INDIANA UNIVERSITY SOUTH BEND

UNDERGRADUATE COURSES

Curriculum Change
(New Course Requests / Course Change Requests / New Program Requests)

CAMPUS ROUTE SHEET

DIVISION/UNIT/DEPARTMENT  Physics & Astronomy / Liberal Arts and Sciences

CHANGE REQUESTED:  New Course Request for AST-N390

SIGNATURES

Dept/Unit Chair  Jerry D. Hinnefeld  Date  Mar. 1, 2010

Unit Curriculum Committee Chair  Yi Cheng  Date  Mar. 8, 2010

Dean  Rebecca Tostrin  Date  Mar. 22, 2010

Chair  Dave Elliott  Date  3/30/2010

Director of General Education

Senate Curriculum Committee Chair  Anne Brown  Date  4/15/10

Assoc Vice Chancellor
Academic Affairs  John McNeely  Date  5/3/10

July 2008
New Course Request

Check Appropriate Boxes: Undergraduate credit [x] Graduate credit [ ] Professional credit [ ]

1. School/Division: CLAS
2. Academic Subject Code: AST
3. Course Number: N390 (must be cleared with University Enrollment Services)
4. Instructor: various
5. Course Title: The Natural World
   Recommended Abbreviation (Optional): (Limited to 32 Characters including spaces)
6. First time this course is to be offered (Semester/Year): Fall 2010
7. Credit Hours: Fixed at 3.0 or Variable from _______ to _______
8. Is this course to be graded S-F (only)? Yes [ ] No [x]
9. Is variable title approval being requested? Yes [ ] No [ ]
10. Course description (not to exceed 50 words) for Bulletin publication: Explores an important scientific or technological issue in modern society. Applies scientific methods and interdisciplinary perspectives in an examination of the subject. Investigates the broader implications and ethical dimensions of scientific research and technological advancement.
   
11. Lecture Contact Hours: Fixed at 3.0 or Variable from _______ to _______
12. Non-Lecture Contact Hours: Fixed at 0.0 or Variable from _______ to _______
13. Estimated enrollment: 20 of which [ ] percent are expected to be graduate students.
14. Frequency of scheduling: occasional Will this course be required for majors? no
15. Justification for new course: 300-level "Common Core" course for gen. ed. curriculum
16. Are the necessary reading materials currently available in the appropriate library? yes
17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.
18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.
19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: [Signature]
Date: Mar. 1, 2010
Department Chairman/Division Director

Approved by: [Signature]
Date: 3/22/10
Dean

Dean of Graduate School (when required)
Date: 

Chancellor/Vice-President
Date: 

University Enrollment Services
Date: 

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

University Enrollment Services Final—White; Chancellor/Vice-President—Blue; School/Division—Yellow; Department/Division—Pink; University Enrollment Services Advance—White
Hello Monika,

The general education committee has reviewed your course proposal for AST N390 History in the Universe for inclusion in the Common Core—the Natural World, and it has been approved.

Thanks & have a great weekend,

Julie

Julie Elliott
Associate Librarian/
Coordinator of Public Relations & Outreach
Franklin D. Schurz Library
Indiana University South Bend
574-520-4410

AIM/Yahoo: jmfelli
jmelli@iusb.edu

http://www.iusb.edu/~libg/onebook/
Sample Syllabus
AST- N390 The Natural World: History of the Universe

Instructor: Monika Lynker, Ph.D., Prof. of Physics

- **Office:** NS 343; **Telephone:** 520-5513 (home: 282-2472)
- **Office Hours:** whenever my office door is open, MW 10-11:30 and 1:30 - 3:00, or by appointment (best made via e-mail)
- **E-mail:** mlynker@iusb.edu

Description:
The night sky, almost unchanged in appearance since the dawn of human history, has inspired centuries of thought about the nature of the universe. This course will offer the opportunity to examine how our understanding of the universe has changed over time and explore the current state of our knowledge of cosmology. Topics will range from ancient astronomy and cosmology, to the Copernican revolution in the middle ages, up to our current measurements and understanding of the size and age of the universe. Readings will include excerpts from works by Aristotle, Copernicus, Galileo, Kepler, Newton, Hubble, Einstein, and others, as well as recent scientific papers on the cosmic microwave background radiation, dark matter, and the size and shape of the universe.

Pre-requisites: One semester of calculus-based physics (PHYS-P221 or equivalent), basic knowledge of Calculus (M215 or equivalent), and W131.

Text:
*Archives of the Universe: 100 Discoveries that transformed our Understanding of the Cosmos,* Marcia Bartusiak (Editor), New York, 2004

*An Introduction To Modern Cosmology,* by Andrew Liddle, John Wiley & sons, isbn 0470 84835 9 (paper), 0470 84834 0 (cloth)

Supplementary reading will be made available in class or on reserve in the library.

Presentations: This course will be a mixed lecture/seminar format, and students will be periodically asked to present a journal article to the class with a longer presentation on a topic of the student's choice during the last week of the semester.

Grading: The course grade will be determined approximately as follows:

- 3 Exams
- Class participation (includes in-class questions and homework)
- Final paper and presentation

60%
15%
25%
There will be three in-class exams, which will be equally weighted. Missed exams cannot be made up unless you have a documented emergency. You are expected to attend class and participate in discussions.

**Tentative Exam Dates:**
To be announced at the beginning of the semester.

Any changes in the scheduling of exams will be announced at least two class meetings in advance. Indiana University respects the right of all students to observe their religious holidays. Please talk to me at the beginning of the semester if a conflict might occur. If you feel that an accommodation may be needed based on the impact of a disability, please talk with me and contact the Office of Disability Support Services (DSS). DSS supports disabled individuals in achieving their academic potential to the greatest extent possible by coordinating reasonable accommodations and facilitating services. IUSB is committed to providing equal access to higher education for academically qualified individuals with disabilities.

**Assignments:** Homework will be assigned weekly and will involve quantitative exercises as well as short writing assignments. All assignments must be written in your own words and should be a synthesis of information you have gathered, not merely a reproduction of a particular reference. Plagiarized text will not be tolerated for the assignments.

We will place considerable emphasis on quantitative exercises. This will involve algebraic manipulation of equations. The quantitative exercises do not need to be typed, but must be written out very clearly (even if they seem easy to you!). I’ll look for the following in how you write out your solutions:

- The proper equation and major quantities clearly identified
- Algebraic manipulation of the equation BEFORE quantities are put in
- Proper use of scientific notation and significant figures
- A clearly identified final answer with proper units

**Academic Integrity:** I follow the guidelines for the Student Code of Conduct in terms of academic dishonesty, i.e. No Cheating!

**Tentative Schedule:** A tentative schedule of lecture and discussion topics is posted online; however, this will almost certainly change as we make our way through the semester. Check the online schedule frequently to see the latest incarnation.

**Oncourse:** Although I will do my best to make in-class announcements available on Oncourse, you are responsible for all announcements made in class. Similarly, although I will make most of my lecture slides available on Oncourse, you are responsible for all the material covered in class regardless of whether or not it is covered on the slides.
## Sample Schedule

<table>
<thead>
<tr>
<th>Week #</th>
<th>Starting Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/30</td>
<td>Introduction and pre-history (e.g. Babylonian, Mayan, Indian, Persian cosmology)</td>
</tr>
<tr>
<td>2</td>
<td>9/6</td>
<td>Ancient Cosmology (Greece and Egypt)</td>
</tr>
<tr>
<td>3</td>
<td>9/13</td>
<td>Medieval Cosmology (Copernicus, Galilei, Kepler)</td>
</tr>
<tr>
<td>4</td>
<td>9/20</td>
<td>Physical background: gravity, thermodynamics, and light</td>
</tr>
<tr>
<td>5</td>
<td>9/27</td>
<td>Astronomical background: stars and galaxies</td>
</tr>
<tr>
<td>6</td>
<td>10/4</td>
<td>Beginnings of modern cosmology (Herschel, Shapley, Leavitt, Hubble)</td>
</tr>
<tr>
<td>7</td>
<td>10/11</td>
<td>The expanding universe (Hubble, Einstein, de Sitter, Friedman, Hoyle, ....)</td>
</tr>
<tr>
<td>8</td>
<td>10/18</td>
<td>The Hot Big Bang and Nucleosynthesis (hopefully guest lecture by Dr. Hinnefeld)</td>
</tr>
<tr>
<td>9</td>
<td>10/25</td>
<td>Theories of the early universe and inflation</td>
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<tr>
<td>10</td>
<td>11/1</td>
<td>Latest results on age of the universe (e.g. WMAP data)</td>
</tr>
<tr>
<td>11</td>
<td>11/8</td>
<td>Latest results on shape and size of the universe (e.g. Supernova measurements)</td>
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<tr>
<td>12</td>
<td>11/15</td>
<td>Latest results on dark energy and dark matter (hopefully guest lectures by Dr. Levine)</td>
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<tr>
<td>13</td>
<td>11/22*</td>
<td>Discussion/Thanksgiving</td>
</tr>
<tr>
<td>14</td>
<td>11/29</td>
<td>Presentations</td>
</tr>
<tr>
<td>15</td>
<td>12/6</td>
<td>Presentations</td>
</tr>
<tr>
<td>16</td>
<td>12/13</td>
<td>Final</td>
</tr>
</tbody>
</table>

*We only meet one day this week for discussion of the assigned reading for the final presentations. There will be no class on Thursday 11/25 because of Thanksgiving.*