

Projects and Personnel Representing UK STEM Education Initiatives - March 2009

ENGINEERING

Project Personnel		Project Title	Funding Agency	Project Goals and STEM Needs Addressed		
Fox, James, PI	Civil Engineering	Collaborative Research: REU SITE: Coal Mining Impacts on Soil Carbon Storage and Impacts in Appalachian Headwater Streams	National Science Foundation (EAR-075153)	Through an integrated program of classroom, field, and laboratory experiences, REU/RET participants will study biogeochemical cycles and their influence on ecosystem dynamics over time by examining carbon cycling and storage in soils and sediments in headwater watersheds. broader impact is participation of underrepresented groups including students and teachers from Eastern Kentucky Appalachian distressed communities.	\$246,294	08/15/08-07/31/11
Jaromczyk, Jerzy, PI	Computer Science	Kentucky Biomedical Research Infrastructure Network (KBRIN) - UK Bioinformatics	National Center for Research for Research Resources-UofL subcontract (04-0388C UKY)	Provide a summer program for sophomore undergraduates from KBRIN institutions orienting them to research through a mentored research experience as well as a rich weekly seminar experience	\$610,199	5/1/07-4/30/08
Kim, Sujin, Co-I	Library & Information Sciences					
Lund, James, Co-I	Biological Sciences					
Mirabito, Peter, Co-I	Biology					
Rawls, John, Co-I	Biology					
Stromberg, Arnold, Co-I	Statistics					
Viele, J, Co-I	Statistics					
Wood, C, Co-I	Statistics					
Voss, Stephen, Co-I	Biological Sciences					
Lynn, Bert, Co-I	Chemistry					
Baron, Andre, Co-I	Cancer Center-Core Support					

Adams, Robert, PI	Electrical Engineering	CAREER: A Framework for Modular Fast Direct Electromagnetic Simulations	National Science Foundation (ECCS-0547497)	Provide undergraduate and graduate participation in outreach activities to regional high schools	\$399,549	5/15/06-4/30/11
Anderson, Kimberly, PI	Electrical Engineering	IGERT: Building Leadership through a Program on Engineered Bioactive Interfaces and Devices	National Science Foundation (DGE-0653710)	Addresses the need for a coherent interdisciplinary graduate education and research training in Engineered Bioactive Interfaces and Devices	\$1,799,673	9/1/07-8/31/12
Balk, Thomas, PI	Chemical and Materials Engineering	Developing Ferrous Metallurgy Course Material For An Updated Materials Engineering Curriculum at the University Of Kentucky	American Iron and Steel Institute	Enhance the role of ferrous metallurgy in the Materials Engineering curriculum at the University of Kentucky	\$10,000	10/1/06-9/30/08
Grulke, Eric, PI	Chemical and Materials Engineering	Nanoscale Materials and Architecture for Energy Conversion	DOE EPSCoR (DE-FG02-07ER46375)	Inter-university, multidisciplinary energy-related research cluster in nanomaterials and involving postdoc (4) and graduate student (9) education.	\$1,900,000	7/15/07-7/14/10
Grulke, Eric, PI	Chemical and Materials Engineering	State DOE EPSCoR Match: Nanoscale Materials and Architecture for Energy Conversion	KY Council on Postsecondary Education	Inter-university, multidisciplinary energy-related research cluster in nanomaterials and involving postdoc (4) and graduate student (9) education.	\$250,000	6/1/07-12/31/10
Hastings, Todd, PI	Electrical Engineering	CAREER: Reference Compensation for Localized Surface-Plasmon Resonance Sensors	National Science Foundation (ECCS-0747810)	Develop an interdisciplinary NanoPhotonics course, further develop UK's Nanoscale Engineering Certificate Program (NECP), and enhance outreach efforts to underrepresented Appalachian students	\$74,370	5/1/08-4/30/09
Hastings, Todd, PI	Electrical Engineering	REU Supplement: Self-Referenced SPR Sensing using Multiple Surface-Plasmon Modes	National Science Foundation (0601351)	REU supplement to expose an especially promising undergraduate to research involving micro-and nanofabrication, photonics, and biochemical sensing	\$6,000	2/16/07-4/30/09

Hastings, Todd, PI	Electrical Engineering	REU Supplement: NER: Directed and Selective Self-Assembly of Nanosized Particles via Surface-Plasmon Excitation	National Science Foundation (DMI-0609137)	REU supplement to use an undergraduate's talents to explore a wider parameter space for directed nanoparticle assembly	\$6,000	1/20/06-5/30/08
Kalinski, Michael, PI	Civil Engineering	CAREER: Understanding and Predicting the Dynamic Behavior of Mine Tailings Dam Materials	National Science Foundation (CMMI-0448717)	Provides for students from historically impoverished Appalachian region to participate at the university and K-12 levels and demonstrate the accessibility of a career in science and engineering	\$400,000	10/1/05-9/30/10
Lumpp, James, PI	Electrical Engineering	Kentucky Satellite One Mission Development	Kentucky Science and Technology Corporation (177-264-01)		\$66,257	1/1/07-6/30/08
Lumpp, James, PI	Electrical Engineering	KySat Orbital System Design	Kentucky Science and Technology Corporation (189-264-07-004)	Students at UK will design and develop flight hardware and software for KySat-1 Orbital Mission, KySat Suborbital mission one and mission 2 and test technologies for small satellites.	\$162,260	5/1/07-6/30/08
Lumpp, Janet, PI	Electrical Engineering	Advanced Carbon Nanotechnology Consortium	Vanderbilt University (17529-S3)	Conduct research and development for practical applications of carbon-based nanostructured materials and devices that will result in breakthrough technologies beneficial to the US national defense; provide training and education for students/researchers to meet the above challenges.	\$1,513,400	5/20/04-5/19/09
Andrews, Rodney, Co-I	CAER					
Anthony, John, Co-I	Chemistry					
Bachas, Leonidas, Co-I	Chemistry					
Chen, Zhi, Co-I	Electrical Engineering					
Hinds, Bruce, Co-I	Electrical Engineering					
Meier, Mark, Co-I	Chemistry					
Singh, Vijay, Co-I	Electrical Engineering					

Rankin, Stephen, PI	Chemical and Materials Engineering	CAREER: Kinetics and Engineering of Functional Nanoscale Organic and Inorganic Hybrids	National Science Foundation (CBET-0348234)	Develop an upper-level elective course on inorganic materials chemistry and engineering	\$405,700	4/1/04-3/31/09
St. Omer, Ingrid, PI	Electrical Engineering	REU Site: Electrical & Computer Engineering at the University of Kentucky	National Science Foundation (EEC-0552854)	Provide twelve underrepresented student participants per year with an authentic active eight-week research experience in a developing community that will increase their confidence and ability to contribute to the body of engineering knowledge and improve student understanding of the nature of research practice and scientific reasoning	\$398,903	3/1/06-2/28/09
Lau, Daniel, Co-I	Electrical Engineering					
Jensen, Jane, Co-I	Educational Policy Studies and Evaluation					
Walcott, Bruce, PI	Electrical Engineering	Computer Science, Engineering, and Mathematics Scholarship Program	National Science Foundation (DUE-0422397)	Further the undergraduate scholarship program for low-income academically talented students in Computer Science, Engineering, and Mathematics (CSEM) at the University of Kentucky (UK)	\$200,000	9/15/04-8/31/08
Eberhart, Carl, Co-I	Mathematics					
Kraemer, Phil, Co-I	Undergraduate Education					
Tannenbaum, Robert, Co-I	Undergraduate Education					
Walcott, Bruce, PI	Electrical Engineering	Engineering Summer Program	KY Economic Development Cabinet		\$108,632	7/1/02-6/30/08
Rouch, Keith, PI	Mechanical Engineering	Graduate Engineering Fellowship: Life Cycle Product Design and Manufacture	Department of Education (P200A0301765-05)	Provide fellowships for graduate study in Mechanical Engineering, an identified area of national need and consistent with recent initiatives within the Commonwealth of Kentucky	\$577,860	8/15/03-8/14/08
Jawahir, Ibrahim, Co-I	Mechanical Engineering					
Kraisheh, Marwan, Co-I	Mechanical Engineering					
Parker, Johne, Co-I	Mechanical Engineering					

Stephens, L, Co-I	Mechanical Engineering					
Smith, Suzanne, PI	Mechanical Engineering	Big Blue V: Mars Exploration as a Focus for Workforce Development	Kentucky Space Grant Consortium (WKU 516171-07-75)	Involve undergraduates in research and development of a complex aerospace system including interaction with aerospace industry professionals	\$42,345	6/1/06-7/31/08
Bailey, Stephen, Co-I	Visualization Center					
Smith, William, Co-I	Electrical Engineering					
Smith, Suzanne, PI	Mechanical Engineering	Investigation of Impact Response on a Planetary Surface Habitat: Aerospace Industry Internship for Katherine D. Baker	Western Kentucky University (WKU 516171-07-77)		\$9,050	5/15/07-7/31/08
Yang, Ruigang, PI	Computer Science	CAREER: The Light Portal: 3-D Reconstruction and Visualization over Space and Time	National Science Foundation (IIS-0448185)	Provide an integral education component with course development and student research participation	\$480,000	3/15/05-2/28/09
Zhai, Tonguang (Tony), PI	Chemical and Materials Engineering	CAREER: Quantitative Understanding of the Effects of Micro- and Macro-Texture on Fatigue Crack Initiation	National Science Foundation (DMR-0645246)	Introduce a new course on crystallographic texture for upper level undergraduates and beginning graduate students; graduate and undergraduate training in texture theory and research through participation in experimental and theoretical activities.	\$400,000	7/1/2007-6/30/12