1. General
President: John G. Peters
Dean of Graduate School: James Erman, Interim
Department Chairman: Suzanne Willis, Interim
Department Telephone Number: (815) 753-1772
Type of Institution: University
Control: Public
Setting: Small town
Total Faculty: 1,279
Total Graduate Faculty: 900 (approx.)
Total Students: 25,000
Total Graduate Students: 6,600
Annual Graduate Tuition:
In-state residents: Full-time—$2,824/sem.
Tuition rates for: 2008–09
Deferred tuition plan: No
Tuition waived if Research or Teaching Assistant
Annual Other Fees: Full-time—$1,193.05/sem.
Graduate assistants—$1,193.05/sem.
Term: Semester

2. Number of Faculty in Department
The combined total of full-time faculty in the three professorial ranks is 20. The combined total of full-time, part-time, and other faculty at all ranks is 33.

3. Admission, Financial Aid, and Housing
Address admission inquiries to: Graduate School
Graduate application fee required: Yes, $30.00
Admission deadline (Fall admission): 6/1
Admission information: For fall admission, 2008–09, 32 students were accepted from 49 applicants.
Admission requirements: For admission to the graduate programs, a Bachelor’s degree in physics or a related discipline is required with a minimum undergraduate GPA of 2.75. The GRE is required. No minimum score is required. The GRE Physics is not required, but recommended for international students. Students from non-English speaking countries are required to demonstrate proficiency in English via the TOEFL exam. Minimum acceptable score for admission is 80/120.
Undergraduate preparation assumed: Corson and Lorrain, Electricity and Magnetism; Fowles, Mechanics; Weidener and Sells, Modern Physics; Fowles, Optics.
Address financial aid inquiries to: Department of Physics
GAPSFAS application required: No
Financial aid deadline: 3/1
Loans available: Yes
Address housing inquiries to: Student Housing Services
On-campus, single student housing available: Yes
On-campus, married student housing available: Yes

4. Graduate Degree Requirements
Master’s: 30 hrs. of course work with 24 in physics; thesis required for pure and applied physics specializations.
Doctorate: Students are required to complete 90 semester hours of graduate course work. This includes 15 hours in five out of six core courses covering classical and quantum mechanics, statistical physics, and electromagnetic theory, and twelve hours in two different areas of physics. A minimum of 24 hours dedicated to dissertation research is required. The remaining hours may include additional dissertation work or other graduate course work in physics and related fields. Students entering the program without a master’s degree in physics are required to pass a qualifying examination, which is usually taken at the end of the first year. Successful completion of a candidacy examination based on the core courses and other graduate courses is required of all students in the Ph.D. program. Transfer credits for students entering with a master’s degree or with graduate coursework from another institution are allowed, pending approval by the Graduate Studies Committee.
Thesis: Thesis may be written in absentia.
Special Equipment, Facilities, or Programs: Students may specialize in four principal areas: condensed matter and materials physics, elementary particles and fields, accelerator physics, and physics education. The department makes special efforts to accommodate the needs of students such as employees of nearby industrial government laboratories and teachers employed in the region who wish to gain advanced degrees in physics on either a part-time or full-time basis. On the departmental faculty are eight condensed matter experimental-
ists and two theoreticians with whom graduate students may work on their thesis research. In addition there are joint and adjunct professors from Argonne National Laboratory, the Advanced Photon Source, and nearby industrial research labs. For solid state experimentation, the department has low- and high-temperature Mössbauer spectrometers; a materials synthesis lab with high-temperature and high-pressure furnaces and thermogravimetric analysis equipment for creating transition element oxides; x-ray diffractometers used for crystal structure determinations; high-vacuum systems for the preparation and study of surfaces; and magnetization, resistivity and magnetoresistive measurements, and two high resolution electron microscopes. The Physics Department has a strong collaborative program with the Advanced Photon Source in x-ray crystallography, inelastic scattering, magnetic x-ray dichroism, high energy x-ray scattering, X-ray and light scattering, surface scattering, and anomalous and resonant scattering spectroscopies. Because of the close departmental ties with the Materials Science Division of the Argonne National Laboratory, both faculty and graduate students make frequent use of research facilities there (1 hour by car). The theoreticians in this group make use of departmental, university, and Argonne computers.

Among the faculty working on elementary particles and accelerator physics are nine experimentalists and two theoreticians, along with a number of graduate students doing thesis work. At present, the experimentalists participate in the D0 proton-antiproton experiment at the Fermi National Acceleration Laboratory (45 minutes by car) and the ATLAS experiment at CERN. Detector R&D is ongoing with emphasis on use of scintillator detectors at a future linear collider. The theoreticians have joint appointments at Fermilab. Accelerator physics R&D are coordinated through the Northern Illinois Center for Accelerator and Detector Dement (NICADD). Current areas include studies of intense electron sources at the Fermilab-NICADD Photoinjector Laboratory and beam diagnostics using resources at NIU, Argonne and Fermilab; Argonne Tandem Linear Accelerator System; muon-based diagnostics using resources at NIU, Argonne and Fermilab; and high-precision measurements of fundamental constants. A faculty member works closely with graduate students on methods of physics teaching and serves as a supervisor of their student teaching at selected nearby high schools.

### Table C—Separately Budgeted Research Expenditures

<table>
<thead>
<tr>
<th>Research Specialty</th>
<th>No. of Grants</th>
<th>Expenditures ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerator Physics</td>
<td>6</td>
<td>904,000</td>
</tr>
<tr>
<td>Condensed Matter Physics</td>
<td>19</td>
<td>2,040,000</td>
</tr>
<tr>
<td>Particles &amp; Fields</td>
<td>4</td>
<td>907,000</td>
</tr>
<tr>
<td>Public Service</td>
<td>1</td>
<td>3,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>3,854,000</strong></td>
</tr>
</tbody>
</table>

### FACULTY

#### Professors

- **Crabtree**, George W., Ph.D., Illinois, Chicago, 1974. Experimental studies of high-$T_c$ superconductors.
- **Cummings**, Mary Anne, Ph.D., Michigan, 1990. High-energy experimental physics and accelerator physics.

#### Associate Professors


#### Assistant Professors


#### Emeriti

Hurych, Zdenek, Ph.D., Charles University, Prague, 1967. Surface studies using synchrotron radiation.
Kimball, Clyde W., Ph.D., St. Louis, 1959. Mössbauer studies of high-$T_c$ superconductors.
Shaffer, John C., Ph.D., University of Delaware, 1966. Solid state theory.

Research Scientists
Dychkant, Alexandre, Ph.D., Institute for High Energy Phys., Russia, 1985. HEP.
Lima, Jose, Ph.D., CBPF-Brazil, 1998. HEP.
Terzic, Balsa, Ph.D., Florida State University, 2002. Beam and Astrophysics.
Uzunyan, Sergey, Ph.D., Northern Illinois University, 2006. HEP.
Vinogradov, Nikolai, Ph.D., Moscow State Engineering Physical Institute, 2001. Accelerator physics.
Zutshi, Vishnu, Ph.D., University of Delhi, 1997. HEP.

RESEARCH SPECIALTIES AND STAFF

Theoretical
Accelerator and Beam Physics. Erdelyi, Mihalcea.

Elementary Particles. Weak interactions; gauge theory; phenomenology; super-symmetric theories. Albright, Martin.

Experimental
Condensed Matter and Materials Physics Nanophysics: Mössbauer effect; superconductivity; lattice defects; optical and transport properties of amorphous and crystalline solids; synchrotron radiation; surface physics; magnetic properties of solids; low-temperature physics; x-ray crystallography; materials preparation. Brown, Chmaissem, Crabtree, Dabrowski, Ito, Lurio, Mini, Thompson, Xiao, Zaluzec.

High-Energy Physics. Collider studies of heavy quark production and decay, jet production and searches for quark compositeness; searches for new massive states; detector development. Bhat, Blazey, Chakraborty, Fortner, Hedin, Zutshi.


Physics Education. Willis, Windelborn.