New Course Request

Indiana University

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


3. Course Number [453] (must be cleared with University Enrollment Services) 4. Instructor [Lynker]

5. Course Title [Topical Astrophysics]

Recommended Abbreviation (Optional) [Limited to 32 Characters including spaces]

6. First time this course is to be offered (Semester/Year): [Spring, 2006]

7. Credit Hours: Fixed at [3.0] or Variable from [ ] to [ ]

8. Is this course to be graded S-F (only)? Yes [X] No [ ]

9. Is variable title approval being requested? Yes [X] No [ ]

10. Course description (not to exceed 50 words) for Bulletin publication: [P: Calculus, PHYS P323 or equivalent. Selected topics in astrophysics such as celestial mechanics, astrobiology, stellar interiors, stellar atmospheres, stellar populations, galaxy dynamics, or cosmology.]

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: [10] of which [0] percent are expected to be graduate students.

14. Frequency of scheduling: [on demand] Will this course be required for majors? [no]

15. Justification for new course: [better match to current faculty expertise than AST A451]

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: 9/15/05]

Department Chairman/Division Director

[Signature] [Date: ]

Dean of Graduate School (when required)

Approved by: [Signature] [Date: 11/8/05]

 chancellor/Vice-President

[Signature] [Date: ]

University Enrollment Services

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
New Course Request: AST-A453 – Topical Astrophysics

In response to strong demand from our current group of physics majors, we have scheduled a course in astrophysics in the Spring 2006 semester, to be team-taught by Monika Lynker, Ilan Levine, Henry Scott, Rolf Schimmrigk, and Jerry Hinnefeld, with Monika as the lead instructor. Each of us has some overlap with astrophysical topics in our research interests – dark matter for Ilan, astrobiology for Henry, nucleosynthesis for Jerry, and cosmology for Rolf and Monika. In addition, Monika participated in two NSF Chautauqua short courses on astrophysical topics last summer.

The course currently in the Spring 2006 schedule is AST-A451 Stellar Astrophysics, because that course has been offered before on this campus, by Steve Shore. We would prefer, however, to use the new course number AST-A453 Topical Astrophysics, which became effective on 1/1/2005, because both the title and the course description are more in line with the course we plan to teach.
AST- A453 Sample Syllabus

General Information

This course is a calculus-based treatment of selected topics from astrophysics. It will build on material covered in the introductory physics sequence (P221/P222/ P323 – Physics 1/2/3) and will show how to apply the laws of physics learned there to problems in astrophysics. The course will cover the nature of our solar system, the evolution and properties of stars, galaxies, and some cosmology.

Tentative schedule

1. Introduction (1 week, Monika)
2. The Solar System (2 weeks, Henry)
3. Stars
   1. Introduction (1 week, Monika)
   2. Nuclear Processes (2 weeks, Jerry)
4. Galaxies and Large Scale Structure
   1. Introduction (1 week, Monika)
   2. Dark Matter (2 weeks, Ilan)
5. Early Universe and Cosmology (2 weeks, Rolf)
6. Student Presentations (Students & Monika)

Books


Suggested supplementary reading:

“The Tapestry of Astrophysics”, S. N. Shore

“An Introduction to Modern Astrophysics”, B. W. Carroll and D. A. Ostlie

Papers and other books might be placed on reserve in the library as the course goes on.

Grading

The course grade will be determined approximately as follows:

3 Exams 60%
Class participation (includes in-class questions and homework) 15%
Final paper and presentation 25%