Astronomy

ASTR 496  **Seminar in Astronomy**  credit: 1 TO 4 hours.
Lectures on topics of current interest in astronomy and astrophysics; for advanced undergraduates and graduates. See Class Schedule for current topics. 1 to 4 undergraduate hours. 1 to 4 graduate hours. Approved for both letter and S/U grading. May be repeated. Prerequisite: Consent of instructor.

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<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>41452</td>
<td>Lecture</td>
<td>NPA</td>
<td>01:00 PM - 01:50 PM</td>
<td>MWF</td>
<td>134 - Astronomy Building</td>
<td>Fields, B</td>
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Credit Hours: 3 hours
Nuclear & Particle Astrophysics
NPA: Nuclear and Particle Astrophysics. This course is targeted to advanced undergraduate students, with no nuclear or particle physics prerequisites. Need instructors approval. We will develop and apply basic nuclear and particle physics to trace highlights in the history of cosmic matter from the big bang to the present, using all available cosmic messengers. Planned topics include: Early universe thermodynamics, relic particles, and dark matter. Primordial nucleosynthesis predictions, observations, implications, and future tests. Stellar burning phases and nucleosynthesis. Supernovae and explosive nucleosynthesis. Solar, geophysical, atmospheric, supernova, jet-driven, and cosmological neutrinos. Neutron capture processes: theory, astrophysical sites, and observations. Gamma-ray bursts and kilonovae. Ultra-high energy cosmic rays. Cosmic-ray nucleosynthesis and gamma-ray production. The first stars. Galactic and cosmic chemical evolution. The emphasis will be on physical arguments and quantitative estimates to understand observations.

| 30862 | Conference | RI      | 04:00 PM - 04:50 PM | R   | 134 - Astronomy Building | Looney, L  |

Credit Hours: 1 hours
Section S: Survey of Current Research This course is for first year graduate students and advanced undergraduates interested in the research work of faculty members in Astronomy and Astrophysics. Students will meet with a different faculty member for one hour each week informally to learn about his or her scientific research work. ASTR 496 Section S is primarily meant for students who are interested in pursuing a research project with a faculty member, and the course provides good preparation for summer research assistantships. S/U grading only.