

University of Iowa  
165:197 International Development, Sec. 010  
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## SOLAR COOKERS TO HELP SAVE FORESTS AND EMPOWER RURAL WOMEN IN RAJASTHAN: THE NEXUS BETWEEN SUSTAINABLE DESIGN AND SOCIO-ECONOMIC UPLIFT

***HELP BUILD A SOLAR COOKER IN A VILLAGE OUT OF LOCALLY SOURCED NATURAL MATERIALS.***

COURSE INSTRUCTOR: *PROF. H. S. UDAYKUMAR* ([USH@ENGINEERING.UIOWA.EDU](mailto:USH@ENGINEERING.UIOWA.EDU))

COURSE COORDINATOR: *PROF. R. RAJAGOPAL* ([R-RAJAGOPAL@UIOWA.EDU](mailto:R-RAJAGOPAL@UIOWA.EDU))

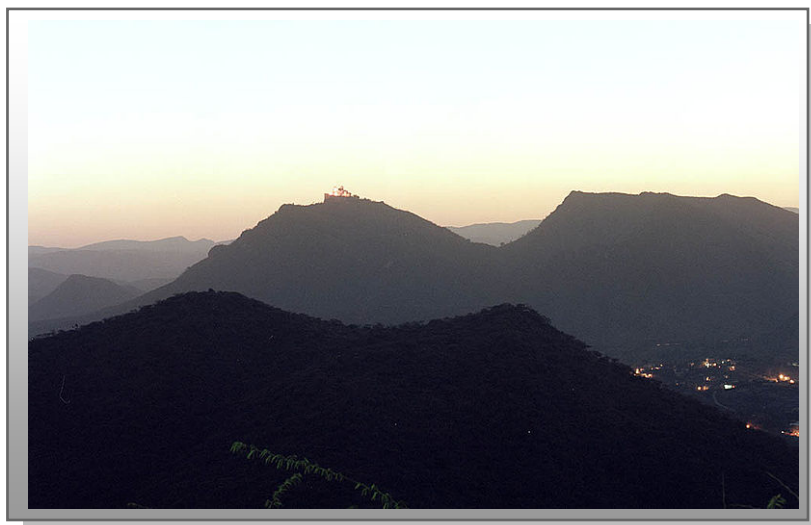
COURSE LOCATION: *KUMBALGARH WILDLIFE  
SANCTUARY, RAJASTHAN, INDIA*

The Kumbalgarh Wildlife Sanctuary is a premier wildlife retreat, some 90 kms from Udaipur, the city of lakes in the state of Rajasthan in western India. The region is rich in history and culture; the Rajputs who ruled over the kingdoms in this region are considered to epitomize bravery. Kumbalgarh lies in the foothills of the rugged Aravali mountain range. The sanctuary is famous for its wolves, leopards, hyena, jackal, sloth bear, various species of deer and birds. Tigers can be found in nearby Ranthambor sanctuary.



PARTNER ORGANIZATION: *CLIMATE  
HEALERS (CALIFORNIA, USA) AND  
FOUNDATION FOR ECOLOGICAL  
SECURITY (ANAND, GUJARAT,  
INDIA)*

The course will be led by Professor Udaykumar (Department of mechanical and industrial engineering, U Iowa) under the guidance of Sailesh Rao of Climatehealers, Jagdeesh Rao of FES, and Yash Sethia and his FES team in Udaipur, Rajasthan, India. FES is a



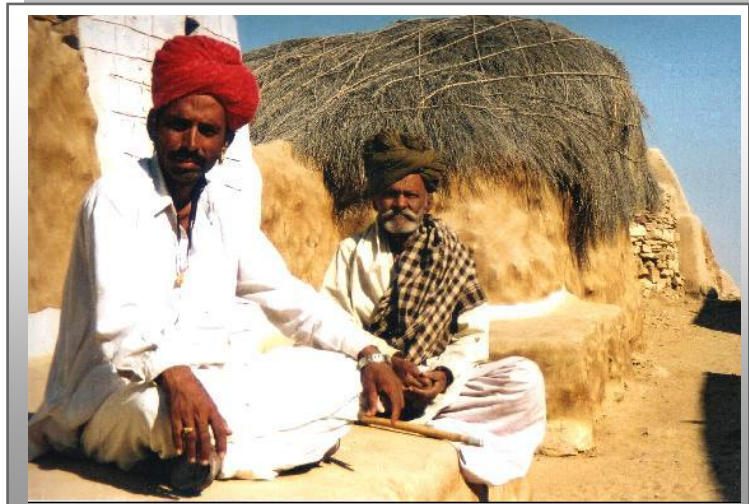
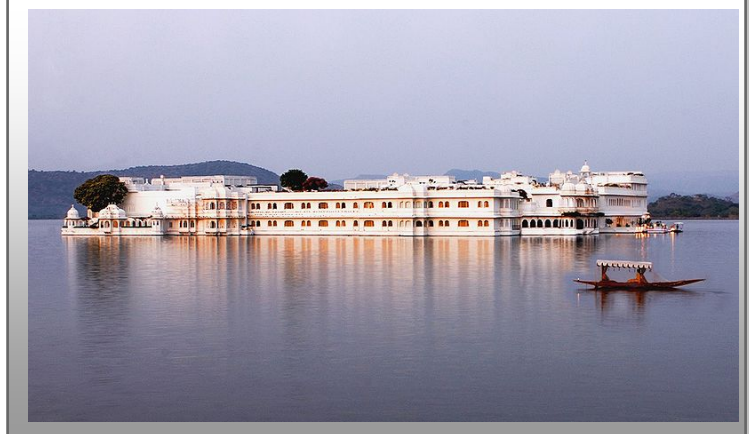
local organization dealing with the issues of balancing ecology and energy needs of indigenous people who have lived on the edges of the forest for centuries. Their livelihood depends on the forest but pressing energy needs are threatening to cut into their ecological base. This organization is helping to deal with balancing energy and ecological issues in a local setting. The organization will be a valuable partner due to intimate long-standing interactions with the rural environment and people and will provide help in posing as well as solving the pressing problems related to balancing energy needs with the preservation of the ecology of the region.

### **COURSE DESCRIPTION :**

This course will consist of two major activities: 1) learning about the delicate balance and interconnectedness between needs of rural/tribal populations seeking to improve quality of life by accessing modern energy systems and that of wildlife in a fast-vanishing but vital forest environment; 2) Performing a combined energy, ecology and economic impact study on human activities in the micro-environment of the Kumbalgarh preserve; 3) Constructing and installing a solar cooker in two village locations in Rajasthan and setting up facilities to obtain performance data on the cookers.

The unique micro-system involves interactions between people, flora and fauna and sustainable energy production and utilization; with these interconnected issues, this setting (at the forest's edge) poses many challenges to engineers, social planners, economists, ecologists and others. First, participants of the course will learn from the

unique and challenging circumstances posed by the rural setting in India, where villagers sustain a tenuous existence at the fringe of a wildlife sanctuary. We will explore the ways in which alternative, renewable, ecologically friendly energy systems (such as solar-powered) systems can prevent deforestation and displacement of wildlife habitats so that the local human communities can coexist with the flora and fauna. Basic aspects of novel energy systems, their design and their interactions with socio-economic and ecological environments will be studied.





An immediate problem to be attacked is that of solar cookers, which are to be supplied by Climatehealers to the local population. **Over the past year students at the University of Iowa have undertaken to design and construct a solar cooker (the Hawkeye cooker) that will be suitable for use in the villages of Rajasthan. We will be constructing a prototype and instrumenting it to obtain readings on performance of the cooker.** There are a host of cultural, economic and technical issues associated with the one solution that is being considered, i.e. solar cookers. It is fairly certain that exploration of other

sustainable energy solutions will face similar complex situations as well. Thus, the course will expose students to the unique and challenging aspects of planning for energy alternatives in a rural setting. K-12 students could be a major force in such efforts. We could develop educational material for K-12 in the areas of biodiversity, cultural heritage, deforestation, land use, alternative energy, global climate change, unhealthy wood burning stoves (practices) and its effect on women and children, the neurological effects of benzo-pyrene (byproduct of wood burning) on the nervous system of women and children are all potential project areas that could be considered.

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## COURSE REQUIREMENTS

### PRIOR TO DEPARTURE

- Attend orientation meeting(s).
- Attend three 2-hour Friday afternoon seminars (3-5pm, dates TBA), read and view required materials, and turn in two reflection papers on those materials.

### DURING OUR STAY IN INDIA

- Attend all planned activities and excursions.
- Attend regular group meetings with the instructor to process experiences.
- Present a summary to local organizers in India.

### AFTER RETURN FROM INDIA

- A 10-page essay about what you learned (due January 25, 2010)
- Participate and present a group summary with the instructor (under 45 minutes) at a winterim symposium that will be organized before the end of February at the UI

## REQUIRED READINGS

- Thomas L. Friedman, *Hot, Flat and Crowded*, Paperback, available at amazon.com.
- David J C McKay, *Sustainable Energy : without the hot air*, available at amazon.com.

## FILMS/VIDEOS

- *Gandhi*, 1982, directed by [Richard Attenborough](#) (190 min.). This film won eight Academy Awards, including Best Picture, Best Director, and Best Actor.
- E2 energy: Energy for a developing world podcast (PBS) at:  
[http://www.pbs.org/e2/episodes/202\\_energy\\_developing\\_world\\_trailer.html](http://www.pbs.org/e2/episodes/202_energy_developing_world_trailer.html)

## COURSE GRADES

- Grades for the course will be based on the following elements:
- **20%** attendance at seminars; 20% two reflection papers on required reading and viewing materials.
- **20%** Active engagement and discussion with fellow students and instructors, our hosts, and the sponsoring organizations
- **30%** Project (individual or group) report and presentation.
- **10%** 10-page essay on what you have learned.

## FOR MORE INFORMATION:

- go to the INDIA and IOWA (INDIA) Winterim webpage at <http://www.uiowa.edu/~geog/india/>
- On climate healers: <http://www.climatehealers.org/olddump/home.html>
- contact Professor Udaykumar at [ush@engineering.uiowa.edu](mailto:ush@engineering.uiowa.edu) or stop by his office (2408 SC) during his office hours (Wednesday 1:30 – 2:30 PM).
- For information about financial aid possibilities, go to <http://international.uiowa.edu/study-abroad/funding/financial-aid/iowa-programs.asp> and click on either “undergraduate scholarships” or “graduate fellowships.”

