UNDERGRADUATE RESEARCH SPRING SYMPOSIUM & AWARDS

Wednesday April 4, 2007 1-6pm
College of Architecture Building
West Wing Atrium

Sponsored by: Undergraduate Research Opportunities Program (UROP)
Schedule of Events

Oral Presentations 1:20-4:20pm
Poster Session 3:00-4:30pm
Awards Ceremony & Reception 4:30-6:00pm

Participants:

Oral Presentations

Humanities and Social Sciences
Session A (Room 259)
Session Moderator: Dr. Lisa Yaszek, LCC

1:20pm
Women’s Empowerment After the Fall of the Taliban
Summar Shoaib, INTA
Mentor: Sylvia Maier, INTA

1:40pm
The History of Pain
Lindsey Chatel, STAC
Mentor: Cindy Klestinec, LCC

2:00pm
A Cross-Disciplinary Look at Landscapes
Amaris Gutierrez-Ray, STAC
Mentor: Ron Broglio, LCC

2:20pm
Changing the Face of Television: Subversive Sex and Gender
Identity Politics in Nip/Tuck
Chris VanAcker, STAC
Mentor: Dr. Lisa Yaszek, LCC
1:20pm
Extracellular Matrix Synthesis by Differentiating Embryonic Stem Cells
Shreya Shukla, BME
Mentor: Dr. Todd McDevitt, BME

1:40pm
Effects of Normal and Altered Shear Stress on the Biology of Intact Aortic Valve Leaflets
Adnan Elhammali, Physics
Mentor: Dr. Ajit Yoganathan, BME

2:00pm
Shear Stress Effects on Key Bone Formation Markers in 2T3 Pre-osteoblasts
Saujanya Vadoothker, BME
Mentor: Dr. Hanjoong Jo, BME
2:20pm
**Numerical Simulation of Semiconductor Device Physics**
*Peter Karasev, EE, and Ivan Kolesov, CMPE*
*Mentor: Dr. Shyh-Chiang Shen, ECE*

2:40pm
**Non-Deterministic Design of Utility Scale Wind Energy Systems**
*Robert Scott, AE*
*Mentor: Dr. Lakshmi N Sankar & Dr. Dmitris Mavris, AE*

3:00pm
**Active Compressor Stability Management**
*Yuan (James) Liu, AE*
*Mentor: Dr. J.V.R. Prasad, AE*

3:20pm
**The Effect of Reversing Blood Flow on the Transmigration of Monocytes through the Endothelium**
*Matthew Goette, BME*
*Mentor: Dr. Larry McIntire, BME*

3:40pm
**Amniotic Fluid Stem Cells for Bone Tissue Engineering**
*Eric Deutsch, ME*
*Mentor: Dr. Robert Guldberg, ME*

4:00pm
**Super-Yagi: A Novel High-Gain Antenna Array for Wireless HDTV**
*Trang Thai, ECE*
*Mentor: Dr. Manos Tentzeris, ECE*
2:20pm

**Markov Chains and Traffic Analysis II**
*Emanuel Indrei, Mathematics*
*Mentor: Dr. Eric Carlen, Mathematics*

2:40pm

**Mixing by Steady Flows in Thermocapillary Driven Microdroplets**
*John Widloski, Physics*
*Mentor: Dr. Roman Grigoriev & Dr. Dmitri Vainchtein, Physics*

3:00pm

**Cortical Reorganization in Age-related Macular Degeneration**
*Vijay Palvia, Biology*
*Mentor: Dr. Eric Schumacher, Psychology*

3:20pm

**Learning Rates For Auditory Menus Enhanced With Spearcons Versus Earcons**
*Dianne Palladino, Psychology*
*Mentor: Dr. Bruce Walker, Psychology*
Engineering
Session E (Room 207)
Session Moderator: Shawna Garcia, IBB

2:40pm
Stability Differences in Right versus Left-legged Stance
Subina Surendran, BME
Mentor: Dr. Lena Ting, BME

3:00pm
Review and Comparison of Systems Biology Modeling Approaches for Translational Research
Chanchala Kaddi, BME
Mentor: Dr. Dongmei Wang, BME

3:20pm
Review and Comparison of Systems Biology Simulation Tools for Translational Research
Melissa Freedenberg and Chanchala Kaddi, BME
Mentor: Dr. Dongmei Wang & Mr. Chang F. Quo, BME

Computing and Architecture
Session F (Room 259)
Session Moderator: Mitch Keller, Math/CS

3:20pm
Library East Commons Research
Amy Plauche, Architecture
Mentor: Dr. Sabir Khan, COA

3:40pm
Random Projection and Learning
David Mann and David Rutter, Computer Science
Mentor: Dr. Rosa Arriaga and Dr. Santosh Vempala, COC

4:00pm
Online Community Grid
Danny Miller, Computational Media
Mentor: Dr. David Bader, COC
College of Architecture

1. **Ferst Room Installation**
   *Allison Barfoot, ARCH & Ting Cheng, ID*
   *Mentor: Dr. Sabir Khan, COA*

2. **CourtsWeb**
   *Ira Dennis, ARCH*
   *Mentor: Dr. Athanassios Economou, Dr. Mike Gamble, Elizabeth Doak, Thomas Grasl, & Myrsini Mamoli, COA*

3. **Kindergarten revisited**
   *Jerry Hsu, ARCH*
   *Mentor: Dr. Athanassios Economou, COA*

4. **Carnegie Libraries: The Birth of the Public Library**
   *Lisa Thomason, ARCH*
   *Mentor: Dr. Elizabeth Dowling, COA*

5. **Solar Latrine**
   *Brad Davis, BC; Matt Madden, Marco Velasez, & Katie Snedeker, CEE*
   *Mentor: Dr. Kevin Caravati, GTRI*

College of Computing

6. **Haptic Laser Pointer**
   *Trevor Bentley, CS*
   *Mentor: Dr. Gregory Abowd & Shwetak Patel, COC*

7. **Automated Evaluation of Scientific Abstracts With Case-Based Reasoning**
   *Joseph Irwin, CS*
   *Mentor: Dr. Ashwin Ram, COC*
College of Engineering

10  Computational Studies of Optimizing the Horizontal Axis Wind Turbine Design
    Su Bae, AE
    Mentor: Dr. Lakshmi N Sankar, AE

11  Photogrammetric Analysis of Wave Propagation in Metallic Plates
    Alex Buchanan, AE
    Mentor: Dr. Massimo Ruzzene, AE

12  Experimental Analysis of Wave Propagation in Hexagonal and Chiral Cellular Structures
    Alek Gavrilovski, AE
    Mentor: Dr. Massimo Ruzzene & Alessandro Spadoni, AE

13  Families of Hydrothermally Stable Asymmetric Laminated Composties
    Robert Haynes, AE
    Mentor: Dr. Erian Armanios, AE

14  High-Speed Axial Reciprocating Probe
    Fabian Mak, AE
    Mentor: Dr. Mitchell Walker, AE
15 **MPD Design Methodologies II**  
*David Perner, AE*
*Mentor: Dr. Mitchell Walker, AE*

16 **Numerical Simulation of Annular Helicon Plasma**  
*Masayuki Yano, AE*
*Mentor: Dr. Mitchell Walker, AE*

17 **Development of Vector Based Modeling System for Molecular Beacon Validation**  
*Vasiliy Buharin, BME*
*Mentor: Dr. Gang Bao, BME*

18 **Utility of Ontologies in Modeling Application**  
*Sriram Challa, BME*
*Mentor: Dr. Dongmei Wang, BME*

19 **Computational Modeling of the Ceramide de Novo Synthesis Pathway**  
*Shobhika Dhingra & Melissa Freedenberg, BME*
*Mentor: Dongmei Wang & Chang F. Quo, BME*

20 **Development of a Cellular Ontology for Computational Modeling**  
*Shobhika Dhingra, BME*
*Mentor: Dr. Dongmei Wang, BME*

21 **Biodegradable Microsphere-Mediated Delivery of Differentiation Factors to Embryonic Stem Cells**  
*Ross Marklein, BME*
*Mentor: Dr. Todd McDevitt, BME*

22 **Bioinformatics: An Emerging Field**  
*Shalini Nemani, BME*
*Mentor: Dr. Dongmei Wang, BME*
23  Quantitative Metrics to Evaluate the Efficacy of Bio-Models  
*Erica Oden, BME*  
*Mentor: Dr. Dongmei Wang, BME*

24  Studying the Behavior of Ultra High Performance Concrete (UHPC) for Tensile Creep and Shrinkage Properties  
*Aragaw Akalu, CEE*  
*Mentor: Dr. Lawrence Kahn, CEE*

25  Exploring Reaction of Water Stable Nano-C60 with Hydroxyl Radical  
*Varun Gandhi, CEE*  
*Mentor: Dr. Jaehong Kim, CEE*

26  Usage of a 3D Range Imaging Camera to Increase the Safety in Construction  
*Menache Sofer, CEE*  
*Mentor: Dr. Jochen Teizer, CEE*

27  Identification of Significant Process Parameters in Variable Frequency Microwave Curing  
*Daniel Cepeda, ECE*  
*Mentor: Dr. Gary May, ECE*

28  Ohmic Contacts for Wide Bandgap Devices  
*Zen Mehra, EE*  
*Mentor: Dr. Shyh-Chiang Shen, ECE*

29  Thermal Modeling of Embedded Active Electronic Components  
*Jaeho Lee, ME*  
*Mentor: Dr. Yogendra K Joshi & Dr. David Warren Gerlach, ME*
30  
**CdTe/CdS/ITO Deposition for Carbon Nanotube-Based Solar Cells**

Rodolfo Camacho-Aguilera, MSE; Trevor McLeod, EE; & Victor Kusomboone, MSE  
**Mentor: Dr. William (Jud) Ready, MSE/GTRI**

31  
**Characterization of Novel Organic Polymer Materials for Thermochemical Lithography**

Adam Jakus, MSE  
**Mentor: Dr. Seth Marder & Dr. Simon Jones, MSE**

32  
**Thermo-Mechanical Behavior of Epoxy Shape Memory Polymer Foams**

Martha Lesniewski, MSE  
**Mentor: Dr. Ken Gall, MSE**

33  
**Nano-Nickel in Ni+Al Powder Mixture**

Arsalan Siddiqi & Adam Jakus, MSE  
**Mentor: Dr. Naresh Thadhani & Daniel Eakins, MSE**
College of Sciences

34 Lactate Testing in Elite Swimmers: Effect of Pre-exercise Carbohydrate Ingestion
   Michael Casner, MGMT
   Mentor: Dr. Mindy Millard-Stafford, AP

35 Do Constructional Constraints Influence Cichlid Craniofacial Diversification?
   Meryl Mims, Biology
   Mentor: Dr. Todd Streelman & Dr. Darrin Hulsey, Biology

36 The Photoracemization of Bi-Naphthols
   Elizabeth Ann Gould, Chemistry
   Mentor: Dr. Kyril Solntsev, Chemistry

37 New Materials for High Efficiency Organic Light Emitting Diodes
   Lauren Hayden, Chemistry
   Mentor: Dr. Seth Marder, Chemistry

38 Alexandrov's Conjecture
   Brian Nakamura, Math
   Mentor: Dr. Mohammad Ghomi, Math

39 The Eclipsing Binary MY Cygni
   Rebecca Tucker, Physics
   Mentor: Dr. James Sowell, Physics

40 Target Cueing and Search Asymmetries in Visual Search
   Bath-Ammi Garcia, Psychology & Charalampos Papadimetriou, Physics
   Mentor: Dr. Elizabeth Davis & Kenneth Hailston, Psychology
Ivan Allen College

41  Team Dynamics and Bonding within a Virtual Environment  
    Andrew Ho, Computational Media  
    Mentor: Dr. Ute Fischer, LCC

42  Science Fiction, Fandom, and the Bud Foote Collection  
    Betsy Gooch, STAC  
    Mentor: Dr. Lisa Yaszek, LCC

43  Italian Futurism Cinema: Technological and Cultural Impacts  
    Jenifer Vandagriff, STAC  
    Mentor: Dr. Angela Dalle Vacche, LCC
Special Thanks:

College of Architecture
Ms. Fadrika Prather, UROP Project Coordinator
Ms. Neela Balkissoon, UROP Student Assistant
Faculty and Graduate Student Judges from the Colleges
Oral Session Moderators
  Ms. Maria-Isabel Carnasciali, ME
  Ms. Shawna Garcia, IBB
  Dr. Steven Girardot, CETL
  Mr. Mitch Keller, Mathematics
  Dr. Rupal Thazhath, Biology
  Dr. Lisa Yaszek, LCC
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