Designated Emphasis in Development Engineering
Fall 2016 Course Offering

**Development Engineering Core Courses – Fall 2016**

1. **Development Engineering C200: Design, Evaluate and Scale Development Technologies**
   CCN: 27383
   Time: M 6-9:30pm, Haas Innovation Lab
   Instructor: A. Gadgil, J. Walske
   This required course for the Designated Emphasis in Development Engineering (Dev Eng) will include projects and case studies, many related to projects at UC Berkeley. Student teams will use the case studies or their own projects to develop a plan for scaling and evaluating development technologies.

**Designated Emphasis in Development Engineering Electives – Fall 2016**

**Module 1**

2. **Development Practice C232: Foundations of Public Health**
   CCN: 24947
   Time: T 9-11AM, 311 Wellman
   Instructor: REINGOLD, Arthur L
   The seminar will introduce core disciplines and concepts in public health, using a case-based, integrated approach. Examples of cases discussed include: respiratory disease and air pollution; tobacco control and prevention of smoking-related conditions; disease elimination or eradication via childhood immunization; environmental control and prevention of schistosomiasis; behavior change and prevention of HIV/AIDS; and novel economic approaches to improving healthcare delivery to impoverished groups. Also listed as Public Health C253.

3. **Information C213: User Interface Design and Development**
   CCN: 29292
   Time: F 1-4PM, 202 South Hall
   Instructor: Youmans, Robert

4. **Information C283: Information and Communications Technologies for Development**
   CCN: 29327
   Time: M 2-5PM, 205 South Hall
   Instructor: BURRELL, Jenna ; IBRAHIM, Mahad
This seminar reviews current literature and debates regarding Information and Communication Technologies and Development (ICTD). This is an interdisciplinary and practice-oriented field that draws on insights from economics, sociology, engineering, computer science, management, public health, etc. Also listed as Energy and Resources Group C283.

CCN: 28244
Time: TR 3:30-5PM, 251 Le Conte
Instructor: AGOGINO, Alice M

This course is aimed at developing the interdisciplinary skills required for successful product development in today's competitive marketplace. We expect students to be disciplinary experts in their own field (e.g., engineering, business). By bringing together multiple perspectives, we will learn how product development teams can focus their efforts to quickly create cost-effective products that exceed customers’ expectations.

Module 2

6. Development Practice 228: Strategic Planning and Project Management
CCN: 24946
Time: R 1-3PM, 311 Wellman
Instructor: TBA

A pragmatic, interdisciplinary introduction to strategic planning and project management, introducing students to a portfolio of models, tools, and techniques drawn from the private, nonprofit, and public sectors. It will offer an opportunity through case studies, simulations and class projects to apply those approaches in settings relevant to the development field.

7. Economics 240A: Econometrics
CCN: 14442
Time: MW 10-12PM, 3107 Etcheverry
Instructor: GRAHAM, Bryan S

This is the first semester of the core sequence in econometrics (a.k.a. quantitative methods), which develops the procedures used for empirical implementation and validation of economic relationships.

8. Economics C270A: Development Economics
CCN: 14455
Time: TR 3:30-5PM, 201 Giannini 201
Instructor: MAGRUDER, Jeremy R

This course covers leading research issues in Development Economics, with a particular focus on macroeconomic growth empirics, political economy, and human capital topics. It is taught at a level appropriate for Ph.D. students in Economics and related fields.
9. Energy and Resources 273: Social Science Research Methods
CCN: 24961
Time: TR 12:30-2PM, 238 Kroeber
Instructor: RAY, Isha

This course aims to introduce graduate students to the rich diversity of research methods that social scientists have developed for the empirical aspects of their work. Its primary goal is to encourage critical thinking about the research process: how we "know," how we match research methods to research questions, how we design and conduct our information/data collection, what we assume explicitly and implicitly, and the ethical dilemmas raised by fieldwork-oriented studies.

CCN: 30001
Time: F 2-5PM, 370 Dwinelle
Instructor: COLFORD, John M

This course will review the methods for the design and analysis of impact evaluations relevant to health professionals, especially those working in low and middle-income countries. The class will emphasize the challenges involved in identifying the causal relationship between a program or project and its outcomes while providing students with some experience in drafting a proposal that might be submitted to a funding agency for support of an impact evaluation. For doctoral students the course may help concretely to identify potential dissertation projects; for masters students the course will provide skills useful in obtaining a future job in the field.

11. Public Health 252C: Intervention Trial Design
CCN: 29703
Time: F 2-5PM, 106 Mulford
Instructor: COLFORD, John M

Students learn (through lectures and graded student presentations and projects) to design clinical and population-level field trials. Topics: formulation of a testable hypothesis; identification of appropriate populations; blinding (including indices for assessment); randomization (including traditional and adaptive randomization algorithms); sample-size estimation; recruitment strategies; data collection systems; quality control and human subjects responsibilities; adverse effects monitoring; improving participant adherence; use of surrogate outcomes.

CCN: 29143
Time: W 10-12PM, 88 Dwinelle
Instructor: DEJANVRY, Alain

This course emphasizes the development and application of policy solutions to developing-world problems related to poverty, macroeconomic policy, and environmental sustainability. Methods of
statistical, economic, and policy analysis are applied to a series of case studies. The course is designed to develop practical professional skills for application in the international arena. Also listed as Agricultural and Resource Economics C253.

Module 3

13. Civil and Environmental Engineering 271: Sensors and Signal Interpretation
CCN: 26640
Time: TR 3:30-5PM, 544 Davis
Instructor: GLASER, Steven D

An introduction to the fundamentals of sensor usage and signal processing, and their application to civil systems. In particular, the course focuses on how basic classes of sensors work, and how to go about choosing the best of the new MEMS-based devices for an application. The interpretation of the data focuses on analysis of transient signals, an area typically ignored in traditional signal processing courses. Goals include development of a critical understanding of the assumptions used in common sensing and analysis methods and their implications, strengths, and limitations.

CCN: 27205
Time: TR 12:30-2PM, Location TBA
Instructor: EFROS, Alexei

This course provides an introduction to theoretical foundations, algorithms, and methodologies for machine learning, emphasizing the role of probability and optimization and exploring a variety of real-world applications. Students are expected to have a solid foundation in calculus and linear algebra as well as exposure to the basic tools of logic and probability, and should be familiar with at least one modern, high-level programming language.

15. Computer Science 294: Special Topics: Behavioral Data Mining
CCN: 31947
Time: MW 2:30-4PM, 310 Soda
Instructor: CANNY, John F

CCN: 27985
Time: TBA, Location TBA
Instructor: SENGUPTA, Raja

Advanced group studies or seminars in subjects which are interdisciplinary in the various fields or engineering or other sciences associated with engineering problems. Topics which form the basis of seminars will be announced at the beginning of each semester.

17. Energy and Resources C200: Energy and Society
CCN: 25022
Energy sources, uses, and impacts; an introduction to the technology, politics, economics, and environmental effects of energy in contemporary society. Energy and well-being; energy international perspective, origins, and character of energy crisis. Also listed as Public Policy C284.

18. Energy and Resources C221: Energy, Climate, and Development
CCN: 25033
Time: M 9-12PM
Instructor: KAMMEN, Daniel M

Graduate seminar examining the role of energy science, technology, and policy international development. The course will look at how changes in the theory and practice of energy systems and of international development have co-evolved over the past half-century, and what opportunities exist going forward. A focus will be on rural and decentralized energy use, and the issues of technology, culture, and politics that are raised by both current trajectories, and potential alternative energy choices. We will explore the frequently divergent ideas about energy and development that have emerged from civil society, academia, multinational development agencies, and the private and industrial sector. Also listed as Development Practice C221 and Public Policy C221.