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| **School or Division** | School of Pure and Applied Sciences |
| **Program or Certificate or** | All degrees |
| **New degree or certificate program** |  |
| **Proposed by (faculty only)** | George Manacheril |
| **Presenter (faculty only)** | George Manacheril |
| Note that the presenter (faculty) listed above must be present at the Curriculum Committee meeting or the proposal will be returned to the School or Division and must be submitted for a later date. | |
| **Submission date** | 12/6/2014 |
| **Course prefix, number, and title** | AST 2002C: Astronomy |

**Section I, New Course Information (must complete all items)**

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| **List School or Division** | School of Pure and Applied Sciences |
| **List course prerequisite(s) and minimum grade(s) (must include minimum grade if higher than a “D”)** | (SB1720 Testing Exemption or successful completion of all Developmental courses) and MAT 1033 or higher with a grade of “C” or better |
| **Will students be taking any of the prerequisites listed for this course in different parts of the same term (ex. Term A and Term B)** | No |
| **List course corequisites** | N/A |
| **Is any corequisite for this course listed as a corequisite on its paired course?**  (Ex. CHM 2032 is a corequisite for CHM 2032L, and CHM 2032L is a corequisite for CHM 2032) | No |
| **Course credits or clock hours** | 4  (Note: 19 of the 37 Florida institutions offering this course do so with a lab component; 18 of them offer it as a 4-cr class) |
| **Contact hours (faculty load)** | 5 |
| **Select grade mode** | Standard Grading (A, B, C, D, F) |
| **Credit type** | College Credit |
| **Course description** (provide below) | |
| This course provides a survey of astronomy as a quantitative observational science. It is designed to provide an introduction to the night sky, astronomical tools and methods, the historical development of our understanding of the universe, the solar system, star formation, stellar properties, the lives and deaths of stars, galaxies and cosmology. | |

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| **General topic outline** (type in outline below) |
| * An introduction to the night sky * The geocentric and heliocentric models of our solar system * Gravity * Light and the electromagnetic spectrum * Astronomical tools and methods * Our solar system * The Sun * Stellar properties * The interstellar medium and star formation * The lives and deaths of stars * The Milky Way and the diversity of galaxies * Cosmology * The search for extraterrestrial intelligence |

**Learning Outcomes:** For information purposes only. Type in all learning outcomes, assessments, and general education competencies as they should be displayed in the syllabus. More rows can be added if necessary.

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| **Learning Outcomes** | **Assessments** | **General Education Competencies** |
| Identify the major celestial phenomena associated with the Sun, Moon, planets, and stars and analyze their relationship to the celestial sphere. | Homework and/or tests and/or group assignments /projects. |  |
| Use star charts to locate stars and constellations, and compare astronomical and astrological predictions; use sampling to approximate the number of stars seen by the naked eye in the night sky. | Lab reports and/or tests and/or group assignments /projects. | CT, QR, TIM |
| Describe the ancient concepts of astronomy and show how they relate to modern day concepts. | Homework and/or tests and/or group assignments /projects. | COM |
| Identify and apply the relevant theories of gravitation and motion to predict and analyze planetary orbits; use observational data to draw conclusions about the shapes of planetary orbits (such as Mercury’s). | Homework and/or lab reports and/or tests and/or group assignments/projects. | CT, QR, TIM |
| Determine the mass of a celestial object (such as the Moon) by using Kepler's laws and observational data (such as a satellite's orbit around the Moon). | Lab reports and/or tests and/or group assignments /projects. | CT, QR, TIM |
| Identify the various observational tools used in astronomy and categorize and differentiate the regions of the electromagnetic spectrum; identify gaseous elements by their spectral lines. | Homework and/or lab reports and/or tests and/or group assignments/projects. |  |
| Use the Doppler effect to determine the rotational period of a celestial object (such as Mercury). | Lab reports and/or tests and/or group assignments /projects. | CT, QR, TIM |
| Compare theories of formation of stars and their planetary systems. | Homework and/or tests and/or group assignments /projects. |  |
| Compare and contrast the major physical characteristics of the Earth and Moon; integrate relevant theories related to the Moon's origin, its phases and its tidal effects on Earth. | Homework and/or tests and/or group assignments /projects. |  |
| Compare and contrast the structure and physical characteristics of the terrestrial and Jovian planets. | Homework and/or tests and/or group assignments /projects. |  |
| Compare and contrast the various objects comprising the solar system debris; use occultation data (such as from the Pluto-Charon system) to determine the diameter of each of the objects involved. | Homework and/or lab reports and/or tests and/or group assignments/projects. | CT, QR, TIM |
| Identify, describe, and compare the different layers in the Sun's interior and atmosphere; measure the Sun's diameter using pinhole projection. | Homework and/or lab reports and/or tests and/or group assignments/projects. |  |
| Compare the various methods of measuring distances and other stellar properties; measure the proper motion of Barnard's star and determine the star's overall motion in space. | Homework and/or lab reports and/or tests and/or group assignments/projects. | CT, QR, TIM |
| Interpret the H-R diagram and use it to describe stellar evolution. | Homework and/or lab reports and/or tests and/or group assignments/projects. |  |
| Describe the properties of the interstellar medium and theories of stellar formation. | Homework and/or tests and/or group assignments /projects. |  |
| Trace and compare the life histories of stars of various masses; compare the properties of white dwarfs, neutron stars, and black holes. | Homework and/or tests and/or group assignments /projects. | COM |
| Describe the physical makeup, stellar populations, and evolution of our Galaxy; construct the shape and a scale drawing of our Galaxy by using appropriate observational data. | Homework and/or lab reports and/or tests and/or group assignments/projects. | CT, QR, TIM |
| Compare the different types of galaxies and theories of their origin, and describe the nature of active galactic nuclei. | Homework and/or tests and/or group assignments /projects. |  |
| Differentiate among cosmological models and identify their limitations; deduce the size and age of the observable universe by using Hubble's law. | Homework and/or lab reports and/or tests and/or group assignments/projects. | CT, QR, TIM |
| Describe efforts to communicate with extraterrestrial intelligence, develop one such method, and identify the obstacles astronomers face in pursuing such searches. | Homework and/or lab reports and/or tests and/or group assignments/projects. |  |

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| **ICS code for this course** | ADVANCED AND PROFESSIONAL - 1.11.19 - PHYSICAL SCIENCES |
| **Should any major restriction(s) be listed on this course? If so, select "yes" and list the appropriate major restriction code(s) or select "no".** | No |
| **Is the course an “International or Diversity Focus” course?** | No, not International or Diversity Focus |
| **Is the course a General Education course?** | Yes |
| **Is the course a Writing Intensive course?** | No |
| **Is the course repeatable\*?**  (A repeatable course may be taken more than one time for additional credits. For example, MUT 2641, a 3 credit hour course can be repeated 1 time and a student can earn a maximum of 6 credits).  \*Not the same as Multiple Attempts or Grade Forgiveness | No |
| **Do you expect to offer this course three times or less (experimental)?** | No |

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| **Impact of Course Proposal** | |
| **Will this new course proposal impact other courses, programs, departments, or budgets?** | Yes |
| **If the answer to the question above is “yes”, list the impact on other courses, programs, or budgets?** | AST 2003C and AST 2004C, as taught currently, will have to be either phased out or have a different focus. A good example is UF’s AST 2004C, which is focused on Cosmology; such a course could attract science majors. Also, AST 2003C could focus on planetary geology, which could attract students taking our Geology course. |
| **Have you discussed this proposal with anyone (from other departments, programs, or institutions) regarding the impact? Were any agreements made? Provide detail information below.** | |
| N/A | |

**Section II, Justification for proposal**

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| **Provide justification (below) for this proposed curriculum action** |
| This is one of the state designated general education core courses in the natural sciences; adding this course to our curriculum increases the options our students have in covering their general education requirements by taking a course in the physical sciences. |

**Section III, Important Dates and Endorsements Required**

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| **List all faculty endorsements below. (Note that proposals will be returned to the School or Division if faculty endorsements are not provided).** |
| George Manacheril |

**nOTE:** Changes for the Fall 2015 term must be submitted by the January 3, 2015 deadline and approved no later than the February 28, 2015 Curriculum Committee meeting. Changes during mid-school year are NOT permitted. Extreme circumstances will require approval from the appropriate Dean or Assistant Vice President as well as the Provost and Vice President of Academic Affairs to begin in either the Spring 2015 or Summer 2015 term.

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| **Term in which approved action will take place** | Fall 2015 |

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| **Required Endorsements** | **Type in Name** | **Select Date** |
| **Department Chair or Program Coordinator** | George Manacheril | 12/6/2014 |
| **Academic Dean or Assistant Vice President** | Theo Koupelis | 12/6/2014 |
| **Dean’s Council Representative** | Dr. Mary Myers | 1/6/2015 |

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| **Select Curriculum Committee Meeting Date** | January 23, 2015 |

Completed curriculum proposals must be uploaded to Dropbox by the deadline. Please refer to the *Curriculum Committee Critical Dates for Submission of Proposals* document available in the document manager in the FSW Portal:

* Document Manager
* VP Academic Affairs
* Curriculum Process Documents

**Important Note to Faculty, Department Chairs or Program Coordinators, and Deans or an Assistant Vice President:**

Incomplete proposals or proposals requiring corrections will be returned to the School or Division. If a proposal is incomplete or requires multiple corrections, the proposal will need to be completed or corrected and **resubmitted to the Dropbox for the next Curriculum Committee meeting** (no later than January 3, 2015 to be effective for the Fall 2015 term). All Curriculum proposals require approval of the Provost and Vice President of Academic Affairs. Final approval or denial of a proposal is reflected on the completed and signed Summary Report.