience includes a preparation phase, a two to three week visit to an international destination where students are immersed in the local culture, and a debrief following the trip. Because credit and destinations vary, the course may be repeated to a total of 6 hours. Graded Pass/Not Pass only. Variable content course. 1-3 D

HRA 499 Internship in Hospitality

Prerequisite: senior standing; and Hospitality and Restaurant Administration major; and permission. Supervised experience in a cooperative program in hospitality. Student must gain experience/exposure in at least three positions during the internship. The student must be paid for the internship and must work a minimum of 750 hours. 6(0-6) D

HRA 710 Risk Management and Legal Compliance in the Hospitality Industry

Prerequisite: LAW 600 or equivalent. In-depth studies of legal issues pertinent to hospitality and tourism firms are the focus of this course. Topical areas include contracts, negligence, and employment, labor, and real estate law. Treaties and international law affecting global trade policy as well as international tourism development receive heavy emphasis. 3(3-0) D

HRA 720 Hospitality Change Management and Leadership

Prerequisite: MGT 600 or equivalent. An in-depth investigation of the principles and theories of leading change in hospitality organizations. The processes, skills, and abilities needed to manage change in the industry are stressed. Attention is given to areas hospitality leaders need to address when initiating change such as vision development, team development and motivation, power and influence, performance standards, productivity, and organizational culture. Case studies will be used extensively to address course content. 3(3-0) F

HRA 730 Seminar in Hospitality and Tourism

Prerequisite: 18 graduate hours in business administration and economics. An evaluation and analysis of the theory, research, and practice involved in hospitality and tourism fields. The course involves an integrative learning experience where students will have the opportunity to engage in an applied research project. 3(3-0) S

10

Missouri State University
Curricular Proposal Course Change or Deletion

Department Hospitality and Restaurant Administration Date 10/29/12

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

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.)
HRA 310 Analyzing Financial Performance in Hospitality Operations Prerequisite: HRA 210 and HRA 215 and ACC 201. Financial techniques in forecasting, budgeting, and performance measurement, and the application of the hospitality industry uniform system of accounts are covered in this course as they apply to operational and fiscal decision making. 3(3-0) F,S	**HRA 310 Analyzing Financial Performance in Hospitality Operations** Prerequisite: MTH 130 or higher; and HRA 210; and HRA 215; and ACC 201. Financial techniques in forecasting, budgeting, and performance measurement, and the application of the hospitality industry uniform system of accounts are covered in this course as they apply to operational and fiscal decision making. 3(3-0) F,S

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
Occasionally, transfer students have registered for HRA 310 without having completed MTH 130 or higher, yet have completed ACC 201 which is a current prerequisite for HRA 310. This change will address the problem to ensure that all students are adequately prepared for success in HRA 310.

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 310 Analyzing Financial Performance in Hospitality Operations

Prerequisite: MTH 130 or higher; and HRA 210; and HRA 215; and ACC 201. Financial techniques in forecasting, budgeting, and performance measurement, and the application of the hospitality industry uniform system of accounts are covered in this course as they apply to operational and fiscal decision making. 3(3-0) F,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.

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 Melissa Clark Date 10/30/12
Department Head

(Routing on Reverse Side)

Missouri State University
Curricular Proposal Course Change or Deletion

Date 10/29/12

Department Hospitality and Restaurant Administration

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

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.)
HRA 490 Advanced Hospitality Leadership Prerequisite: senior standing; and HRA 354 or concurrent enrollment; and Hospitality and Restaurant Administration major. An in-depth investigation into leadership principles and practices required of professionals in the hospitality industry. 3(3-0) F,S	**HRA 490 Advanced Hospitality Leadership** Prerequisite: senior standing; and MTH 130 or higher; and HRA 354 or concurrent enrollment; and Hospitality and Restaurant Administration major. An in-depth investigation into leadership principles and practices required of professionals in the hospitality industry. 3(3-0) F,S

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
Occasionally, transfer students have registered for HRA 490 without having completed MTH 130 or higher which is necessary for this senior level capstone course. This change will address the problem.

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 490 Advanced Hospitality Leadership

Prerequisite: senior standing; and MTH 130 or higher; and HRA 354 or concurrent enrollment; and Hospitality and Restaurant Administration major. An in-depth investigation into leadership principles and practices required of professionals in the hospitality industry. 3(3-0) F,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.

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 Melissa Combs Department Head Date 10/30/12

(Routing on Reverse Side)

CNRS

8

Missouri State University
Curricular Proposal Course Change or Deletion

Date 10/29/12

Department Hospitality and Restaurant Administration

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

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.)
HRA 720 Hospitality Change Management and Leadership Prerequisite: MGT 600 or equivalent. An in-depth investigation of the principles and theories of leading change in hospitality organizations. The processes, skills, and abilities needed to manage change in the industry are stressed. Attention is given to areas hospitality leaders need to address when initiating change such as vision development, team development and motivation, power and influence, performance standards, productivity, and organizational culture. Case studies will be used extensively to address course content. 3(3-0) F	**HRA 720 Hospitality Change Management and Leadership** Prerequisite: MGT 600 or equivalent. An in-depth investigation of the principles and theories of leading change in hospitality organizations. The processes, skills, and abilities needed to manage change in the industry are stressed. Attention is given to areas hospitality leaders need to address when initiating change such as vision development, team development and motivation, power and influence, performance standards, productivity, and organizational culture. Case studies will be used extensively to address course content. 3(3-0) ~~D~~F

What is changing? Check all boxes that apply.

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

Reason for Proposed Change or Deletion
We need to be able to offer this course based on demand to best accommodate faculty members' teaching loads and departmental flexibility.

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

COMPLETE NEW CATALOG INFORMATION (typed)

HRA 720 Hospitality Change Management and Leadership

Prerequisite: MGT 600 or equivalent. An in-depth investigation of the principles and theories of leading change in hospitality organizations. The processes, skills, and abilities needed to manage change in the industry are stressed. Attention is given to areas hospitality leaders need to address when initiating change such as vision development, team development and motivation, power and influence, performance standards, productivity, and organizational culture. Case studies will be used extensively to address course content. 3(3-0) D

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** (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 _____ Date 10/30/12
Department Head

(Routing on Reverse Side)

CNHS

4

Missouri State University
Curricular Proposal Course Change or Deletion

Date 10/29/12

Department Hospitality and Restaurant Administration

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

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.)
HRA 730 Seminar in Hospitality and Tourism Prerequisite: 18 graduate hours in business administration and economics. An evaluation and analysis of the theory, research, and practice involved in hospitality and tourism fields. The course involves an integrative learning experience where students will have the opportunity to engage in an applied research project. 3(3-0) S	**HRA 730 Seminar in Hospitality and Tourism** Prerequisite: 18 graduate hours in business administration and economics. An evaluation and analysis of the theory, research, and practice involved in hospitality and tourism fields. The course involves an integrative learning experience where students will have the opportunity to engage in an applied research project. 3(3-0) ~~S~~D

What is changing? Check all boxes that apply.

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

Reason for Proposed Change or Deletion
We need to be able to offer this course based on demand to best accommodate faculty members' teaching loads and departmental flexibility.

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

COMPLETE NEW CATALOG INFORMATION (typed)

HRA 730 Seminar in Hospitality and Tourism

Prerequisite: 18 graduate hours in business administration and economics. An evaluation and analysis of the theory, research, and practice involved in hospitality and tourism fields. The course involves an integrative learning experience where students will have the opportunity to engage in an applied research project. 3(3-0) D

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** (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** 10/30/12

(Routing on Reverse Side)

10

Missouri State University
Curricular Proposal Program Change or Deletion

Department Mathematics Date 8/30/12

Title of Program Affected MSED, Secondary Ed, Math Area

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

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
X Other Requirements

REASON FOR PROPOSED CHANGE

CSC 130 (as the initial programing course) is more appropriate for B.S. Ed. Mathematics Majors. CSC 131 has a pre-requisite of CSC 130.

COMPLETE NEW CATALOG INFORMATION (Typed)

Attachment C

*Total Hours*_____

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)

X **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 _____ Department Head Date 9/26/12

(Routing on Reverse Side)

Attachment A

Mathematics

Bachelor of Science in Education
(Certifiable grades 9-12)

A. General Education Requirements - see General Education Program and Requirements section of catalog
B. Major Requirements
1. MTH 261(5), 280(5), 302(3), 315(3), 345(3), 460(3), 497(1), 532(3), 533(3), 575(3)
2. Select two courses from: MTH 503(3), 536(3), 540(3), 567(3)
3. Courses required from related areas: CSC 121(3) or 125(4) or 131(4); PHY 123(4) or 203(5)
C. Professional Education Requirements
1. MTH 409(3), 410(3), 493(5-6), 494(5-6)
2. Professional Education Required Core and Competencies - see Teacher Certification, Teacher Education Program and Secondary Education Requirements section of catalog

Attachment B

Mathematics

Bachelor of Science in Education
(Certifiable grades 9-12)

A. General Education Requirements - see General Education Program and Requirements section of catalog
B. Major Requirements
1. MTH 261(5), 280(5), 302(3), 315(3), 345(3), 460(3), 497(1), 532(3), 533(3), 575(3)
2. Select two courses from: MTH 503(3), 536(3), 540(3), 567(3)
3. Courses required from related areas: CSC 121(3) or 125(4) or ~~131(4)~~ **130 (3);** PHY 123(4) or 203(5)
C. Professional Education Requirements
1. MTH 409(3), 410(3), 493(5-6), 494(5-6)
2. Professional Education Required Core and Competencies - see Teacher Certification, Teacher Education Program and Secondary Education Requirements section of catalog

Attachment C

Mathematics

Bachelor of Science in Education
(Certifiable grades 9-12)

A. General Education Requirements - see General Education Program and Requirements section of catalog
B. Major Requirements
1. MTH 261(5), 280(5), 302(3), 315(3), 345(3), 460(3), 497(1), 532(3), 533(3), 575(3)
2. Select two courses from: MTH 503(3), 536(3), 540(3), 567(3)
3. Courses required from related areas: CSC 121(3) or 125(4) or 130(3); PHY 123(4) or 203(5)
C. Professional Education Requirements
1. MTH 409(3), 410(3), 493(5-6), 494(5-6)
2. Professional Education Required Core and Competencies - see Teacher Certification, Teacher Education Program and Secondary Education Requirements section of catalog

Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

Date 9-21-12

Department Mathematics

Check one: __x__New COURSE ____New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached? _____

PROPOSED CATALOG DESCRIPTION

MTH 750 Number and Operations for Elementary Mathematics Specialists. 3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. The course is designed to develop an understanding of the learning and teaching of pre-number concepts, counting and cardinality, and numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum. To be taken concurrently with Internship and Seminar in Number and Operations. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.

PURPOSE OF COURSE

This course will focus on the content and complexities of teaching and assessing number and operations in a K-5 setting and will include topics from grades 6-8 to develop an understanding of how the mathematical ideas in the elementary grades build to those in the middle grades. Candidates will develop an expertise related to number and operation that will support fellow teachers and enhance student learning. Candidates will also examine the learning trajectories children exhibit as they develop concepts and skills in these areas. Course content will include the teaching and learning of counting and cardinality and number and operations in base 10 including both whole numbers and decimal numbers.

RELATIONSHIP TO OTHER DEPARTMENTS

This course will be used to meet requirements of the M.S. Ed. for elementary education in COE

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

_____ **College Council**	(All new course proposals 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.)
__x__ **Professional Education Committee**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
_____ **Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
__x__ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature _____ Department Head **Date** 10/4/2012

(Routing on Reverse Side)

FS-2005

11

NEW COURSE RESOURCE INFORMATION

Department Mathematics Date 9-21-12

Course Number and Title MTH 750: Number and Operations for Elementary Mathematics Specialists

Anticipated Average Enrollment 30 Maximum Enrollment Limit 40

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

No.

2 What will this course require in the way of:

Additional library holdings? No.

Additional computer resources? No.

Additional or remodeled facilities? No.

Additional equipment or supplies? Some additional manipulatives.

Additional travel funds? No.

Additional faculty--general vs specialized? No.

Other additional expenses? No.

3 If additional faculty are not required, how will faculty be made available to teach this course?

One per course faculty may have to be hired to either teach the course (ex. Campbell), or to cover a class usually taught by one of the math educators. (Because of the cooperative nature of the course offerings for the Elementary math specialist certification, we only expect one of the five content courses to be taught at MSU each year.)

List names of current faculty qualified to teach this course:

Campbell (Emeritus), Killion, Plymate, Ragan, Harbaugh

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This course is designed for practicing teachers (with at least 2 years of experience teaching elementary or middle school). Because of the new state certification, the students are expected to be new recruits. This would have no impact on other courses or programs offered in the Mathematics department. Since these courses can be considered as meeting program requirements for the M. S. Ed.. in Elementary Education, the potential growth of the program is viewed as a positive venture by COE. Recruiting candidates for the master's program with an added state certification in math or as an alternative course of study for existing students working on the M.S. Ed (elementary education) would support enrollment growth initiatives.

5 Other comments:

This course will be taken concurrently with Seminar and Internship in Number and Operations, offered in COE.

Number and Operations for Elementary Mathematics Specialists
Curriculum Process Syllabus

Credit Hours: 3 hours

Prerequisites: Two years teaching experience and permission of program coordinator

Course Catalog Description:
The course is designed to develop an understanding of the learning and teaching of pre-number concepts, counting and cardinality, and numbers and operations in base ten. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum. To be taken concurrently with Seminar and Internship in Number and Operations.

Purpose of Course: This course will focus on the content and complexities of teaching and assessing number and operations in a K-5 setting and will include topics from grades 6-8 to develop an understanding of how the mathematical ideas in the elementary grades build to those in the middle grades. Candidates will develop an expertise related to number and operation that will support fellow teachers and enhance student learning. Candidates will also examine the learning trajectories children exhibit as they develop concepts and skills in these areas. Course content will include the teaching and learning of counting and cardinality and number and operations in base 10 including both whole numbers and decimal numbers.

Course Objectives:

The learner will:

- Develop an understanding of the intricacy of learning to count and appropriate pedagogy.
- Analyze counting errors made by young children and provide intervention suggestions.
- Describe and provide examples of the different types of problems that are solved using addition, subtraction, multiplication and division.
- Describe the learning paths for single-digit addition, subtraction, multiplication, and division and appropriate pedagogy..
- Describe multiple strategies and models for helping children develop an understanding of the structure of the base-10 system.
- Apply properties and place-value concepts to develop an understanding of base-ten computation methods.

- Describe common student computational errors and provide suggestions for interventions.
- Determine if student-invented algorithms are valid.
- Describe how to use drawings and manipulatives to explain the rationale behind computational methods.
- Extend the base-10 system to decimal numbers.
- Use the Common Core State Standards for Mathematics and the Learning Progressions to guide the planning, implementation, and assessment of the teaching of number and operations.
- Teachers will develop in themselves the Standards for Mathematical Practice, described in the Common Core State Standards for Mathematics, in the context of numbers and operations.

Course Outline:

A. Overview of Counting and Cardinality and Number and Operations in Base 10 domains of Common Core State Standards for Mathematics.
B. Common Core Learning Progressions for Counting and Cardinality and Number and Operations in Base Ten
C. The Teaching and Learning of Counting and Cardinality
    1. Learning path for counting
    2. Classification
    3. Non-quantified comparison
    4. Subitizing
    5. Cardinality
    6. Examining student thinking and work
    7. Developing pedagogical content knowledge
    8. Common student errors in counting
D. The Teaching and Learning of Numbers in base 10.
    1. Structure of base-10 system.
    2. Number bonds, 5- and 10-frames, place value cards
    3. Composing and decomposing numbers
    4. Examining student thinking and work regarding place value
    5. Developing pedagogical content knowledge
    6. Common student errors with place value
E. The Teaching and Learning of Operations
    1. Fluency
    2. Single-digit addition and subtraction methods
        a. Direct modeling by counting all or taking away
        b. Counting on
        c. Convert to an easier problem
    3. Addition and Subtraction situations
        a. Add To

   b. Take From
   c. Put Together/Take Apart
   d. Compare
4. Examining student thinking and work regarding addition and subtraction
5. Multi-digit Addition and Subtraction
   a. Using base 10 pieces to develop standard algorithm.
   b. Use of open number line to model word problems
   c. Place value/Non-standard algorithms
   d. Mental math
   e. Common student errors with addition and subtraction
6. Single-digit multiplication and division methods
   a. Making and counting all quantities
   b. Repeated counting on
   c. Use of associative or distributive property to compose and decompose
7. Multiplication and division situations
   a. Equal groups or objects
   b. Arrays of objects
   c. Compare
8. Examine student thinking and work regarding multiplication and division
9. Multi-digit multiplication and division
   a. Using base 10 pieces to develop standard algorithm.
   b. Use of open number line to model word problems
   c. Place value/Non-standard algorithms
   d. Interpretation of remainder
   e. Mental math
   f. Common student errors with multiplication and division
10. Use primes, factors, prime factorization and relatively prime numbers to solve problems.
   a. Factors and multiples
   b. Primes and Composites
   c. Problem solving involving GCF and LCM
   d. Analysis of student work and development of appropriate remediation and enrichment
11. Extension of understanding of base ten to decimals
   a. Connection between decimal representation and fractions with denominators of powers or 10
   b. Reading and writing decimal numbers
   c. Use understanding of base 10 place values to make sense of addition and subtraction of decimal numbers
12. Examine students thinking and work with decimal place values and addition and subtraction of decimal numbers.

Resources:

Suggested student textbook:

- Common Core Progressions Documents
- Adding it Up Jeremy Kilpatrick, Jane Swafford, Bradford Findell, *Editors*; Mathematics Learning Study Committee; National Research Council
- Dougherty, B., Flores, A., Louis, E., Sophian, C., & Zbiek, R. M. (2010). *Developing Essential Understanding of Number and Numeration for Teaching Mathematics Pre-K-Grade 2.* Reston, VA: NCTM
- Karp, K., Caldwell, J., Bay-Williams, J., & Zbiek, M. (2011). *Developing Essential Understanding of Addition and Subtraction for Teaching Mathematics Pre-K-Grade 2.* Reston, VA: NCTM.
- Otto, A., Caldwell, J., Hancock, S. W., & Zbiek, R. M. (2011). *Developing Essential Understanding of Multiplication and Division Teaching Mathematics Grade 3- Grade 5.*

Suggested teacher resources:

- Developing Mathematical Ideas Dale Seymour Publications
- Hundred Board Activities- see book 100 Activities for the Hundred Number Board by Sandra Pryor Clarkson Ideal School Supply Company 0-89099-519-2
- Mental Math in Primary grades by Hope, Leutzinger, Reys and Reys

Assessment:

• Homework Assignments	20%
• Midterm Exam	30%
• Final Exam	30%
• Journal article reviews and reflections	10%
• Discussion board posts and replies	10%

12

Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

Department Mathematics **Date** 9-21-12

Check one: __x__ **New COURSE** ____ **New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached?** _____

PROPOSED CATALOG DESCRIPTION

MTH 752 Rational Numbers and Proportional Thinking for Elementary Mathematics Specialists. 3 (3-0) Prerequisite: MTH 750 and permission of program coordinator. The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum. To be taken concurrently with Internship and Seminar in Rational Numbers and Proportional Thinking. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.

PURPOSE OF COURSE

This course will focus on the content and complexities of teaching and assessing number and operations in a K-5 setting and will include topics from grades 6-8 to develop an understanding of how the mathematical ideas in the elementary grades build to those in the middle grades. Candidates will develop an expertise related to rational numbers and ratio and proportional relationships that will support fellow teachers and enhance student learning. Candidates will also examine the learning trajectories children exhibit as they develop concepts and skills in these areas. Course content will include the teaching and learning of numbers and operations in base 10, rational numbers, ratio and proportional relationships, and the number system.

RELATIONSHIP TO OTHER DEPARTMENTS

This course will be used to meet requirements of the M.S. Ed. for elementary education in COE

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

_____ **College Council**	(All new course proposals 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.)
___x___ **Professional Education Committee**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
_____ **Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
___x___ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature _____ Department Head **Date** 10/4/2012

(Routing on Reverse Side)

NEW COURSE RESOURCE INFORMATION

Department Mathematics Date 9-21-12

Course Number and Title MTH 752: Rational Numbers and Proportional Thinking for Elementary Mathematics Specialists

Anticipated Average Enrollment 30 Maximum Enrollment Limit 40

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

No.

2 What will this course require in the way of:

Additional library holdings? No.

Additional computer resources? No.

Additional or remodeled facilities? No.

Additional equipment or supplies? Some additional manipulatives.

Additional travel funds? No.

Additional faculty--general vs specialized? No.

Other additional expenses? No.

3 If additional faculty are not required, how will faculty be made available to teach this course?

One per course faculty may have to be hired to either teach the course (ex. Campbell), or to cover a class usually taught by one of the math educators. (Because of the cooperative nature of the course offerings for the Elementary math specialist certification, we only expect one of the five content courses to be taught at MSU each year.)

List names of current faculty qualified to teach this course:

Campbell (Emeritus), Killion, Plymate, Ragan, Harbaugh

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This course is designed for practicing teachers (with at least 2 years of experience teaching elementary or middle school). Because of the new state certification, the students are expected to be new recruits. This would have no impact on other courses or programs offered in the Mathematics department. Since these courses can be considered as meeting program requirements for the M. S. Ed. in Elementary Education, the potential growth of the program is viewed as a positive venture by COE. Recruiting candidates for the master's program with an added state certification in math or as an alternative course of study for existing students working on the M.S. Ed (elementary education) would support enrollment growth initiatives.

5 Other comments:

This course will be taken concurrently with Seminar and Internship in Rational Numbers and Proportional Thinking, offered in COE.

Rational Numbers and Proportional Thinking for Elementary Mathematics Specialists

Curriculum Process Syllabus

Credit Hours: 3 hours

Prerequisites: MTH 750: Number and Operations for Elementary Mathematics Specialists

Course Catalog Description:
The course is designed to develop an understanding of the learning and teaching of rational numbers and ratio and proportional relationships. Emphasis will be given to how children think about and learn these concepts and how they fit into the elementary school curriculum. To be taken concurrently with Seminar and Internship in Rational Numbers and Proportional Thinking.

Purpose of Course: This course will focus on the content and complexities of teaching and assessing number and operations in a K-5 setting and will include topics from grades 6-8 to develop an understanding of how the mathematical ideas in the elementary grades build to those in the middle grades. Candidates will develop an expertise related to rational numbers and ratio and proportional relationships that will support fellow teachers and enhance student learning. Candidates will also examine the learning trajectories children exhibit as they develop concepts and skills in these areas. Course content will include the teaching and learning of numbers and operations in base 10, rational numbers, ratio and proportional relationships, and the number system.

Course Objectives:

The learner will:

- Describe how the base-ten system extends to decimals and represent decimals on number lines.
- Explain the rationale for decimal computation.
- Examine hypothetical or actual student calculation methods and decide if the methods are valid or not.
- Describe fractions as numbers which can be represented with lengths and on number lines define fractions A/B as A parts, each of size 1/B.
- Explain how addition, subtraction, multiplication, and divisions meaning and problem types extend to rational numbers.
- Explain the connection between fractions and division.

- Use reasoning and drawings to solve problems and explain solutions.
- Explain how multiplication can make smaller and division can make larger.
- Reason about and explain how quantities vary together in a proportional relationship.
- Describe how proportional relationships differ from other relationships such as additive relationships and inversely proportional relationships.
- Explain how unit rates may be used to solve problems.
- Describe how rations connect to fractions.
- Explain that the concept of proportional relationship is a precursor and key example of a linear relationship.
- Compare and contrast different ways to find values in proportional relatioships and in inversely proportional relationships.
- Determine if student-invented algorithms are valid.
- Use the Common Core State Standards for Mathematics and the Learning Progressions to guide the planning, implementation, and assessment of the teaching of rational numbers and ratio and proportional relationships.
- Teachers will develop in themselves the Standards for Mathematical Practice, described in the Common Core State Standards for Mathematics, in the context of rational numbers and proportional thinking.

Course Outline:

A. Overview of Number and Operations – Base 10, Number and Operation – Fractions, Ratio and Proportional Relationships, and The Number System domains of Common Core State Standards for Mathematics.
B. Common Core Learning Progressions for Number and Operations – Base 10, Number and Operation – Fractions, Ratio and Proportional Relationships, and The Number System domains of Common Core State Standards for Mathematics.
C. Fractions
    1. Meaning of fractions.
        a. Specifying the whole
        b. Explaining what is meant by "equal parts"
        c. Definition of A/B as A parts, each of size 1/B
    2. Number line and number line diagrams with fractions
    3. Equivalent fractions
        a. Models
        b. Applications
        c. Numerical process
    4. Comparing fractions
        a. Models
        b. Importance of same whole

5. Addition and subtraction of fractions
    a. Decomposing and composing fractions
    b. Representations and models – fraction strips, number lines, fraction circles
    c. Application problems
6. Multiplication and division
    a. Models and representations – area model, fraction strips, number line
    b. Alternate algorithms
    c. Using fractions to multiply decimals
    d. Using relationship between multiplication and division to work with fraction division problems
    e. Multiplication as scaling
    f. Application problems
    g. Multiplication and division of decimals
7. Common student errors
8. Analyzing student work

D. Ratio and Proportional Relationships
1. Definitions and essential characteristics of ratios, rates, and proportional relationships
2. Representing ratios and equivalent ratios
3. Connecting ratio to fractions
4. Ratio tables
5. Double number line diagrams
6. Percents as ratios
7. Proportional relationships
    a. Recognizing proportional relationships
    b. Equations for proportional relationships
    c. Correspondences among tables, graphs and equations of proportional relationships
8. Analysis of student work and development of appropriate remediation and enrichment

E. The Number System
1. Integers
    a. Comparing
    b. Operations
        1) Models
        2) Comparing
        3) Use properties of operations to explain operations with integers
2. Irrational Numbers

Resources:

Suggested student textbook:

- Common Core Progressions Documents
- Adding it Up Jeremy Kilpatrick, Jane Swafford, Bradford Findell, *Editors*; Mathematics Learning Study Committee; National Research Council
- Lobato, J. Ellis, . & Zbiek, R. M., (2010). *Developing Essential Understanding of Rational Numbers for Teaching Mathematics in Grades 3-5* . Reston, VA: NCTM.
- Karp, K., Caldwell, J., Bay-Williams, J., & Zbiek, M. (2011). *Developing Essential Understanding of Ratios, Proportions, and Proportional Reasoning for Teaching Mathematics in Grades 6 - 8*. Reston, VA: NCTM.

Suggested teacher resources:

- Developing Mathematical Ideas Dale Seymour Publications

Assessment:

• Homework Assignments	20%
• Midterm Exam	30%
• Final Exam	30%
• Journal article reviews and reflections	10%
• Discussion board posts and replies	10%

13

Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

Department Mathematics Date 9-21-12

Check one: __x__New COURSE ____New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached? _____

PROPOSED CATALOG DESCRIPTION

MTH 754 Algebraic Reasoning for Elementary Mathematics Specialists. 3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra. To be taken concurrently with Internship and Seminar in Algebraic Reasoning. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.

PURPOSE OF COURSE

This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Candidates will develop an expertise related to algebraic reasoning that will support teachers and enhance student learning. Candidates will also examine the learning trajectories children exhibit as they develop algebraic reasoning concepts and skills. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra.

RELATIONSHIP TO OTHER DEPARTMENTS

This course will be used to meet requirements of the M.S. Ed. for elementary education in COE

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

_____ **College Council**	(All new course proposals 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.)
__x__ **Professional Education Committee**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
_____ **Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
__x__ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature _____ Department Head **Date** 10/4/2012

(Routing on Reverse Side)

13

NEW COURSE RESOURCE INFORMATION

Department Mathematics Date 9-21-12

Course Number and Title MTH 754: Algebraic Reasoning for Elementary Mathematics Specialists

Anticipated Average Enrollment 30 Maximum Enrollment Limit 40

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

No.

2 What will this course require in the way of:

Additional library holdings? No.

Additional computer resources? No.

Additional or remodeled facilities? No.

Additional equipment or supplies? Some additional manipulatives.

Additional travel funds? No.

Additional faculty--general vs specialized? No.

Other additional expenses? No.

3 If additional faculty are not required, how will faculty be made available to teach this course?

One per course faculty may have to be hired to either teach the course (ex. Campbell), or to cover a class usually taught by one of the math educators. (Because of the cooperative nature of the course offerings for the Elementary math specialist certification, we only expect one of the five content courses to be taught at MSU each year.)

List names of current faculty qualified to teach this course:

Campbell (Emeritus), Killion, Plymate, Ragan, Harbaugh

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This course is designed for practicing teachers (with at least 2 years of experience teaching elementary or middle school). Because of the new state certification, the students are expected to be new recruits. This would have no impact on other courses or programs offered in the Mathematics department. Since these courses can be considered as meeting program requirements for the M. S. Ed. in Elementary Education, the potential growth of the program is viewed as a positive venture by COE. Recruiting candidates for the master's program with an added state certification in math or as an alternative course of study for existing students working on the M.S. Ed (elementary education) would support enrollment growth initiatives.

5 Other comments:

This course will be taken concurrently with Seminar and Internship in Algebraic Reasoning, offered in COE.

Algebraic Reasoning for Elementary Mathematics Specialists
Curriculum Process Syllabus

Credit Hours: 3 Hours

Prerequisites: Two years teaching experience and permission of program coordinator

Course Catalog Description:
This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra. To be taken concurrently with Seminar and Internship in Algebraic Reasoning.

Course Purpose:
This course will focus on the content and complexities of teaching and assessing algebraic reasoning in grade 1-6 settings. Candidates will develop an expertise related to algebraic reasoning that will support teachers and enhance student learning. Candidates will also examine the learning trajectories children exhibit as they develop algebraic reasoning concepts and skills. Course content will include examination of representation and analysis of mathematical situations and structures. Attention will be given to patterns, functions, and the transition from arithmetic to algebra.

Course Objectives:
The learner will:

- Represent and justify general arithmetic claims, using a variety of representations, algebraic notation among them; understand different forms of argument and learn to devise deductive arguments and to refute claims as appropriate. In addition, recognize invalid arguments (e.g., examples-based justifications of general statements)
- Recognize commutativity, associativity, distributivity and use the elements of 1 and 0 as identify elements in the real number system; understand how these may be used in computations (e.g., make 10) to justify the correctness of standard and non-standard algorithms.
- Model problems (e.g., situations that could be modeled using constant, linear, exponential, and quadratic equations, or systems of equations), both mathematical and real-world, using algebraic representations. Use the process of substitution of particular numbers into expressions and apply to specific instances.
- Make meaning, interpret, and thoughtfully manipulate variables, algebraic expressions, and algebraic equations.
- Move fluidly and flexibly among verbal, graphical, tabular, and symbolic representations.

- Use the Common Core State Standards for Mathematics and the Learning Progressions to guide, implement, and assess the teaching and learning of algebraic reasoning.
- Develop in themselves the mathematical practices described in the Standards for Mathematical Practice from the Common Core State Standards for Mathematics in the context of algebraic reasoning.

Course Content Outline

A. Overview of Operations and Algebraic Thinking and Expressions and Equations domains of the Common Core State Standards for Mathematics.
B. Common Core Learning Progressions for Operations and Algebraic Thinking and Expressions and Equations.
C. Properties of arithmetic operations as they relate to algebra.
D. Generalization and proof as related to developing a mathematical argument.
E. Defining quantities by a contextual situation
    a. Relationships
    b. Using algebra to express relationship
F. Representing relationships
    a. Tables
    b. Graphs
    c. Verbal
    d. Equations
    e. Moving among relationships
G. Solving linear equations, systems of linear equations, and linear inequalities
H. Mathematical modeling
    a. Representing contextual situations
    b. Making predictions using relations and functions

Resources:

Required:

NCTM Essential Understandings: "Developing Essential Understanding of Algebraic Thinking for Teaching Mathematics in Grades 3-5"

NCTM Essential Understandings: "Developing Essential Understanding of Mathematical Reasoning for Teaching Mathematics in Grades preK-8"

Thinking Mathematically: Integrating Arithmetic and Algebra in Elementary School, Carpenter, Heinemann

Assessment:

- Written exams and quizzes 40% of grade
- Assigned problem sets 15% of grade
- Curriculum development project demonstrating course principles 40% of grade
- Analysis and evaluation of existing curriculum and peer-developed lessons 5% of grade

Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

14

Department Mathematics **Date** 9-21-12

Check one: __x__New COURSE ____New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached? _____

PROPOSED CATALOG DESCRIPTION

MTH 758 Data and Probability for Elementary Mathematics Specialists. 3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. The course is designed to develop understanding of probabilistic reasoning and the collection, exploration, and analysis of data. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.

PURPOSE OF COURSE

This course will focus on the content and complexities of teaching and assessing data analysis, statistics, and probability in a K-5 setting but will include topics in 6-8 grades because elementary teachers must understand how the mathematical ideas in the elementary grades build to those in the middle grades and should understand the connections between the topics in the various grade levels. Candidates will develop an expertise related to data analysis, statistics, and probability that will support fellow teachers and enhance student learning. Candidates will also examine the learning trajectories as children develop data analysis, statistics, and probability concepts and skills. Course content will include the essentials of probability and statistics: designing data investigations; describing data using measures like mean, median, interquartile range, and mean absolute deviation; using measures to compare data sets; using data displays to ask and answer questions about data; and drawing conclusions and making inferences.

RELATIONSHIP TO OTHER DEPARTMENTS

This course will be used to meet requirements of the M.S. Ed. for elementary education in COE

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

_____ **College Council**	(All new course proposals 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.)
___x___ **Professional Education Committee**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
_____ **Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
___x___ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature _____ **Date** 10/4/2012
Department Head

(Routing on Reverse Side)

14

NEW COURSE RESOURCE INFORMATION

Department Mathematics Date 9-21-12

Course Number and Title MTH 758: Data and Probability for Elementary Mathematics Specialists

Anticipated Average Enrollment 30 Maximum Enrollment Limit 40

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

No.

2 What will this course require in the way of:

Additional library holdings? No.

Additional computer resources? No.

Additional or remodeled facilities? No.

Additional equipment or supplies? Some additional manipulatives.

Additional travel funds? No.

Additional faculty--general vs specialized? No.

Other additional expenses? No.

3 If additional faculty are not required, how will faculty be made available to teach this course?

One per course faculty may have to be hired to either teach the course (ex. Campbell), or to cover a class usually taught by one of the math educators. (Because of the cooperative nature of the course offerings for the Elementary math specialist certification, we only expect one of the five content courses to be taught at MSU each year.)

List names of current faculty qualified to teach this course:

Campbell (Emeritus), Killion, Plymate, Ragan, Harbaugh

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This course is designed for practicing teachers (with at least 2 years of experience teaching elementary or middle school). Because of the new state certification, the students are expected to be new recruits. This would have no impact on other courses or programs offered in the Mathematics department. Since these courses can be considered as meeting program requirements for the M. S. Ed. in Elementary Education, the potential growth of the program is viewed as a positive venture by COE. Recruiting candidates for the master's program with an added state certification in math or as an alternative course of study for existing students working on the M.S. Ed (elementary education) would support enrollment growth initiatives.

5 Other comments:

This course does not have an internship course associated with it.

Data and Probability for Elementary Mathematics Specialists
Curriculum Process Syllabus - 3 hours credit

Course Description: The course is designed to develop understanding of probabilistic reasoning and the collection, exploration, and analysis of data. Emphasis will be given to how children think and learn about these concepts and how they fit into the elementary school curriculum.

Prerequisites: Two years teaching experience and permission of program coordinator

Course Goals:

1. Teachers will develop a deep understanding of the nature and uses of data.
2. Teachers will develop a deep understanding of probabilistic concepts.

Course Objectives:

1. Teachers will develop ways to use data to investigate other mathematical concepts (e.g. algebra).
2. Teachers will recognize key mathematical ideas regarding data and probability, including common misconceptions, with which their students and colleagues are grappling.
3. Teachers will summarize, describe, and compare distributions of numerical data in terms of shape, center, and spread.
4. Teachers will calculate theoretical and experimental probabilities of simple and compound events, and explain why their values may differ for a given event in a particular experimental situation.
5. Teachers will develop an appreciation for statistical variability and its sources, and the role of randomness in statistical inference.
6. Teachers will explore relationships between two variables by studying patterns in bivariate data.
7. Teachers use the Common Core State Standards for Mathematics and the Learning Progressions documents to guide the creation of lessons and the assessment of students in data and probability.
8. Teachers will ask questions that deepen students' and colleagues' mathematical understanding of data and probability.
9. Teachers will develop methods of supporting their students' and colleagues' mathematical understanding.
10. Teachers will develop methods to interpret, analyze, and communicate about data regarding students' understanding.
11. Teachers will develop in themselves the Standards for Mathematical Practice, described in the Common Core State Standards for Mathematics, in the context of data analysis and probability.

Purpose of Course: This course will focus on the content and complexities of teaching and assessing data analysis, statistics, and probability in a K-5 setting but will include topics in 6-8 grades because elementary teachers must understand how the mathematical ideas in the elementary grades build to those in the middle grades and should understand the connections between the topics in the various grade levels. Candidates will develop an expertise related to data analysis, statistics, and probability that will support fellow teachers and enhance student learning. Candidates will also examine the learning trajectories as children develop data analysis, statistics, and probability concepts and skills. Course content will include the essentials of probability and statistics: designing data investigations; describing data using measures like mean, median, interquartile range, and mean absolute deviation; using measures to compare data sets; using data displays to ask and answer questions about data; and drawing conclusions and making inferences.

Assessment:

1. Exams to assess mathematical content knowledge
2. Written discussions of research articles related to student learning of data and probabilistic concepts.
3. Assignments of collecting, representing, and analyzing data.
4. Assignments of looking at student (or other teacher) discussions of probability to identify misconceptions. To complete the assignment the student must develop a plan for correcting the misconception that includes probing questions and input needed.
5. Project that requires students to use school achievement data to draw conclusions and make inferences about student learning. (May be part of seminar and internship)

Resources:

Developing Mathematical Ideas: Working with Data, by Schifter, Bastable, and Russell, Dale Seymour, 2002. (Case Studies book for students, Facilitator's package for Instructors)

Common Core Learning Progressions

Sources (but not required)

Navigating through Data and Analysis and Probability in Prekindergarten- Grade 2, by Sheffield, Cavanagh, Dacey, Findell, Greenes, Small, NCTM 2002.

Navigating through Data and Analysis and Probability in Grades 3-5, by Chapin, Koziol, MacPherson, and Rezba, NCTM 2003.

Navigating through Data and Analysis and Probability in Grades 6-8, by Bright, Brewer, McClain, and Mooney, NCTM 2003.

Elementary and Middle School Mathematics: Teaching Developmentally, by Van De Walle, Pearson 2011.

Helping Children Learn Mathematics, by Reys, Lindquist, Lambdin, and Smith, Wiley, 2010

Statistics and Probability: Activities Integrating Math and Science, by AIMS Education Foundation, 2008

Course Outline:

1. The Nature and Uses of Data
    a. The Collection of Data
        i. Design
        ii. Questions
        iii. Selection
        iv. Variability
    b. Types of Data
    . Discrete (Categorical)
        i. Continuous (Numerical)
        c. Representations of Data
    . Graphs
        i. Tables

ii. Numbers
d. Exploring Data
Shape
i. Center
ii. Spread

Concepts of Probability

Randomness
a. Measuring Chance
Theoretical vs. Experimental
i. Sample Spaces
ii. Counting Principles
iii. Fairness

The Joining of Data and Probability

Modeling – Using data to explore algebraic concepts
a. Drawing Conclusions from Data – Using data to research teaching and learning
b. Communicating Inferences from Data – Using data to improve teaching and learning

15

Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

Department Mathematics **Date** 9-21-12

Check one: __x__New COURSE ____New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached? _____

PROPOSED CATALOG DESCRIPTION

MTH 760 Geometry and Measurement for Elementary Mathematics Specialists. 3 (3-0) Prerequisite: Two years teaching experience and permission of program coordinator. This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary curriculum. To be taken concurrently with Internship and Seminar in Geometry and Measurement. This course cannot be used within the M. S. Mathematics program or the M.S. Ed. Secondary Education (Mathematics) program.

PURPOSE OF COURSE

This course will focus on the content and complexities of teaching and assessing geometry and measurement in a K-5 setting. Candidates will develop expertise related to geometry and measurement content and as well as adaptive reasoning skills that will support elementary teachers and enhance student learning in grades K-5. Candidates will examine the learning trajectories children exhibit as they develop geometry and measurement concepts and skills. Course content will include geometric properties and relationships, visualization and spatial reasoning, adaptive reasoning, and measurement in multiple dimensions, and transformational and coordinate geometries, geometric constructions and modeling.

RELATIONSHIP TO OTHER DEPARTMENTS

This course will be used to meet requirements of the M.S. Ed. for elementary education in COE

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

_____ **College Council**	(All new course proposals 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.)
___x___ **Professional Education Committee**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
_____ **Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
___x___ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature _____ **Date** 10/4/2012
Department Head

(Routing on Reverse Side)

FS-2005

NEW COURSE RESOURCE INFORMATION

Department Mathematics Date 9-21-12

Course Number and Title MTH 760: Geometry and Measurement for Elementary Mathematics Specialists

Anticipated Average Enrollment 30 Maximum Enrollment Limit 40

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

No.

2 What will this course require in the way of:

Additional library holdings? No.

Additional computer resources? No.

Additional or remodeled facilities? No.

Additional equipment or supplies? Some additional manipulatives.

Additional travel funds? No.

Additional faculty--general vs specialized? No.

Other additional expenses? No.

3 If additional faculty are not required, how will faculty be made available to teach this course?

One per course faculty may have to be hired to either teach the course (ex. Campbell), or to cover a class usually taught by one of the math educators. (Because of the cooperative nature of the course offerings for the Elementary math specialist certification, we only expect one of the five content courses to be taught at MSU each year.)

List names of current faculty qualified to teach this course:

Campbell (Emeritus), Killion, Plymate, Ragan, Harbaugh

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This course is designed for practicing teachers (with at least 2 years of experience teaching elementary or middle school). Because of the new state certification, the students are expected to be new recruits. This would have no impact on other courses or programs offered in the Mathematics department. Since these courses can be considered as meeting program requirements for the M. S. Ed. in Elementary Education, the potential growth of the program is viewed as a positive venture by COE. Recruiting candidates for the master's program with an added state certification in math or as an alternative course of study for existing students working on the M.S. Ed (elementary education) would support enrollment growth initiatives.

5 Other comments:

This course will be taken concurrently with Seminar and Internship in Geometry and Measurement, offered in COE.

Geometry and Measurement for Elementary Mathematics Specialists
CURRICULUM PROCESS SYLLABUS

Course Credit: 3 hours

Prerequisite Courses: Two years teaching experience and permission of program coordinator.

Course Catalog Description:
This course is designed to develop an understanding of the teaching and learning of geometry and measurement. Emphasis will be given to how children think about and learn these concepts and how they fit into an elementary curriculum. To be taken concurrently with Internship and Seminar in Geometry and Measurement.

Purpose of Course:
This course will focus on the content and complexities of teaching and assessing geometry and measurement in a K-5 setting. Candidates will develop expertise related to geometry and measurement content and as well as adaptive reasoning skills that will support elementary teachers and enhance student learning in grades K-5. Candidates will examine the learning trajectories children exhibit as they develop geometry and measurement concepts and skills. Course content will include geometric properties and relationships, visualization and spatial reasoning, adaptive reasoning, and measurement in multiple dimensions, and transformational and coordinate geometries, geometric constructions and modeling.

Course Objectives:
The learner will:

- Develop a deeper understanding of the topics in geometry and measurement that are taught in grades 1-6 through exploration of geometric constructions and modeling; utilization of technology and manipulatives; and adaptive reasoning and proofs;
- Develop an understanding of the ways in which children learn geometry and measurement concepts, including the van Hiele model for geometric learning as a framework (and/or Vygotsky's Zone of Development);
- Develop multiple ways to assess students understanding of geometry and measurement concepts;
- Develop strengths in diagnosing students' misconceptions, helping students move beyond these misconceptions and facilitate conceptual understanding of geometry and measurement concepts;
- Develop strategies for asking questions of students that will facilitate their mathematical understanding of geometry and measurement;
- Develop an understanding of how core mathematical ideas in geometry and measurement develop across grade levels;

- Develop methods of supporting their students' and colleagues' mathematical understanding of geometry and measurement;
- Develop ways to use geometry and measurement to investigate other mathematical concepts (such as algebra and data).
- Use the Common Core State Standards for Mathematics and the Learning Progressions documents to guide the creation of lessons and the assessment of students in data and probability.
- Develop in themselves the mathematical practices described in the Standards for Mathematical Practice from the Common Core State Standards for Mathematics in the context of geometry and measurement.

Course Content Outline:

A. Overview of Geometry and Measurement and Data domains of Common Core State Standards for Mathematics.
B. Common Core Learning Progressions for Geometry and Measurement and Data domains of Common Core State Standards for Mathematics
C. Properties and Relationships of Geometric Figures
    a. Draw, construct and describe geometrical figures
    b. Relationships among figures
D. Transformational Geometry
    a. Transformations
    b. Similarity
    c. Congruence
E. Coordinate Geometry
    a. Graphing points
    b. Use coordinate geometry to solve real-world problems
F. Geometric Measurement
    a. Measurement as iteration of a unit
    b. Measurement conversions
    c. Perimeter as attribute of plane figures
    d. Concepts of area and relationship to multiplication and addition
    e. Concept of volume and relationship to multiplication and addition
    f. Real world and mathematical problems involving area, surface area, and volume
    g. Pythagorean Theorem
G. Spatial Reasoning and Visualization
H. Geometric Constructions
I. Geometric Modeling
J. Geometric Reasoning and Proofs

Resources:

Required Textbook:

"Developing Mathematical Ideas: Geometry. Examining Features of Shapes: Casebook. Schifter, Bastable, and Russell; Dale Seymour Publications, 2002.

"Developing Mathematical Ideas: Geometry. Measuring Space in One, Two and Three Dimensions: Casebook. Schifter, Bastable, and Russell; Dale Seymour Publications, 2002.

Additional Resources:

"Discovering Geometry: An Investigative Approach." Serra, Michael; Key Curriculum Press, 2003.

"Foundations of Mathematics for Teachers." Killion, et al., Kendall Hunt, 2009.

"Looking at Geometry: Activities Integrating Math and Science. Grades 6-9." Erickson, Sheldon; AIMS Education Foundation, 2003.

Assessments:

Evidence of Participation and Preparation — **20% of grade**

- Case discussions
- Journal

Classwork — **20% of grade**

- Math Problem Sets
- Quizzes
- Journal/Article Reflections/Writing Assignment

Final Reflection Project — **30% of grade**

- Collaborative Structured Interview

Tests — **30% of grade**

16

Missouri State University
Curricular Proposal Program Change or Deletion

Department Physics, Astronomy and Materials Science **Date** November 5, 2012

Title of Program Affected Bachelor of Science Physics (Comprehensive)

Major___ Comprehensive Major_x___ Option___ Minor___ Certificate___ Certification___ Academic Rules___ Other___

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.)
Physics (Comprehensive) Bachelor of Science A.General Education Requirements - see General Education Program and Requirements section of catalog Specific General Education Requirements: PHY 203(5), MTH 261(5), ENG 321(3) B.Major Requirements 1.PHY 152(3), 204(5), 333(3), 343(3), 353(3), 375(3), 385(2), 386(1), 391(3), 486(1) See attached for entire copy	Physics (Comprehensive) Bachelor of Science A.General Education Requirements - see General Education Program and Requirements section of catalog Specific General Education Requirements: PHY 203(5), MTH 261(5), ENG 321(3) B.Major Requirements 1.PHY 152(3), 204(5), **291(3),** 333(3), 343(3), 353(3), 375(3), 385(2), 386(1), 391(3), 486(1) See attached for entire copy

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)
___ From program (major) to option
___ Program or option deletion
___ Other_____

REASON FOR PROPOSED CHANGE
Adding a requirement for PHY 291, which is also being submitted. This change was approved last year, but the course didn't make it all the way through. Computational physics is more important than ever in the workplace and students need more exposure to it.

COMPLETE NEW CATALOG INFORMATION see attached

Total Hours63-66

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_____ Department Head **Date** 11-5-12

(Routing on Reverse Side)

16

Complete Catalog Description

Physics (Comprehensive)
Bachelor of Science
A.General Education Requirements - see General Education Program and Requirements section of catalog
Specific General Education Requirements: PHY 203(5), MTH 261(5), ENG 321(3)

B.Major Requirements

1.PHY 152(3), 204(5), 333(3), 343(3), 353(3), 375(3), 385(2), 386(1), 391(3), 486(1)

2.Select one of the following option areas:

a.Astronomy and Astrophysics: AST 114(4) or 115(4); and select two courses from: AST 311(3), 313(3), 315(3), 317(3)

b.Engineering and Applied Physics: CSC 125(4); PHY 324(4), 351(3)

c.Materials Physics: MAT 540(3), 550(3), 580(3); PHY 575(3)

d.Graduate Prep Physics: MAT 580(3); PHY 476(3), 575(3)

3.Related Requirements: MTH 280(5), 302(3), 303(3)

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

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Missouri State University
Curricular Proposal Program Change or Deletion

Department Physics, Astronomy, and Materials Science **Date** November 02, 2012

Title of Program Affected Master of Science, Materials Science

Major___ Comprehensive Major___ Option___ Minor___ Certificate___ Certification___ Academic Rules___ Other___

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.)
Please see the attached document	Please see the attached document

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)
___ From program (major) to option
___ Program or option deletion
___ Other_____

REASON FOR PROPOSED CHANGE

The graduate faculty of our department makes annual evaluations in order to see what modifications if any need to be made to our M.S. degree program in Materials Science.

In recent years, we found that in certain cases, students could not complete their theses because of extraordinary circumstances. In order to accommodate students who may be in such situations, we are introducing a non-thesis option. This requires the completion of a minimum of two degree papers, each of which shall require an extensive paper or major creative work.

In addition, we have decided to change the number of required hours towards the degree. Our MS program in Materials Science currently requires 37 credit hours whereas a large majority of programs in the country only require 30-33 hours for completion of the MS degree. We have decided to cut 3 hours of research and one 3-hour course which reduces the number of total required hours to 31 for completion of the MS degree in Materials Science.

COMPLETE NEW CATALOG INFORMATION (Typed)

Please see the attached document

*Total Hours*_____*31*___

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

Signature_____ Department Head **Date** 11-5-12

(Routing on Reverse Side)

17

Missouri State University
Curricular Proposal Program Change or Deletion

Department Physics, Astronomy and Materials Science **Date** November 02, 2012

Title of Program Affected Master of Science, Materials Science

Major___ Comprehensive Major___ Option___ Minor___ Certificate___ Certification___ Academic Rules___ Other___

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.)
Program Description The Materials Science degree is designed to provide the graduate with a suitable background for employment in the exciting field of electronic materials. Specifically, students will receive experience in high-technology materials synthesis and characterization, including the operation and design of the equipment used to make integrated circuits. This degree was designed for students with good experimental skills, but little practical knowledge of specific instrumentation. Graduates will be prepared for employment in areas of semiconductor manufacturing, materials synthesis and testing, and other industries where high technology processing and development are required. The program requires 9-12 hours of course work, 9 hours of laboratory course work, 6 hours of electives, 9-12 hours of thesis research and 1 hour of seminar, for a total of 37 hours. Interdisciplinary courses taught in other departments may be used for electives if approved by the department head in advance. At the beginning of the first semester, students' background will be evaluated to determine the student's optimum path of study. Based on the results of the students' initial evaluation, poorly prepared students may be required to take some additional course work that will not apply to the degree. Later in the first semester, the student will interview with faculty members to choose an area of thesis research. A comprehensive examination is required usually one semester prior to graduation. The comprehensive examination is used to monitor the progress of each student through the program. At the end of the thesis project, the student will present his or her results in the form of a public thesis presentation or defense. Accelerated Master's Option Undergraduate Physics majors may wish to enroll in the Accelerated Master of Science degree program in Materials Science. Students who successfully complete this program can obtain an Engineering Physics Bachelor of Science degree and a Master of Science in Materials Science degree within five years. This challenging option is for students who have a strong interest in becoming experts in electronic materials. This includes the fields of Solid State Physics, Photonics, Opto-electronics, Electrical Engineering, and computer Engineering. While not essential for eventual admission to the program, it is strongly recommended that, as freshmen, students contact the department head for permission to become involved in the program. This will allow for appropriate advisement during the undergraduate years.	Program Description The Materials Science degree is designed to provide the graduate with a suitable background for employment in the exciting field of electronic materials. Specifically, students will receive experience in high-technology materials synthesis and characterization, including the operation and design of the equipment used to make integrated circuits. This degree was designed for students with good experimental skills, but little practical knowledge of specific instrumentation. Graduates will be prepared for employment in areas of semiconductor manufacturing, materials synthesis and testing, and other industries where high technology processing and development are required. The program requires ~~9-12~~ **15** hours of **required** course work, ~~9 hours of laboratory course work~~, 6-**9** hours of electives, ~~9-12~~ **6-9** ours of research and 1 hour of seminar, for a total of ~~37~~**31** hours. Interdisciplinary courses taught in other departments may be used for electives if approved by the department head in advance. At the beginning of the first semester, students' background will be evaluated to determine the student's optimum path of study. Based on the results of the students' initial evaluation, poorly prepared students may be required to take some additional course work that will not apply to the degree. Later in the first semester, the student will interview with faculty members to choose an area of thesis research. A comprehensive examination is required usually one semester prior to graduation. The comprehensive examination is used to monitor the progress of each student through the program. At the end of the thesis project, the student will present his or her results in the form of a public thesis presentation or defense. Accelerated Master's Option Undergraduate Physics majors may wish to enroll in the Accelerated Master of Science degree program in Materials Science. Students who successfully complete this program can obtain ~~an Engineering Physics~~ **a Physics (with Materials Science Option)** Bachelor of Science degree and a Master of Science in Materials Science degree within five years. This challenging option is for students who have a strong interest in becoming experts in electronic materials. This includes the fields of Solid State Physics, Photonics, Opto-electronics, **Nanotechnology,** Electrical Engineering, and computer Engineering. While not essential for eventual admission to the program, it is strongly recommended that, as freshmen, students contact the department head for permission to become involved in the program. This will allow for appropriate advisement during the undergraduate years.

Students may be admitted to the program after completing 60 hours with a 3.00 cumulative GPA, including the engineering physics core courses with a 3.50 cumulative GPA.

Students seeking this option must:

•Obtain admission to the Master of Science in Materials Science accelerated program by applying to the Graduate College prior to their senior year.
•Pass the Master of Science in Materials Science comprehensive examination in the second semester of their senior year.
Before enrolling in a course to be counted as both undergraduate and graduate credit and to count the courses towards the masters degree, an undergraduate student must be accepted into the accelerated program and receive prior approval from the graduate program advisor, department head of the undergraduate program, and the dean of the Graduate College. Acceptance into the program and all approvals must be completed prior to the end of the Change of Schedule Period for the course(s). See the Graduate College for further information.

Nine hours of course work may be counted toward both the undergraduate and the masters degree. These courses are MAT 640, MAT 651 and MAT 681.

Students who successfully meet all the requirements would receive a Bachelor of Science degree in Physics at the end of their fourth year, and a Master of Science at the end of their fifth year.
Degree Requirements (minimum of 37 hours)
1.For the student who has not received a "C" or better in a quantum mechanics course or its equivalent prior to admission to the program, satisfactory completion of PHY 675 Introduction to Quantum Mechanics is required.
2.Required core:
•MAT 640 Thermodynamics of Materials
•MAT 651 Introduction to Materials Science.
•MAT 681 Structure of Solids
•MAT 750 Experimental Design
•MAT 760 Experiments in Physical Characterization
•MAT 770 Vapor Synthesis of Materials
3.Six hours, with at least 3 hours at the 700 level or above, chosen from the following:
•PHY 643 Kinetic Theory and Statistical Mechanics
•PHY 653 Electromagnetic Field Theory
•MAT 720 Advanced Quantum Mechanics
•MAT 758 Optoelectronic Materials
•MAT 780 Polymer Preparation and Characterization
•MAT 790 Statistical Appliation in Materials Science
•Interdisciplinary Courses approved by the department head for elective credit. Examples: BMS 614, Scanning Electron Microscopy or CHM 614 Polymer Chemistry
4.Seminar. 1 hour of seminar, MAT 798.
5.Research. 9-12 hours of research, MAT 799 (up to 6 hours must be thesis research - see #6 Thesis Research).
6.Thesis Research. Satisfactory completion of an approved thesis and an oral thesis defense to the student's faculty advisor and a committee of graduate faculty is also required.
7.Comprehensive Examinations. A passing grade on the comprehensive examination, taken approximately one semester before graduation.

Students may be admitted to the program after completing 60 hours with a 3.00 cumulative GPA, including the engineering physics core courses with a 3.50 cumulative GPA.

Students seeking this option must:

•Obtain admission to the Master of Science in Materials Science accelerated program by applying to the Graduate College prior to their senior year.
•Pass the Master of Science in Materials Science comprehensive examination in the second semester of their senior year.
Before enrolling in a course to be counted as both undergraduate and graduate credit and to count the courses towards the masters degree, an undergraduate student must be accepted into the accelerated program and receive prior approval from the graduate program advisor, department head of the undergraduate program, and the dean of the Graduate College. Acceptance into the program and all approvals must be completed prior to the end of the Change of Schedule Period for the course(s). See the Graduate College for further information.

Nine hours of course work may be counted toward both the undergraduate and the masters degree. These courses are MAT 640, MAT 651 and MAT 681.

Students who successfully meet all the requirements would receive a Bachelor of Science degree in Physics at the end of their fourth year, and a Master of Science at the end of their fifth year.
Degree Requirements (minimum of ~~37~~**31** hours)
1.For the student who has not received a "C" or better in a quantum mechanics course or its equivalent prior to admission to the program, satisfactory completion of PHY 675 Introduction to Quantum Mechanics is required. **(This course does not count towards the 31 hour total)**
2.Required core: **(15 hours)**
•MAT 640 Thermodynamics of Materials
•MAT 651 Introduction to Materials Science
•MAT 681 Structure of Solids
~~•MAT 750 Experimental Design~~
•MAT 760 Experiments in Physical Characterization
•MAT 770 Vapor Synthesis of Materials
3.~~Six~~ **6-9** hours, with at least ~~3~~ **6** hours at the 700 level or above, chosen from the following:
~~•PHY 643 Kinetic Theory and Statistical Mechanics~~
~~•PHY 653 Electromagnetic Field Theory~~
~~•MAT 720 Advanced Quantum Mechanics~~
~~•MAT 758 Optoelectronic Materials~~
~~•MAT 780 Polymer Preparation and Characterization~~
~~•MAT 790 Statistical Application in Materials Science~~
• Any 600 or 700 level PHY or MAT course
•Interdisciplinary Courses approved by the department head for elective credit. Examples: BMS 614, Scanning Electron .Microscopy or CHM 614 Polymer Chemistry
4. Seminar. 1 hour of seminar, MAT 798.
~~5.Research. 9-12 hours of research, MAT 799 (up to 6 hours must be thesis research - see #6 Thesis Research).~~
~~6.Thesis Research. Satisfactory completion of an approved thesis and an oral thesis defense to the student's faculty advisor and a committee of graduate faculty is also required.~~
5. Research. 6-9 hours of research, MAT 799. For both options, the student is required to give an oral presentation of his/her work to the Department.
a. Thesis Option: **Satisfactory completion of an approved thesis and an oral thesis defense to the student's faculty advisor and a committee of graduate faculty is also required. . 6-9 hours of MAT 799 may be counted toward this degree under this option.**
b. Non-thesis Option: **Only under extraordinary circumstances, a Student may choose a non-thesis option with the permission of graduate committee and department head. This requires the**

	completion of a minimum of two degree papers, each of which shall require an extensive paper or major creative work. 6 hours of PHY 799 may be counted toward this degree under this option. ~~76.~~ Comprehensive Examinations. A passing grade on the comprehensive examination, taken approximately one semester before graduation.

COMPLETE NEW CATALOG INFORMATION (Typed)

Department of Physics, Astronomy, and Materials Science

Kemper Hall, Room 101, Phone: (417) 836-5131, Fax: (417) 836-6226
Email: Physics@missouristate.edu
Website: http://physics.missouristate.edu/
Department Head: David M. Cornelison

Faculty

Professor: David M. Cornelison, Kartik C. Ghosh, Ryan E. Giedd, Shyang Huang, Robert A. Mayanovic, Robert S. Patterson, Kandiah Manivannan, Saibal Mitra, Emmett R. Redd, Michael D. Reed, Robert J. Whitaker

Associate Professor: Lifeng Dong

Emeritus Professor: Bruno Schmidt, George W. Wolf, Pawan K. Kahol,

Programs

Master of Science, Materials Science

Kartik Ghosh, Graduate Director
Kemper Hall, Room 103G; Phone (417) 836-6205
KartikGhosh@missouristate.edu

Program Description

The Materials Science degree is designed to provide the graduate with a suitable background for employment in the exciting field of electronic materials. Specifically, students will receive experience in high-technology materials synthesis and characterization, including the operation and design of the equipment used to make integrated circuits.

This degree was designed for students with good experimental skills, but little practical knowledge of specific instrumentation. Graduates will be prepared for employment in areas of semiconductor manufacturing, materials synthesis and testing, and other industries where high technology processing and development are required.

The program requires 15 hours of required course work, 6-9 hours of electives, 6-9 ours of research and 1 hour of seminar, for a total of 31 hours. Interdisciplinary courses taught in other departments may be used for electives if approved by the department head in advance.

At the beginning of the first semester, students' background will be evaluated to determine the student's optimum path of study. Based on the results of the students' initial evaluation, poorly prepared students may be required to take some additional course work that will not apply to the degree. Later in the first semester, the student will interview with faculty members to choose an area of thesis research.

A comprehensive examination is required usually one semester prior to graduation. The comprehensive examination is used to monitor the progress of each student through the program. At the end of the thesis project, the student will present his or her results in the form of a public thesis presentation or defense.

Entrance Requirements

Students admitted to the program in full standing must meet the following requirements.

1. A Bachelor of Science degree in any science or engineering discipline which includes:
   A. a calculus sequence and differential equations;
   B. a calculus-based physics sequence; and
   C. two semesters of physical chemistry or thermodynamics and modern physics.

   For example, the following would constitute adequate preparation:
   MTH 261 Analytical Geometry and Calculus I
   MTH 280 Analytical Geometry and Calculus II
   MTH 303 Differential Equations
   PHY 203 Foundations of Physics I
   PHY 204 Foundations of Physics II
   PHY 343 Thermodynamics **OR** CHM 506 Physical Chemistry I
   PHY 375 Modern Physics **OR** CHM 507 Physical Chemistry I

   Applicants with some deficiency in the courses listed in (1) above, may be admitted, but may have additional course work added to their program. This additional course work may not count toward their graduate degree.
2. Candidates for admission to the program are required to have a GPA of at least 3.00 on a 4.00 scale on the last 60 hours of course work.
3. Submission of Graduate Record Examination (GRE) scores from the General Test is required.
4. Three letters of reference.

Students who do not meet the GPA or GRE standards described in (3) and (4) above may be granted conditional admission to the program. Conditionally admitted students will be required to complete a minimum of nine hours of specified course work with a GPA of at least 3.00 to be advanced to full standing in the program.

Retention Requirements

The student is expected to demonstrate effective communication skills while enrolled in the program. Evaluation of communication skills will be done in accordance with the student's background. These abilities will be evaluated for graduate assistants based on their teaching performance and by the MAT 798 Seminar course.

For students who are not graduate assistants, evaluation will be done in the MAT 798 Seminar course. For the student who uses English as a second language, there may be additional requirements.

The student must also demonstrate progress toward graduation in the following ways:

1. satisfactory performance in the comprehensive exam, given approximately one semester before graduation;

2. maintenance of a 3.00 GPA in the core courses;
3. satisfactory progress in thesis research.

Degree Requirements (minimum of 31 hours)

1. For the student who has not received a "C" or better in a quantum mechanics course or its equivalent prior to admission to the program, satisfactory completion of PHY 675 Introduction to Quantum Mechanics is required. (This course does not count towards the 31 hour total)

2. Required core: (15 hours)
- MAT 640 Thermodynamics of Materials
- MAT 651 Introduction to Materials Science
- MAT 681 Structure of Solids
- MAT 760 Experiments in Physical Characterization
- MAT 770 Vapor Synthesis of Materials

3. 6-9 hours, with at least 6 hours at the 700 level or above, chosen from the following:
- Any 600 or 700 level PHY or MAT course
- Interdisciplinary Courses approved by the department head for elective credit. Examples: BMS 614, Scanning Electron Microscopy or CHM 614 Polymer Chemistry

4. Seminar. 1 hour of seminar, MAT 798.

5. Research. 6-9 hours of research, MAT 799. For both options, the student is required to give an oral presentation of his/her work to the Department.

a. Thesis Option: Satisfactory completion of an approved thesis and an oral thesis defense to the student's faculty advisor and a committee of graduate faculty is also required. . 6-9 hours of MAT 799 may be counted toward this degree under this option.

b. Non-thesis Option: Only under extraordinary circumstances, a Student may choose a non-thesis option with the permission of graduate committee and department head. This requires the completion of a minimum of two degree papers, each of which shall require an extensive paper or major creative work. 6 hours of PHY 799 may be counted toward this degree under this option.

6. Comprehensive Examinations. A passing grade on the comprehensive examination, taken approximately one semester before graduation.

Accelerated Master's Option

Undergraduate Physics majors may wish to enroll in the Accelerated Master of Science degree program in Materials Science. Students who successfully complete this program can obtain a Physics (with Materials Science Option) Bachelor of Science degree and a Master of Science in Materials Science degree within five years.

This challenging option is for students who have a strong interest in becoming experts in electronic materials. This includes the fields of Solid State Physics, Photonics, Opto-electronics, Nanotechnology, Electrical Engineering, and computer Engineering.

While not essential for eventual admission to the program, it is strongly recommended that, as

freshmen, students contact the department head for permission to become involved in the program. This will allow for appropriate advisement during the undergraduate years.

Students may be admitted to the program after completing 60 hours with a 3.00 cumulative GPA, including the engineering physics core courses with a 3.50 cumulative GPA.

Students seeking this option must:

1. Obtain admission to the Master of Science in Materials Science accelerated program by applying to the Graduate College prior to their senior year.
2. Pass the Master of Science in Materials Science comprehensive examination in the second semester of their senior year.

Before enrolling in a course to be counted as both undergraduate and graduate credit and to count the courses towards the masters degree, an undergraduate student must be accepted into the accelerated program and receive prior approval from the graduate program advisor, department head of the undergraduate program, and the dean of the Graduate College. Acceptance into the program and all approvals must be completed prior to the end of the Change of Schedule Period for the course(s). See the Graduate College for further information.

Nine hours of course work may be counted toward both the undergraduate and the masters degree. These courses are MAT 640, MAT 651 and MAT 681.

Students who successfully meet all the requirements would receive a Bachelor of Science degree in Physics at the end of their fourth year, and a Master of Science at the end of their fifth year.

18

Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

AST 112 Life in the Universe

Department Physics, Astronomy, & Materials Science
Date Nov. 2, 2012

Check one: _X_New COURSE ____New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached? _____

PROPOSED CATALOG DESCRIPTION

General Education Course (Life Sciences). 3(3-0) An exploration of how life came to be on the planet Earth, prospects for detecting it on other worlds and what that detection, or non-detection, means to humanity. Topics include how the Universe and Earth produced conditions for life, how life evolves, biodiversity, recent discoveries of exoplanets, and possible effects on society.

PURPOSE OF COURSE

See attached page.

RELATIONSHIP TO OTHER DEPARTMENTS

Biomedical Science has an intersession astrobiology (BMS455) course which has not been offered in many years. This course is similar, but more in depth and leans more towards the astronomical impacts on evolution, aliens, and the human experience. This course also includes aspects of chemistry (chemical evolution of the Universe; the chemistry of life), geology (how planets develop and evolve), biology and biomedical science (how life evolves, its requirements, and Darwinism).

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

X	**College Council**	(All new course proposals 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**	(Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)
X	**Committee on General Education and Intercollegiate Programs**	(Considers all general education and multi-college new course proposals)
_____	**Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature [signature]
Date 11-5-12
Department Head

(Routing on Reverse Side)

FS-2005

NEW COURSE RESOURCE INFORMATION

Department: Physics, Astronomy, & Materials Science Date Nov. 2, 2012

Course Number and Title AST 112 Life in the Universe

Anticipated Average Enrollment 100 Maximum Enrollment Limit 100

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? No If so, give course number and title.

2 What will this course require in the way of:

Additional library holdings? None

Additional computer resources? None. Access to current computer labs is sufficient.

Additional or remodeled facilities? None

Additional equipment or supplies? None, this is not a lab course.

Additional travel funds? None

Additional faculty—general vs specialized? None

Other additional expenses? None

3 If additional faculty are not required, how will faculty be made available to teach this course? The updating of the General Education curriculum advanced by the Faculty Senate provokes an updating of current astronomy offerings. Condensing the current offerings allows for the inclusion of this new course, to be offered fall semesters only. Therefore no additional faculty are needed. List names of current faculty qualified to teach this course: Drs. Mike Reed, Robert Patterson, William Thomas, Becky Baker

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This is a General Education course and the source of students is the same as current introductory astronomy courses. Once the updated General Education curricula are in place, the sources of students diverge slightly as the other astronomy offerings will be placed in the Physical Science category and this course would be placed in the Life Sciences category.

5 Other comments:

Course number and Title: Astronomy 112: Life in the Universe
Instructor Name: Dr. X.
Professor, Department of Physics, Astronomy, and Materials Science
Office location: Kemper 10X
Phone Number: (417) 836-5131
E-mail: X@missouristate.edu
Office hours: To be set.
Web Page: X.missouristate.edu

Purpose: This is a general education life science course covering the evolution of life in the Universe and prospects and impacts of extraterrestrial life. At the end of this course you should know how the Universe evolved to become hospitable for life; how Earth-based life developed, evolved, and was affected by astronomical events; the relationships between humans, other life, and their environments, including terraforming; discoveries within our solar system and of exoplanets in relation to where life could exist; and possible effects on society and humanity with acquired knowledge of whether or not alien life exists. This course meets the Life Science Learning Goals of 1) Understand living systems by describing their nature, organization and evolution. 2) Understand and use the processes by which scientific knowledge of living things is generated. 3) Develop knowledge of living things through hypothesis testing and gain the ability to draw defensible conclusions regarding living things. 4) Make logical connections between key concepts in the life sciences and describe the interaction between human lives and other living things. 5) Understanding the human species as a biological organism. And 6) Understand the ways the environment impacts humanity and how human actions affect the environment.

Course design: The course will include the following sections:
1) History of the Universe with a focus on chemical production and energy
which leads to a Universe where humans and other aliens could exist.
2) History of life on Earth as our only example of life within the Universe.
3) The biology and chemistry of life- conditions for life, including extremophiles.
4) Prospects for diversity of life.
5) Current exoplanet research in relation to where life could exist and how to find out whether there is alien life.
6) Impacts on society whether there is or isn't alien life.

Grading: Grading will be based on 2 tests (100 points each), approximately six homework assignments (20 to 40 points each) and in-class quizzes (using clickers). Grades will be posted on Blackboard.

Attendance Policy: Attendance is required at all lectures as not all material can be obtained from the text alone. If you need to miss a test, you will need to take it beforehand, if you cannot attend when homework is due, you will need to turn it in beforehand. You do not need to e-mail me if you will not be in class: Homework and tests can only be made up with a note- so when you return, bring a note. However, if you will be gone for an extended period, please let me know. Late homework will only be accepted until graded homework is returned or solutions are posted, whichever comes first. Late homework will be graded at half points.

Materials: The texts for this course is *Life in the Universe* by Bennett and Shostak and *How Life Began: Evolution's Three Geneses* by Meinesz. This is the only text you will need for this course. However, this is a very dynamic and evolving area of science and so (some) lecture notes, useful links, and other material will be posted on the web.

Emergency Response Assistance:
Students who require assistance during an emergency evacuation must discuss their needs with their professors and Disability Services. If you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible.

For additional information students should contact the Disability Resource Center, 836-4192 (PSU 405), or Larry Combs, Interim Assistant Director of Public Safety and Transportation at 836-6576.

For further information on Missouri State University's Emergency Response Plan, please refer to the following web site: http://www.missouristate.edu/safetran/erp.htm

Dropping a class policy:
It is your responsibility to understand the University's procedure for dropping a class. If you stop attending this class but do not follow proper procedure for dropping the class, you will receive a failing grade and will also be financially obligated to pay for the class. For information about dropping a class or withdrawing from the university, contact the Office of the Registrar at 836-5520.

General comments and classroom courtesy:
Feel free to ask questions at any time.
No talking with neighbors when the class is in progress. Constant chatter is both disrespectful and disruptive.
This class is from X to X. Homework and tests can and will occur anytime within the allotted time. If you choose to come late or leave early, you may do so, but you may also miss vital material and/or points.

Standards for Written English: (from Barbara Walvoord.) Suppose a group of people were living on a small island, all using the same form of language, until one day the island broke in two, separated by impassible rough water. In 100 years, would the people on both halves still use the same language? No. Human language is always changing. Language on each half of the island would evolve with different forms and rules; neither would be ``better'' in any absolute sense- just different. Similarly, in the U.S., language variations have developed among people separated by culture or geography. However, a common societal pattern is that the ruling class imposes its form of language on everyone else. In the U.S., the ``standard'' is the form of the white middle and upper classes. Forms developed by people who have been economically, culturally, or geographically separated are often incorrectly considered ``bad'' English. But actually such forms are different, not ``bad.'' Each form has its own rules and its own uses.
One of the tasks of a good education is to make you aware of these facts about language. Another task of education, however, is to prepare you to function effectively in the world where readers generally expect you to write Edited Standard Written English (ESWE). Thus, in this class, you must use ESWE. Here is the standard:

- All quoted material enclosed in quotation marks and properly referenced.

With the recent (2011) estimation that there are tens of millions of Earth-like planets in our own galaxy, it is timely to examine humanity's place in the Universe from scientific, historical, and philosophical points of view. This interdisciplinary course will examine conditions which brought about life (astronomy, chemistry, geology, biology, and physics); how that life evolved and survived (biology, chemistry, astronomy, physics); alternative models of evolution (astronomy, physics, biology); current solar system and exoplanet investigations including the search for extraterrestrial life (astronomy, physics, chemistry); and how the discovery, or non-discovery of extraterrestrial life impacts society and individual humans (philosophy).

This course is designed to meet the General Education Life Sciences requirement by engaging students using cutting-edge science in a reflexive way. This course meets the following Life Sciences Learning Goals and Outcomes as proscribed by the Faculty Senate during 2012:

Goal 1: By investigating the conditions of our Universe which allowed life to develop; evolution of life on Earth, including impacts of astronomical events; and how life could adapt to extraterrestrial conditions being discovered in our solar system and beyond.

Goals 2 and 3: By applying knowledge of physics to geological and biological fossil records to deduce how life has and could adapt to a variety of habitats. Few topics are better suited to scientific inquiry than those related to astronomy where evidence is often remote or indirect. This course is not limited to the investigation of Earth-bound life forms, but can use physical evidence to investigate how alien life forms could develop and prosper.

Goal 4: By investigating how all living things have evolved and prospered at various times based on favorable conditions and how the living things impacted each other and their environment.

Goal 5: By investigating how life evolved on Earth into humans, including serendipitous events, both biological and astronomical, which allowed humans to evolve.

Goal 6: This course will investigate not just how humans interact with their Earth-bound environment, but also the larger environment of our galaxy. It will investigate humans' impact on the Earth's atmosphere and biosphere and also contamination of other ecosystems (specifically Mars) including prospects for terraforming other worlds. This course will also examine the philosophical impact of humanity's place in the great context of the Universe.

By satisfying these learning goals and outcomes, this course uses an exciting and rapidly evolving scientific exploration (the search for life on exoplanets) to explore humanity's course through evolution and its possible future both on and off the Earth, alone or in the presence of alien life.

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Missouri State University
CURRICULAR PROPOSAL
NEW COURSE (or new REGULAR SECTION of an existing variable content course)

Department Physics, Astronomy, and Materials Science **Date** November 5, 2012

Check one: __X__ **New COURSE** ____ **New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached?** _____

PROPOSED CATALOG DESCRIPTION

PHY 291 Introduction to Computational Physics

Prerequisite: MTH 280. Numerical and computer methods related to physics modeling and data analysis. Introduction of physics applications using symbolic, matrix, and spreadsheet software including programming. Programming applied directly to physical simulations. Recent advances in physics-related computing. 3(3-0) S

PURPOSE OF COURSE

Over the years, Physics has increasingly turned to solving complex problems via numerical simulation. That material is important for a Bachelor of Science student whether preparing for graduate school or employment.

RELATIONSHIP TO OTHER DEPARTMENTS

The Computers for Learning course (Computer Information Systems and Computer Science departments) teaches some of the applications needed by our majors. This course will build on that Basic Required Course so physics majors can extend their knowledge to applications and techniques which are used by professional physicists. While the math and CSC departments teach a numerical analysis course, it concentrates on the analysis of the techniques themselves, including theoretical limits on precision. In contrast, the proposed course will concentrate on analyzing real data and writing original code to simulate physical systems.

DEPARTMENT: Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 300a/05) and 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 course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

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_____ **Graduate Council**	(Considers all 600-, 700-, and 800-level new courses)

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

Signature _____ **Date** 11-5-12
Department Head

(Routing on Reverse Side)

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NEW COURSE RESOURCE INFORMATION

Department Physics, Astronomy, and Materials Science Date November

Course Number and Title **PHY 291 Introduction to Computational Physics**

Anticipated Average Enrollment 15 Maximum Enrollment Limit 24

Faculty Load Assignment 3 Equated Hours

1 Is another course being deleted? If so, give course number and title.

PHY 392 Mathematics for Science and Engineering II

2 What will this course require in the way of:

Additional library holdings?	none
Additional computer resources?	None, a current classroom has all necessary computers.
Additional or remodeled facilities?	None, a current classroom meets the courses requirement.
Additional equipment or supplies?	None.
Additional travel funds?	None.
Additional faculty--general vs specialized?	None. Current faculty can teach the course.
Other additional expenses?	None.

3 If additional faculty are not required, how will faculty be made available to teach this course?

The entire curriculum for the major was changed last year freeing up the human resource necessary.

List names of current faculty qualified to teach this course: David M. Cornelison, Ryan Giedd, Emmett Redd, and Mike Reed.

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

All students in the Physics major will be required to take the course. It is hard to answer the "in addition or in place…" question because the major was completely reorganized and changed from non-comprehensive to comprehensive. (The hours increased between three and five. We also deleted the larger, comprehensive Engineering Physics program.) The course would not be required in another department nor would it replace any courses there. However, students from other departments could take this course in partial fulfillment of a Physics Minor.

5 Other comments:

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Cornelison, David M

From: Bray, William O
Sent: Friday, November 02, 2012 8:27 PM
To: Cornelison, David M
Subject: Re: PHY 291 proposal

Hi Dave,

I have looked over the syllabus for the course PHY291. That is a solid course in computational physics with emphasis on physical principles and computational models and associated code. While there is some overlap with our numerical analysis courses, it is the perspective and emphasis in 291 that is significant for physics students. I think it would be a fine addition to the physics curriculum.

best regards,

Bill

William Bray
Professor & Dept Head
Department of Mathematics
Missouri State University
http://people.missouristate.edu/wbray

On Oct 31, 2012, at 3:55 PM, "Cornelison, David M" <DavidCornelison@MissouriState.edu> wrote:

Bill,

Here is the syllabus for the computational physics course. If you are ok with it, please send me a short email to that effect.

Thanks

Dave
<PHY 291 Syllabus.docx>

PHY 291 Syllabus
Spring 2012

Instructor: David Cornelison
Office: KEMP 101A
Phone: 836-4467
Email: DavidCornelison@missouristate.edu
Office Hours: TTh 10:00-11:00 and other time as arranged

Textbook: No required book, but a Matlab reference book is probably necessary. I recommend "Getting Started with MatLab 7", by Rudra Pratap.

Coverage: This class has two broad goals. The first is to teach techniques commonly used by physicists to analyze data and extract information related to physical models. These methods will range over many topics, from least-squares (both weighted and un-weighted) to the fitting of datasets derived from electronic, spectroscopic and astronomical measurements. Although much of this analysis will be done with plotting/fitting packages such as Origin©, specialized software tools (such as IRAF) may also be introduced.

The second goal will be to guide the students in writing original code, primarily using the MatLab© programming language. This code will be designed to solve problems from physics and astronomy that are either intractable to analytical techniques or require undue effort to complete without computer aid. For this part of the class, we will concentrate on two things; learning the general structure of a program in MatLab© and analyzing physical models to generate algorithms suitable for numerical analysis. We will discuss a number of different topics, but will focus on three primary applications of the computer in physics;

Differential equations, both ordinary and partial
Eigenvalue Problems
Stochastic methods

Each of these techniques will be applicable in all areas of physics, e.g. electricity and magnetism, mechanics, quantum mechanics, etc. The kinds of problems we might look at could include:

Laplace's equation with boundaries in E&M
Orbital mechanics of n-body systems
Finite-element calculation of forces in a truss
Diffusion of heat or particle concentration
Simple quantum problems
Statistical Mechanics in magnetic systems

Correct physical ideas	25%
Correct programming	25%

If a due date is not met, I will take off 10% for every class period the assignment is late, up till three periods, after which the assignment may not be submitted. I should note that although it is acceptable to work together on assignments, projects must be completed independently. If you have questions regarding anything but the most elementary issue, please come and see me to discuss them. On the projects, I will mark off if I am convinced that collaboration took place.

University Policies: There are a host of policies regarding expectations in this class

Policy on nondiscrimination

Missouri State University is an equal opportunity/affirmative action institution, and maintains a grievance procedure available to any person who believes he or she has been discriminated against. At all times, it is your right to address inquiries or concerns about possible discrimination to the Office for Equity and Diversity, Park Central Office Building, 117 Park Central Square, Suite 111, (417) 836-4252. Other types of concerns (i.e., concerns of an academic nature) should be discussed directly with your instructor and can also be brought to the attention of your instructor's Department Head. Please visit the OED website at www.missouristate.edu/equity/.

Policy on Academic Integrity

Missouri State University is a community of scholars committed to developing educated persons who accept the responsibility to practice personal and academic integrity. You are responsible for knowing and following the university's Student Academic Integrity Policies and Procedures, available at www.missouristate.edu/policy/academicintegritystudents.htm. You are also responsible for understanding and following any additional academic integrity policies specific to this class (as outlined by the instructor). Any student participating in any form of academic dishonesty will be subject to sanctions as described in this policy. If you are accused of violating this policy and are in the appeals process, you should continue participating in the class.

Policy on Disability Accommodation

To request academic accommodations for a disability, contact the Director of the Disability Resource Center, Plaster Student Union, Suite 405, (417) 836-4192 or (417) 836-6792 (TTY), www.missouristate.edu/disability. Students are required to provide documentation of disability to the Disability Resource Center prior to receiving accommodations. The Disability Resource Center refers some types of accommodation requests to the Learning Diagnostic Clinic, which also provides diagnostic testing for learning and psychological disabilities. For information about testing, contact the Director of the Learning Diagnostic Clinic, (417) 836-4787, http://psychology.missouristate.edu/ldc

Cell Phone Policy

Mathcad

Mathcad is a symbolic and numerical math program, produced by PTC, a software design company. The program's main attraction is its ease of use and straightforward layout. Using the program, one can create a series of definitions, equations and calculations, in conjunction with plots and comments. When done well, the final product looks somewhat like a nice technical report. When read, using Mathcad, the report is live and will update the results if any number is changed.

Mathcad is sold by PTC. They have a series of tutorials for all their programs. The website below can be used to learn the features. At first, learn how to do some simple things like defining a function and plotting results.

http://learningexchange.ptc.com/tutorials/by_product/by_product/page:1/product_id:4/url:tutorials

Matlab

Matlab stands for Matrix Laboratory and is a high-level language and interactive environment that lets you make simple calls for functions or write complete programs to calculate results for all sorts of physical systems. This program also has built-in algorithms for visualizing and analyzing data. There are a number of books available to help one learn this tool, but I like Getting Started with Matlab, by Pratap. Also, there is a nice tutorial by Gus Hart (BYU), located at

http://msg.byu.edu/matlab/index.html

This tutorial will help greatly with your efforts.