




# NSF Career Award: Educational Component



Resources at Rutgers

# *Faculty Early Career Development (CAREER) Program Synopsis*

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National Science Foundation's most prestigious awards for new faculty members:

The CAREER program recognizes and supports the early career-development activities of those

***teacher-scholars***

who most effectively

***integrate research and education***

***within context of mission of their organization.***

***<http://www.nsf.gov/pubs/2005/nsf05579/nsf05579.html>***

# *Faculty Early Career Development (CAREER) Program Synopsis*

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Such activities should build a firm foundation for a ***lifetime of integrated contributions to research and education***. NSF encourages submission of CAREER proposals from junior faculty members at all CAREER-eligible organizations and especially encourages women, members of underrepresented minority groups, and persons with disabilities to apply.

*<http://www.nsf.gov/pubs/2005/nsf05579/nsf05579.html>*

# CAREER Program

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This premier program emphasizes the importance the Foundation places on the early development of academic careers dedicated to stimulating the ***discovery process*** in which the ***excitement of research is enhanced by inspired teaching and enthusiastic learning***. ***Effective integration of research and education at all levels generates a synergy in which the process of discovery stimulates learning and assures that the findings and methods of research are quickly and effectively communicated in a broader context and to a larger audience***. <http://www.nsf.gov/pubs/2005/nsf05579/nsf05579.html>

# CAREER Program

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Successful PIs will propose *creative, integrative, and effective research and education plans*, developed within the *context of the mission, goals and resources of their organization*,

<http://ruweb.rutgers.edu/aboutru/mission.shtml>

and which will build a firm foundation for a lifetime of contributions to the *integration of research and education*.

<http://www.nsf.gov/pubs/2005/nsf05579/nsf05579.html>

# Rutgers University Mission

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As the sole comprehensive public research university in the state's system of higher education, Rutgers, The State University of New Jersey, has the threefold mission of:

- providing for the instructional needs of New Jersey's citizens through its undergraduate, graduate, and continuing education programs;
- conducting the cutting-edge research that contributes to the medical, environmental, social and cultural well-being of the state, as well as aiding the economy and the state's businesses and industries; and
- performing public service in support of the needs of the citizens of the state and its local, county, and state governments.

<http://ruweb.rutgers.edu/aboutru/mission.shtml>

# CAREER Award “Challenges”

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- *teacher-scholars*
- *integrate research and education within the context of the mission of the University*
- *stimulating the discovery process with inspired teaching and enthusiastic learning*
- *findings and methods of research are quickly and effectively communicated in a broader context and to a larger audience*
- *creative, integrative, and effective research and education plans*
- *lifelong integration of research and education*

# Educational Component

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## Teaching Philosophy:

“A statement of the faculty member's personal teaching philosophy and goals, and the strategies and methods used to attain those goals.”

<http://cat.rutgers.edu/faculty/portfolios.html>

<http://www.oic.id.ucsb.edu/TA/port-FAQ.html>

<http://chronicle.com/jobs/2003/03/2003032702c.htm>

# Teaching Philosophy

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Teaching “Credo” - your beliefs about teaching and learning

Why do you teach the way you do?

What methods do you use to integrate research and teaching?

How do you know you are being effective?

- *integrate research and education*
- *stimulating the discovery process*
- *effectively communicated in a broader context*
- *creative, integrative, and effective education plans*

# Resources at Rutgers

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## Schools, Centers, Institutes, Departments

- Graduate School of Education
- Center for Math, Science and Computer Education
- Math and Science Learning Center
- Waksman Institute
- School of Engineering
- Cook College
- Physics

# “EDUCATION STRATEGIES”

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**Carolyn Maher,  
Director Robert B. Davis Institute for Learning  
NSF Math & Science Partnership Program**

**<http://www.gse.rutgers.edu/rbdil/site/>**

- Educational Advisory Committee
- Expert Consultants
- Mentor Graduate Students
- Outreach to K-12 Schools
- Develop and teach new course
- Try new teaching approaches
- Develop materials, curriculum for schools

# GSE/RBDIL Projects

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## Education Partner IGERT Grant

Sponsoring Agency: National Science Foundation;  
PI: Prabas Moghe, Rutgers School of Engineering

## \* Research on Informal Mathematics Learning(ROLE)

A three-year grant awarded by the National Science Foundation (NSF).  
Goals: To investigate characteristics of mathematics learning in an informal, after-school and urban environment.\*\*\* PI: Carolyn A. Maher; Co-PI's: Arthur B. Powell and Keith H. Weber

## New Jersey Statewide Systemic Initiative (NJ SSI) Regional Center at Rutgers University

NJSSI is a unique partnership of schools, districts, colleges, universities, science centers, museums, business and industry focused on improving the performance and participation of all students in science and mathematics throughout New Jersey. Director: Carolyn A. Maher; Associate Director: Emily Dann

# Examples of Instructional Delivery

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- **After-school Interventions  
[students/teachers]**
- **Summer Institutes**
- **Integration of Learning Modules in Courses**
- **Development and Testing of Resource  
Materials**
- **Work with Graduate Assistants**

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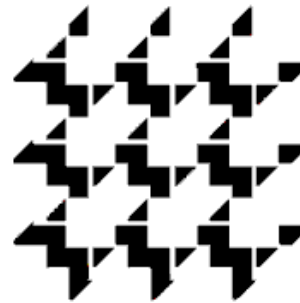
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# DIMACS

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*Center for Discrete Mathematics & Theoretical Computer Science  
Founded as a National Science Foundation Science and  
Technology Center*



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The DIMACS Modules Series in Discrete Mathematics (dm) and Theoretical Computer Science (tcs) is part of an initiative in undergraduate and high school education.

The modules in the series will be self-contained text and problem material that can be used for one or more class meetings in an undergraduate or high school course.

The idea is to make recent advances in dm/tcs known to students in a timely manner.

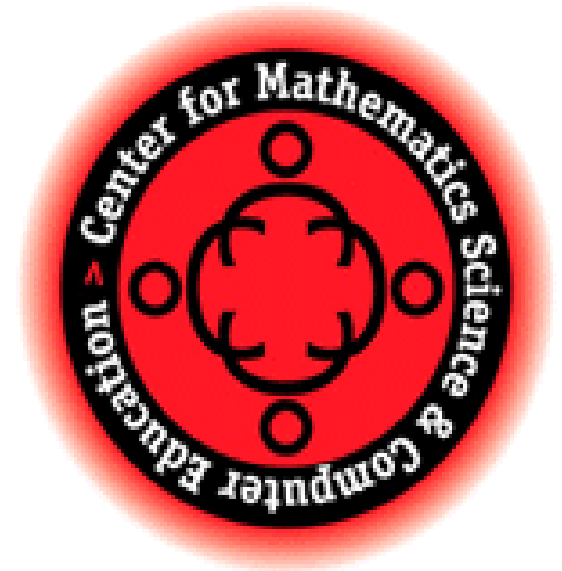
The modules will be somewhat like the UMAP Modules published over the last 25 years by COMAP, the Consortium for Mathematics and its Applications Project, and widely used, but DIMACS modules will be related to the [Special Foci](#) and the many outreach activities at the center.

- <http://dimacs.rutgers.edu/Publications/Modules/generalinfo.html>

# Center for Math, Science and Computer Education

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- <http://cmsce.rutgers.edu/>
- K-12 Teacher Professional Development
- NJSSI, NJ Math Coalition
- Summer Workshops
- Susan Coletta  
[coletta@waksman.rutgers.edu](mailto:coletta@waksman.rutgers.edu)



# Center for Math, Science and Computer Education

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Joe Rosenstein –

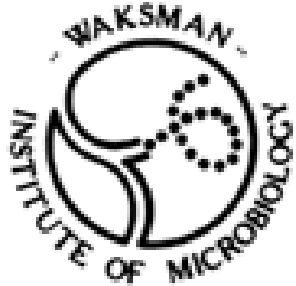
<http://www.metromath.org/>

MetroMath - Center for Mathematics in America's Cities.  
"Center of Learning and Teaching"

Rutgers, Univ. Pennsylvania, City University of New York  
School districts of New York City, Philadelphia,  
Newark, and Plainfield, NJ

# Waksman Institute

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**William H. Sofer, Professor**  
**Department of Molecular Biology and Biochemistry**

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sofer@waksman.rutgers.edu

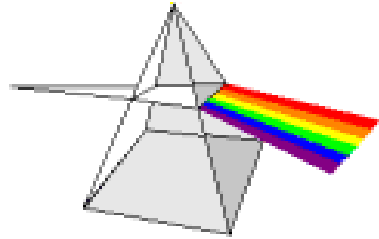
coletta@waksman.rutgers.edu

Waksman Student Scholars Program

G.J. Pallrand/Rutgers Research Showcase

<http://waksman.rutgers.edu/Waks/AnnualReport05/sofer06.html>

# ***Math and Science Learning Center***



***A Home for Math and  
Science Students***



**Kathleen Scott, Director,  
Professor Cell Biology and Neuroscience**

[scott@biology.rutgers.edu](mailto:scott@biology.rutgers.edu)

**Susan Coletta, Senior Science Education Specialist**

[coletta@waksman.rutgers.edu](mailto:coletta@waksman.rutgers.edu)

Demonstrations, Materials, Activities, “Kits” for Teachers

MSLC Touring “Bus” Fall 2005

Workshops for Teachers, Modules for Students

GK-12 Grant, Fellows

<http://mslc.rutgers.edu>

# Rutgers Science Explorer



<http://mslc.rutgers.edu>

# School of Engineering

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[http://coewww.rutgers.edu/ca/newsletter\\_outreach.php](http://coewww.rutgers.edu/ca/newsletter_outreach.php)

## Nanomaterials Science and Engineering

<http://ceramicmaterials.rutgers.edu/NMSE/outreach.php>

## **INSTITUTE OF INDUSTRIAL ENGINEERS (IIE)**

[http://coewww.rutgers.edu/ie/undergraduate/stud\\_society.html](http://coewww.rutgers.edu/ie/undergraduate/stud_society.html)

## Engineering Planet –

<http://engineeringplanet.rutgers.edu/>



# Cook College

## Office of Outreach and Extension Programs

<http://www.cookcollege.rutgers.edu/whoswho/admin-ooep.asp>



<http://marine.rutgers.edu/cool/index.html>



<http://deathstar.rutgers.edu/projects/jcgis/overview.html>

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

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<http://www.physics.rutgers.edu/outreach/>



<http://www.eohsi.rutgers.edu/niehs/coep.shtml>



<http://www.cww.rutgers.edu/>

# Curriculum Design & Assessment

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And Assessment Programs

The Center for the Advancement of Teaching

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