

# Graduate Programs & Research Newsletter



## College of Engineering & Applied Science *Discover. Innovate. Lead.*

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### Eleven CEAS Faculty Receive RGI-2 Grants

Eleven faculty members from CEAS received awards from the second round of the UWM Research Growth Initiative (RGI-2), as PIs or Co-PIs. Winners and their departments are: Erik Christensen, Civil Engineering; Joe Bockhorst and Tian Zhao, Computer Science; David Klemer and

Jun Zhang, Electrical Engineering; Pradeep Rohatgi, Materials; and Ryo Amano, Junhong Chen, Anoop Dhingra, Sarah Gong (2), and Tien-Chien Jen, Mechanical Engineering. A complete list of all RGI-2 awards is posted on the Graduate School web page.

CEAS faculty submitted 44 proposals, requesting a total of \$5,534,105. Submissions came from all six CEAS departments, some with a single PI and many with multidisciplinary, creative collaborations. The breakdown of applications and awards is illustrated below:

CEAS Department	# of Awards by PIs/Co-PI's	Proposals Submitted	Total Requested
Civil Engineering & Mechanics	1	10	\$1,277,569
Computer Science	2	9	1,138,409
Electrical Engineering	2	10	1,317,128
Industrial & Manufacturing Engineering	0	1	68,113
Materials Engineering	1	2	273,468
Mechanical Engineering	6	12	1,459,418
<b>Total</b>	<b>12</b>	<b>44</b>	<b>\$5,534,105</b>

*Continued on p. 2*

### Rockwell Million-Dollar Grant

Rockwell Automation recently awarded a \$1 million grant to UWM in a new strategic alliance designed to ensure the competitiveness of manufacturing throughout the region. With its focus on advanced automation, this grant will provide a new source of research funding for CEAS faculty in three key areas: materials, sensors and devices, and software and informatics.

The funding will be offered through new catalyst grants in a competitive process with external reviewers. Similar to

RGI, these awards are seed funds for projects that are expected to become self-sustaining. Details of the competition will be announced later this year.

Other goals of the alliance include developing a skilled local work force, creating a regional research infrastructure, and fostering interdisciplinary teams that will integrate technology, business and the sciences.

### Faculty Awards and Honors

#### Congratulations to CEAS faculty for their recognition!

*Sarah Gong*, Mechanical Engineering, has been awarded the NSF CAREER award with her project "Sustainable and Eco-Friendly Boibased/Biodegradable Polymers." The award is \$400K from 2007-2012. This is NSF's most prestigious award for junior faculty.

All three CEAS Fulbright applicants (*Chris Papadopoulos, Adeeb Rahman and Hani Titi*, all from Civil Engineering) have

received favorable reviews at the first stage of competition and their applications have been sent on for final review by the host countries: Hungary, Turkey and Jordan, respectively.

*Tarun Naik*, Academic Director of the Center for By-Products Utilization, was recognized by the EPA's Coal Combustion Products Partnership for the CBU's investigation into alternative uses for coal combustion, such as fly ash and other by-products generated by coal-burning power plants.

## Washington Update

Michelle Schoenecker, Associate Technical Grant Writer in the CEAS Office of Research, recently attended the 48<sup>th</sup> annual conference of the National Council of University Research Administrators (NCURA) in Washington, DC. She returned to CEAS armed with information on topics such as NSF and NIH proposal development and the federal funding landscape.

### Advice From NSF Program Officers

**“Ask early, ask often”** – NSF wants Principal Investigators (PIs) to live by this motto. If you are unsure about the fundability of your

proposal or have other questions, NSF wants you contact program officers early in the proposal development process and not to feel intimidated when calling. They know how much work you put into proposals and they want to help you succeed.

**Budget** – This is the crux of your proposal and should be the first thing you develop with your research plan. The budget reflects your priorities and must show consistency between your ideas and your project needs. When developing the budget narrative, use all three pages and keep in line with the program guidelines.

**Intellectual Merit & Broader Impacts** – Proposals that do not separately address these criteria **within the one-page Project Summary** will be returned without review. Examples of Intellectual Merit statements are available at <http://www.nsf.gov/pubs/2003/nsf032/bicexamples.pdf>. Examples of Broader Impact statements are available at <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

**Returned Without Review** – NSF will return a proposal without review if it:

- Is submitted with insufficient lead-time before the activity is scheduled to begin

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## CEAS RGI-2, *cont. from page 1*

To help CEAS faculty prepare their RGI-2 proposals, the Office of Research hosted a workshop that explained the submission process, highlighted changes in the program, and demonstrated the new electronic forms. The staff also provided research and editing assistance to many

faculty members, helping to ensure their proposals met the RGI-2 criteria.

The RGI-2 proposals were evaluated by external reviewers and the top-ranked proposals were reviewed by panels. Reviewers and panelists are researchers with national reputations and

experience serving on selection panels for national organizations. The panel review was held on January 13 and announcement of the winners was made on February 21. This year there was a separate panel to review engineering proposals.

## Update from the Graduate Programs Subcommittee

The GPSC is reviewing the Mathematics/Quantitative Methods list for the Ph.D. program. There is some concern about the role of CEAS U/G courses in the Ph.D. program. We have asked for more feedback from the departments on this issue. We have also been asking departments to explain the quantitative content of all their courses on this list. The reason for the review is that there may have been changes

to courses or to faculty opinion regarding quantitative competence since the time when the list was last compiled. A final version of the list is expected to go to the faculty in March.

The GPSC is continuing to review each department's guidelines for the Qualifying Exam. Our goal is to provide students with sufficient information about the structure of the exam, what

topics they need to address, and what resources are recommended. This information should make students more successful as well as avoid situations where someone might challenge the results of the exam because of inadequate guidelines.

**Members of the GPSC are:** Ryo Amano, representative to the Graduate Faculty Committee; Krishna Pillai,

## Important Dates

**April 1, 2007:**  
Graduate School announces 07-08 Graduate Fellowship and Dissertation Fellowship award recipients

**April 12 & 13, 2007:**  
Spring Ph.D. Qualifying Exam; EMS W220; 1:00 – 5:00

**May 4, 2007:**  
CEAS ILC Meeting

**May 5, 2007:**  
Alumni Banquet; UWM Union Ballroom

**May 7, 2007:**  
Thesis Defense Deadline

**May 14, 2007:**  
Thesis Submission Deadline

**May 19, 2007:**  
Order of the Engineer; UWM Union Wisconsin Room; 3:00 – 5:00

**May 20, 2007:**  
Commencement

## Graduate Open House

CEAS is planning a new open house for current seniors and December graduates to encourage them to consider UWM Graduate School. The open house will inform students about the value of pursuing MS and Ph.D. programs and will answer questions about the graduate school process. In addition, faculty will be asked to dedicate a few minutes during classes that have a majority of seniors to inform them about the benefits of pursuing graduate studies and the details of the upcoming open house.

**March 28, 2007, 1:00 - 3:00**  
**1st Floor Student Lounge**

Mechanical; Sam Helwany, Civil; Jaejin Jang, Industrial; Pradeep Rohatgi, Materials; Lei Ying, Electrical Engineering; Susan McRoy, Computer Science, Chairperson.

## Upcoming NSF and NIH Deadlines

The National Science Foundation (NSF) and the National Institutes of Health (NIH) recently changed the proposal submission deadlines for many of their grant programs. Please review the deadlines for the proposals you plan to submit to these agencies or contact Michelle Schoenecker for assistance at schoene7@uwm.edu or 229-4421.

### National Science Foundation

NSF accepts proposals throughout the year for various programs; however, many are due within two funding cycles in the spring and fall. The spring cycle is from February 1 to March 15 and the fall cycle is from September 1 to October 15.

### National Institutes of Health

To accommodate the changeover to Grants.gov, NIH has changed its proposal deadlines to avoid deadlines on the first and 15<sup>th</sup> of the month when Grants.gov typically experiences high proposal volume.

NIH Program	Receipt Cycle I	Receipt Cycle II	Receipt Cycle III
Research Grants - <b>R01</b> ; new	Feb. 5	June 5	Oct. 5
Research Career Development <b>all K series</b> ; new	Feb. 12	June 12	Oct. 12
Research Grants - <b>R03, R21, R33, R21/R33, R34, R36</b> ; new	Feb. 16	June 16	Oct. 16
Academic Research Enhancement Award (AREA) <b>R15</b> new, renewal, submission, revision	Feb. 25	June 25	Oct. 25
Research Grants - <b>R01</b> renewal, submission, revision	March 5	July 5	Nov. 5
Research Career Development <b>all K series</b> renewal, submission, revision	March 12	July 12	Nov. 12
Research Grants - <b>R03, R21, R33, R21/R33, R34, R36</b> ; renewal, submission, revision	March 16	July 16	Nov. 16
New Investigator – <b>R01</b> resubmission for applications involved in pilot ONLY	March 20	July 20	Nov. 20
Small Business Innovation Research and Small Business Technology Transfer Grants - <b>R43, R44, R41, R42</b> ; new, renewal, submission, revision	April 5	Aug. 5	Dec. 5
Conference Grants and Conference Cooperative Agreements - <b>R13, U13</b> ; new, renewal, submission, revision	April 12	Aug. 12	Dec. 12

## Helping Outstanding CEAS Students Win Scholarships and Fellowships

One goal of the CEAS Strategic Plan is to attract and retain students with the potential for intellectual development, innovation, and leadership. An additional goal is to achieve national prominence. To help CEAS achieve these goals, the Office of Research has undertaken an initiative to notify undergraduate and graduate students of special scholarship and fellowship opportunities and to offer application assistance for these awards.

As the first step CEAS department chairs identified

students who met the National Science Foundation's (NSF) rigorous academic requirements for its Graduate Research Fellowship Program. This prestigious three-year award provides \$30,000 per year for graduate study leading to a research-based master's or doctoral degree. Only 1,000 fellows are selected each year. Michelle Schoenecker, Associate Technical Grant Writer, then organized and presented a workshop for students who responded to their chairs' invitation to apply. The workshop offered information on the program

and strategies for writing a competitive application.

Several students attended the workshop and two superior undergraduate students, Ben Hansen and Richard Hondlik, worked with the Office of Research and with faculty mentors to prepare and submit strong proposals for the December deadline. Three additional CEAS students, Andrew Dressel, Tarissa Lerro and Marco LoRocco, submitted applications with guidance from Chris Papadopoulos. NSF will announce winners in early spring.

As additional scholarship and fellowship opportunities arise, the Office of Research will notify students and faculty of these deadlines and will continue to provide workshops and individual assistance for applicants. Although these are very competitive awards, CEAS has many high achieving students with the potential to compete successfully. Faculty members are encouraged to identify and mentor undergraduate and graduate students who have the academic credentials to apply for NSF and other prestigious scholarships and fellowships.

## Proposals Funded September 15, 2006 to February 1, 2007

PI/Co-PI	Agency	Title	Amount
Amano, R.	JJI	Advanced Remediation Technology Study for Kokomo	\$50,218
Chen, J.	National Science Foundation	SGER: Coating Carbon Nanotubes With Aerosol Nanoparticles Produced from a Mini-Arc Plasma Source	\$5,508
Chen, J.	National Science Foundation	NER: Carbon Nanotube Coated With Nanoparticles: An Enabling Structure for Nanomanufacturing and Nanodevices	\$11,985
Dhingra, A.	SPH Crane and Hoist, Inc.	Graduate Internship Program – Morris Cranes	\$32,545
Garg, A.	Centers for Disease Control & Prevention/NIOSH	Upper-limb Musculoskeletal Disorders: Quantifying Risk	\$479,142
Gong, S.; Chen, J. Co-PI	National Science Foundation	Study of Microcellular Injection Molding of Bio-based/Biodegradable Plastics	\$25,000
Gong, S.	National Science Foundation	Active Nanotube-Liquid Crystalline Elastomer Nanocomposites	\$120,011
Helwany, S.; Titi, H., Co-PI	Wisconsin Department of Transportation	Development and Full-Scale Testing of an Alternate Foundation System for Post and Panel Retaining Walls	\$79,998
Helwany, S.; Ghorbanpoor, A., Co-PI	HNTB, Inc./Wisconsin Department of Transportation	Wisconsin Highway Research Program: Construction Vibration Attenuation with Distance and its Effect on Early-Age Concrete	\$110,171
Horowitz, A. Beimborn, E., Co-PI	University Transportation Center	UWM Participation in University Transportation Center Consortium	\$8,000
Kouklin, N.	National Science Foundation	Precisely Engineered Scalable Carbon Nanotube Arrays and Nanotube-Polymer Nanowires for Wavelength-Tunable IR Optical Detection and Sensing Applications	\$239,704
Liao, Q.	Pacific Advanced Civil Engineering, Inc.	Numerical Simulation of 2D Surfing Wave Generated by a Water Drop Structure	\$12,376
Munson, E.	General Electric Company	Software Versioning and Variants	\$59,939
Wang, W.	UWM Foundation	To Promote the Research and Education of Circuit Design	\$4,861
Wang, W.	US Department of Defense, US Navy	Feasibility Study on Magnetic Content Addressable Memory	\$57,553
Yu, D.	JunTech, Inc.	New Algorithms for PTZ Camera-Based Object Tracking	\$10,000

**TOTAL: \$1,307,011**

Data Source: Graduate School Reports

## Proposals Submitted September 15, 2006 to February 1, 2007

PI/Co-PI	Sponsor	Title	Amount
Boylard, J.	National Science Foundation	Modular Static Checking of Software Design Intent Using Permissions	\$366,649
Bravo, H.; Wasley, J., Co-PI	US Environmental Protection Agency	Creating a Laboratory for Ecological Stormwater Management in Urban Settings: UWM as a Zero-discharge Zone	\$892,190
Chen, J.; Josifovska, Co-PI	National Science Foundation	NIRT: Engineering Gas Sensors with Nanoparticles and Hybrid Nanostructures	\$1,303,260
Chen, J.; Klemer, D., Co-PI	National Institutes of Health	High-Sensitivity Immunosensors Based on Carbon Nanotube/Gold Nanoparticle Microdevices	\$144,971
Gong, S.	US Department of Agriculture	Biocomposite Components with a Solid Skin/ Foamed Core Structure Produced via a Novel Co-injection Molding Process	\$393,916
Gong, S.	US Department of Agriculture	Acquisition of a MiniLab Micro Rheology Compounder for Research and Education on Biobased Plastics	\$50,000
Horowitz, A.	National Cooperative Hwy. Research Program	Travel Demand Forecasting: Parameters and Techniques	\$125,000
Jen, T.C.	National Science Foundation	Advanced Graphite Composite Plate for PEM Fuel Cell	\$367,443
Jen, T.C.	National Science Foundation	Collaborative Research: Environmentally Benign Internal Cooling of End Mills	\$204,635
Jen, T.C.; Chen, J., Co-PI	National Science Foundation	GOALI: Electrostatic-force-assisted Cold Gas Dynamic Spray of Nanoparticles-A New Low Temperature Process for Producing Nanostructured Coatings	\$397,639
Klemer, D.; Chen, J., Co-PI	National Science Foundation	NER: Biomolecular Detection Based on Active Hybrid Nanomaterial Sensors	\$129,909
Kouklin, N., Co-PI Geissinger, P., PI	National Science Foundation	MRI: Acquisition of a High-Resolution Scanning Electron Microscope for an Interdisciplinary Multi-User Facility Serving Life, Physical, and Materials Sciences	\$603,617
Kouklin, N.; Yakovlev, V., Co-PI	National Science Foundation	Micro-, Meso-, and Macro-porous Semiconductor Materials With Enhanced Nonlinear Optical Properties	\$339,901

Data Source: CEAS Grants Database

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### A Reminder: CEAS Grants Database and Transmittal Form

The Graduate School requires a T-Form with department chair and dean's signatures before a grant can be submitted to a funding agency. For the convenience of CEAS faculty, the T-Form is available on the CEAS web page. However, this CEAS T-Form also serves the very important function of directly populating the CEAS grants database. This is why CEAS faculty are required to use the T-Form found on the CEAS web page so the college has an accurate record of grant submissions. The database serves as the source of information about CEAS grant applications, including those published in the CEAS Graduate Studies and Research Newsletter.

## Proposals Submitted

### September 15, 2006 to February 1, 2007

PI/Co-PI	Sponsor	Title	Amount
Kouklin, N.	National Science Foundation	Fabrication and Properties of Uniaxially Nanopatterned Polymeric Nano-Arrays for Device Applications	\$285,753
Li, J.; Yang, C.H., Co-PI	Wisconsin Groundwater Coordinating Council	Transport and Survival of Pathogenic Bacteria Associated With Dairy Manure in Soil and Groundwater	\$69,941
Li, Y.	Johnson Controls, Inc.	Modeling and Control of Building HVAC Systems Using Modelica	\$25,000
Naik T.; Chun, Y., Co-PI	United States Israel Binational Science Foundation	Radon Exhalation, Microstructural Transformations, and Pozzolanic Activity of Fly Ash - Portland Cement Systems	\$46,426
Nasiri, A.	American Heart Association – Midwest Affiliate	Techniques for Efficient Integrated Transcutaneous Power/Signal Transmission for Left Ventricular Assist Devices	\$214,308
Nasiri, A.	American Heart Association	Techniques for Efficient Integrated Transcutaneous Power/Signal Transmission for Left Ventricular Assist Devices	\$259,600
Papadopoulos, C.; Reisel, J., Co-PI	National Science Foundation	Fostering Opportunities for Tomorrow's Engineers (FORTE)	\$1,999,580
Rahman, A.; Papadopoulos, Co-PI	National Institutes of Health	An Engineering Approach to Studying Patient-Specific Risk Assessment of Hip Fracture	\$147,700
Rohatgi, P.	National Science Foundation	US-Korea Cooperative Research: Synthesis and Properties of Light Weight Alumina Particle Reinforced Ductile Iron Castings	\$12,000
Rohatgi, P.	National Science Foundation	US-Egypt Cooperative Research: Manufacture of Aluminum Magnesium Matrix Composites Under Industrial Conditions	\$18,000
Rohatgi, P.	National Science Foundation	NER: Synthesis of Metal Matrix OE Nanoparticle	\$6,000
Rohatgi, P.	National Science Foundation	Light Weight Lead Calcium Alloys- Microballoon Fly Ash Composites for Automotive Batteries Operating Under High Temperature	\$30,000
Rohatgi, P.	National Science Foundation	Manufacture and Characterization of Active and Self Healing Metal Matrix Nanocomposites	\$970,750
Rohatgi, P.	National Science Foundation	Centrifugal Casting for Selective and Functionally Graded Reinforcement of Metal Matrix Nanoparticle Composite Components	\$428,875
Wang, W.	Office of Naval Research	Magnetic Content Addressable Memory	\$545,018
Wang, W.	National Science Foundation	Novel Spin Content Addressable Memory-Based Associative Processing Array	\$298,508
Zhao, J.	National Science Foundation	NEESR-II: Behavior and Design of Cast-in-Place Anchors under Simulated Seismic Loading	\$374,738

Data Source: CEAS Grants Database

**TOTAL: \$11,051,327**

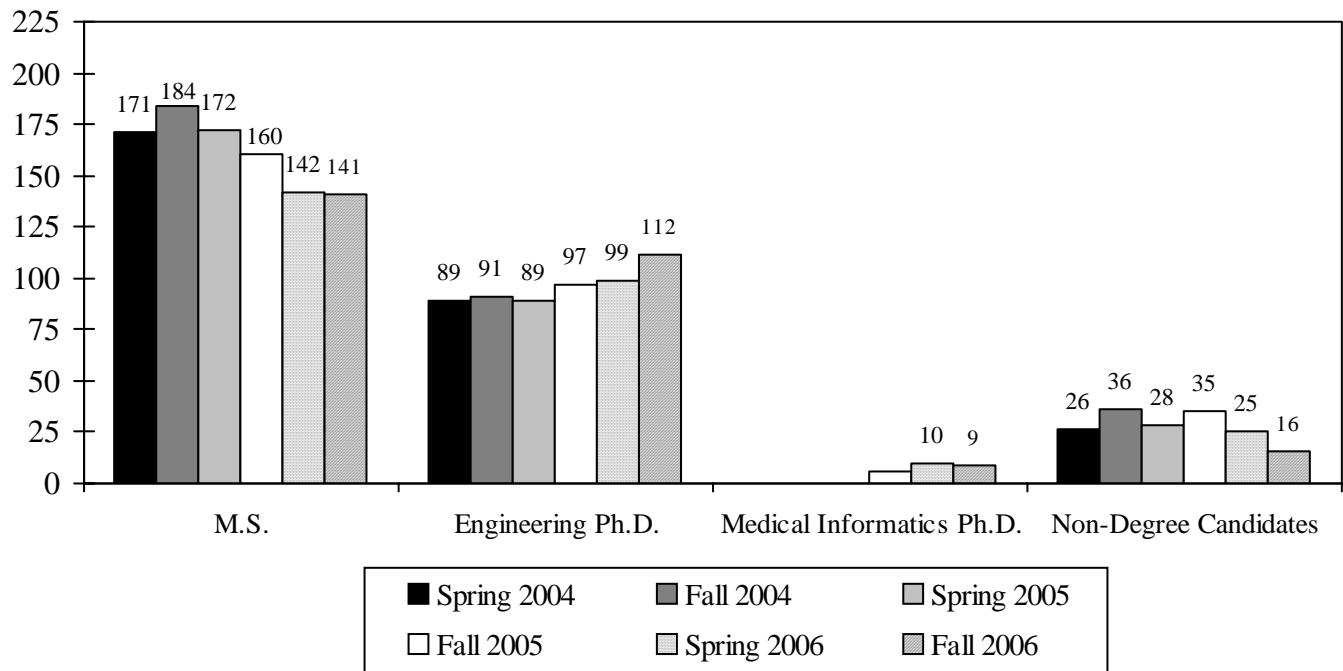
## Graduate Applications for Admission (As of February 1, 2007)

	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007*
M.S. Candidates	205	81	140	89	176	81
Engineering Ph.D. Candidates	82	25	73	29	58	38
Engineering Ph.D. Candidates w/o M.S.	18	2	11	4	23	3
Medical Informatics Ph.D.	-	-	11	5	17	1
<b>Total</b>	<b>305</b>	<b>107</b>	<b>268</b>	<b>127</b>	<b>274</b>	<b>123</b>

Data Source: UWM Graduate School – Graduate Applications and Admissions Summary

\*In Process

## Graduate Student Enrollment



Data Source: UWM Institutional Research – Enrollment Facts at a Glance

**Washington Update, cont. from page 2**

- Is a duplicate of or is substantially similar to a proposal already under consideration by NSF from the same submitter (Tip: If resubmitting a proposal, don't use the same title as the original; if revising a proposal, you may use the same title)
- Does not meet NSF proposal preparation requirements, such as page limits, formatting instructions, and electronic submission requirements as specified in the NSF Grant Proposal Guide or the program announcement/solicitation
- Does not meet the announced proposal deadline date (and time, where specified)
- Was previously reviewed and declined and has not been substantially revised

**Special Handling** – Proposals sent to the following programs must be submitted through Grants.gov (NOT FastLane) in 2007 or they will be returned without review:

- Scientific Computing Research Environments for the Mathematical Sciences (MPS)
- Advanced Learning Technologies (CISE)
- Infrastructure Materials Applications and Structural Mechanics (ENG)
- CEDAR, GEM, and SHINE Postdoctoral Research GEO

**Human Subjects in CEAS Research Projects**

Marjorie Piechowski, Senior Technical Grant Writer, has been appointed to the UWM Institutional Review Board (IRB) as a Decentral Reviewer for the use of human subjects in research. In this role she has two primary responsibilities. She will advise and assist CEAS faculty members and graduate students who plan to use human subjects in research projects to prepare the documents necessary to receive approval for that research. She also will determine the level of approval required for an individual project.

The categories of approval are governed by a set of risk factors and rules described in the federal regulations:

exempt from IRB approval, expedited IRB review or full IRB review. UWM requires approval for all projects using human subjects in research regardless of the source (or lack) of funding for the research project.

To update CEAS faculty and graduate students on current regulations and requirements for the use of human subjects, Marjorie will offer a workshop on **Human Subjects in CEAS Research Projects, to be held Monday March 12 from 3:00 - 4:30 in the EMS 371 Conference Room.**

More details about workshop content and registration will follow in e-mail and hard copy announcements.

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**Spring 2007 Grant Workshops**

**Human Subjects in CEAS Research Projects**

March 12, 3:00 - 4:30, EMS 371 Conference Room

**Developing Strategic Grant Budgets and Budget Narratives**

April 5, 12:00 - 1:30, EMS 371 Conference Room

**Reading Between the Lines of Proposal Reviews**

(how to use reviews to improve the resubmission)

April 18, 12:00 - 1:30, EMS 371 Conference Room

**NIH Follow-up: Overview, Deadlines, Application Process, Types of Proposals and Awards, Agency Structure, Review Process**

May 4, 12:00 - 1:00, EMS 371 Conference Room

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