



Big Engineering Ideas to save the planet



Knowledge

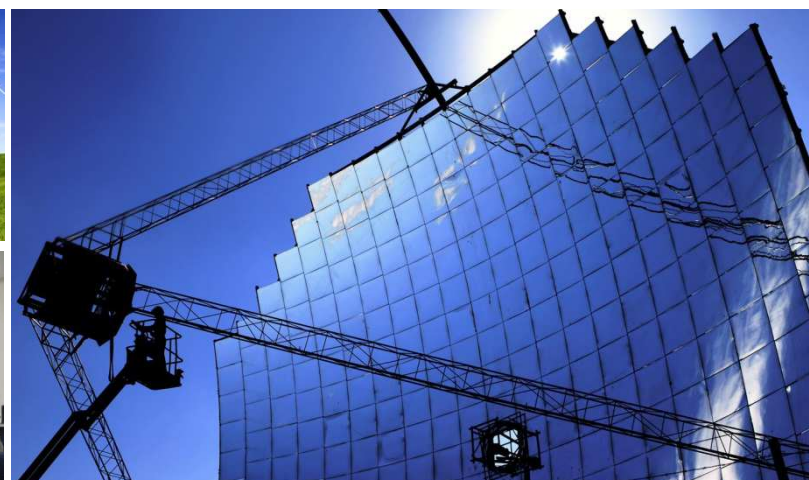
- Energy for 7 billion people
- How to think big and solve problems
- Guest speakers with experience from Princeton, Cambridge, Stanford, Max Planck Institutes, ETH Zurich and beyond

Skills

- Hands on labs and tutes
- Learn about IP, Start-ups and much more...
- Learn how to research, communicate and lead people

The course will help you to understand both basic engineering concepts as well as recent game-changing advances in energy technologies. It will provide you with powerful research and communication skills easily applied in your future career. With hands on practicals, field trips to industrial facilities, and a range of high-profile guest lectures, this course will help you change the world.

For further information contact Dr Niraj Lal niraj.lal@anu.edu.au



Week 1 Big ideas 25th-29th November						
Time	Monday	Tuesday	Wednesday	Thursday	Friday	
	10am	Overview	Climate change (Guest) Dr Stephanie Downes (ANU/Princeton), Research Fellow, ANU RSES	An Engineer's Perspective on Technology Revolutions	Crazy big energy technology: huge potential or downright stupid?	Energy, what it is and how it flows
	11am	The Science of Electricity: powering the planet with spinning magnets and pool-tables.	Professor Andrew Blakers (Guest) ANU. Connecting continents - The Indonesian power solution.	How to communicate to people, and manage them effectively.	The true story behind the Life of Pi, and why leaves are shaped the way they are.	Biology and health of the 21st Century
	12noon	Lunch	Lunch	Lunch	Lunch	
1 - 5pm	Physical engineering challenge - spaghetti towers	Solving problems with a pencil, paper and your brain	3 minute theses	Dyesol Industrial Tour	Geoengineering and Movie (Gasland) + Pizza	
Week 2 Renewable energies 2nd-6th December						
Time	Monday	Tuesday	Wednesday	Thursday	Friday	
	10am	Powering the future - An introduction to renewable energy	ECI Guest -Global artificial photosynthesis	Research Workshop: How to search and analyse the literature	Solar thermal	Politics of energy
	11am	Harnessing wind and water	Organic semiconductors - better than Silicon?		Solar thermal	Politics of energy
	12noon	Lunch	Lunch	Lunch	Lunch	Lunch
	1 - 2pm	Questacon Visit	Lab: Maximising the power output from homemade pinwheel turbines	Research afternoon for 3 minute thesis competition	PV science	Controlling the Weather - Cloud Seeding in the Snowy Mountains
2 - 5pm						
Week 3 Sunshine power 9th-13th December						
Time	Monday	Tuesday	Wednesday	Thursday	Friday	
	10-11am	Photovoltaics: An exponentially growing industry	Towards a sunshine economy	From sun rays to usable electricity: How a silicon solar cell functions.	Dye-sensitised solar cells: How an electrolytic solar cell functions.	Forecasting
	11am-12pm	Behind the scene look at large scale PV plants around the world	Towards a sunshine economy	Slice and dice a solar cell: How to measure the performance of individual components		Storage
	12-1pm	Lunch	Lunch	Lunch	Lunch	Lunch
1-5pm	Lab: Measuring the power of the sun	Problem solving the grid		Make a solar cell	Make a solar cell part 2, Movies + pizza	
Week 4 Solving big problems 16th-20th December						
Time	Monday	Tuesday	Wednesday	Thursday	Friday	
	10am	Analogies: How to have a global understanding of engineering systems?	Exponential growth of technologies	Statistical analysis of experimental data	Does IP help Engineering ideas? Dr Igor Skyrabin	From the labs to the store: Commercialization
	11am	Analogies: How to have a global understanding of engineering systems?	Efficient flying: The future of aircraft design	How to ask the right questions	How to survive as a tech start-up? A discussion with a panel of experts with experience in the USA and beyond	Opportunities after this course / Results of the Innovation Challenge
	12noon	Lunch	Lunch	Lunch	Lunch	Lunch
1 - 5pm	The Scientific Method Workshop: What to do (and not to do) when you are running experiments?		Research afternoon for 3 minute thesis competition	Innovation challenge - In teams of 3 think, design, plan and sell your own start-up	Australian-Brazilian barbeque	