PLAYLIST

Hydroponics - List of Open Educational Resources

Creator: Open.Michigan, University of Michigan (Updated 29 Mar 2013)

Description:

Open Educational Resources are learning materials that are free, public, and shared under licenses that allow people to copy, translate, adapt, and share with others.

Tags:

1. Institution: University of Missouri - St Louis, **Activity/Lab: Microbes in Action** [http://www.oercommons.org/courses/microbes-in-action]

   Description: Root Nodulation: A Partnership in the Web of Life: In this experiment, we will examine what it takes for root nodules to form on legume plants. We will consider the symbiotic relationship resulting from root nodules by observing the growth and appearance of the plants when exposed to Rhizobium as compared to the plants, which were not exposed to the Rhizobium bacteria.

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2. **Activity/Lab: Hydroponic Systems** [http://quest.nasa.gov/smore/teachers/act3.html]
   Notes: Source: http://www.google.com/advanced_search

   Description: In this activity, students work with different hydroponic systems. Students set up one or more hydroponic systems and collect data for a four week period to determine which system resulted in the best plant growth. Students learn about the role of different environmental factors on plants grown in the absence of soil. Such factors include pH, light, and aeration.

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3. Massachusetts Institute of Technology, **Course: Groundwater Hydrology** [http://ocw.mit.edu/courses/civil-and-environmental-engineering/1-72-groundwater-hydrology-fall-2005/]
   Notes: Source: http://ocwconsortium.org/en/courses

   Description: This course covers fundamentals of subsurface flow and transport, emphasizing the role of groundwater in the hydrologic cycle, the relation of groundwater flow to geologic structure, and the management of contaminated groundwater. The class includes laboratory and computer demonstrations.

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4. Institution: Massachusetts Institute of Technology, **Course: Ecology I: The Earth System** [http://ocw.mit.edu/courses/civil-and-environmental-engineering/1-018j-ecology-i-the-earth-system-fall-2009/]
   Notes: Source: http://ocwconsortium.org/en/courses

   Description: We will cover fundamentals of ecology, considering Earth as an integrated dynamic system. Topics include coevolution of the biosphere, geosphere, atmosphere and oceans; photosynthesis and respiration; the hydrologic, carbon and nitrogen cycles. We will examine the flow of energy and materials through ecosystems; regulation of the distribution and abundance of organisms; structure and function of ecosystems, including evolution and natural selection; metabolic diversity; productivity; trophic dynamics; models of population growth, competition, mutualism and predation. This course is designated as Communication-Intensive; instruction and practice in oral and written communication provided. Biology is a recommended prerequisite.

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5. Institution: Univ. of California Irvine, **Video Lecture: Water in the Balance: The Human Fingerprint on Global Freshwater Availability as Seen from Space** [http://ocw.uci.edu/lectures/lecture.aspx?id=479]
   Notes: Source: http://ocwconsortium.org/en/courses

   Description: A CUSA Sustainability Seminar delivered by Jay Famiglietti, PhD, Professor, Earth System Science and Civil & Environmental Engineering, and Director, UC Center for Hydrologic Modeling. Recorded on April 6, 2011.Over the last decade, satellite observations of Earth's water cycle, in particular, those from NASA's GRACE (Gravity Recovery and Climate Experiment) mission, have provided an unprecedented view of recent changes in freshwater availability. In particular, the human fingerprint of water management practices such as reservoir storage and groundwater use is abundantly clear, and raises many important issues for climate, water, food and economic security. Moreover, the worldwide depletion of groundwater aquifers and their transboundary nature points to the great potential heightened conflict in the very near future. In this seminar I will review the basics of how the GRACE mission observes world water resources, what new information the mission has provided since its launch in 2002, and what the implications are for the future of water availability. Several hotspots for water stress, including implications for regional security and conflict, will be highlighted.

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6. **Article: Hydroponics** [http://en.wikipedia.org/wiki/Hydroponics]
Notes: Source: http://www.google.com/advanced_search

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7. **Article: Passive Hydroponics** [http://en.wikipedia.org/wiki/Passive_hydroponics]
Notes: Source: http://www.google.com/advanced_search

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8. **Article: Hydroponic Dosers** [http://en.wikipedia.org/wiki/Hydroponic_dosers]
Notes: Source: http://www.google.com/advanced_search

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9. Controlled Environment Agriculture Program at the University of Arizona, **Audio: Yi-Tan Tech Community Call 210 - Hydroponic Farming** [http://archive.org/details/Yi-tanTechCommunityCall210-HydroponicFarming-summaryVersion]
Notes: Source: http://www.google.com/advanced_search

Description: Hydroponics is plants growing in water, without soil. With it, you can grow pretty much any crop, anywhere, pesticide-free, with predictable yields and harvest times.Gene Giacomelli, director of the Controlled Environment Agriculture Program at the University of Arizona, believes that hydroponics and Controlled Environments can help feed the world, save the world and create new worlds. Already hydroponics has moved beyond food and into nutraceuticals, pharmaceuticals and environmental remediation, to name a few uses. Should we start to colonize other planets or the seabed, expect it there, too. Or maybe (sooner) in urban centers, as vertical farms. With Gene, let's discuss: 1) What is the scope of hydroponics today? The economics?, 2) How is hydroponics being used? Where's the leading edge?, 3) When might hydroponics jump to the next level? Why?

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10. Institution: Farm Foundation, **Video: Farm Fountain** [http://archive.org/details/AmyYoungsandKenRinaldoFarmFountain]
Notes: Source: http://archive.org/search.php?query=subject%3A%22hydroponic%22

Description: This video documents our project of growing edible and ornamental fish and plants in an indoor, constructed ecosystem. Based on the concept of aquaponics, this hanging garden fountain uses a simple pond pump, along with gravity to flow the nutrients from fish waste through the plant roots. The plants and bacteria in the system serve to cleanse and purify the water for the fish.Farm Fountain [**http://www.farmfountain.com]**

is an experiment in local, sustainable agriculture and recycling. It utilizes 2-liter plastic soda bottles as planters and continuously recycles the water in the system to create a symbiotic relationship between edible plants, fish and humans. The work creates an indoor healthy environment that also provides oxygen and light to the humans working and moving through the space. The sound of water trickling through the plant containers creates a peaceful, relaxing waterfall. The Koi and Tilapia fish that are part of this project also provide a focus for relaxed viewing.The plants we are currently growing include lettuces, cilantro, mint, basil, tomatoes, chives, parsley, mizuna, watercress and tatsoi. The Tilapia fish in this work are also edible and are a variety that have been farmed for thousands of years in the Nile delta.

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11. Smithsonian's Lemelson Center, **Video: Invent Your Own Hydroponic Garden** [http://vimeo.com/16469767]
Notes: Source: http://www.google.com/advanced_search

Description: Building your very own hydroponic garden isn't hard, in fact, it's easier than gardening in soil! Watch Spark!Lab's Steve Madewell demonstrate the simple steps to growing fruits and vegetables in a hydroponic garden made from household supplies.

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12. **Video: Hydroponic Farming System in Plastic Bottles with LED Lamps** [http://www.youtube.com/watch?v=bzgDI8Hk0Kg]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: This hydrophonic farming system in build from plastic bottles with LED lamps for growing herbs for the soup. The hydroponics in this system require LED light, because there is no natural sunlight in this restaurant.

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13. **Video: Hydroponic Herb Garden Tour - Fresh Herbs Year Round** [http://www.youtube.com/watch?v=u3-X9_8TjWQ]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: In my first ever xPonics tutorial, I'll show you how I built this simple hydroponics herb garden. This bad boy costs under a hundred dollars and will provide your kitchen with the freshest herbs possible no matter what

time of year it is. Can be placed indoors or outdoors with almost no maintenance required! Want to learn how to build it for yourself?
Download the free ebook at: **http://www.xponics.com/hydroponic-herbs/**

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14. **Video: An explanation of Hydroponics, Aquaponics, & Bioponics** [http://www.youtube.com/watch?v=IEFyMQvLOJI]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: An Explanation into why I went from Hydroponics to Aquaponics to Bioponics and the differences between them.

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15. **Video: Hydroponic Greenhouse** [http://www.youtube.com/watch?v=5p_Eegii1us]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: Silent 2-minute montage with images and videos hydroponic greenhouses

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16. **Video: Hydroponic Lighting Basics** [http://www.youtube.com/watch?v=2i3pTZF14lA]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: Lighting is the source of energy for plants. Where do you get it? The sun, LED lights, Fluorescents and HID lights are covered, briefly, in this fast-track, crash course in lighting. The video covers the types and the features of each

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17. **Video: Bioponics in greenhouse** [http://www.youtube.com/watch?v=ZiW34m6XIcM]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: Fishless aquaponics in my greenhouse.

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18. **Video: TEDxAmsterdam Ideas Worth Doing - Introducing MetFarm** [http://www.youtube.com/watch?v=TuuPg3Acjno]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: For Ideas Worth Doing, here's a first introduction video to the TEDxAmsterdam Award 2011 winner: MetFarm.MetFarm wants to produce good, clean, high quality, fresh food in metropolitan areas.Taking advantages of recent developments in LED, Hydroponic, and Airoponic technologies will allow us to grow cheap safe high quality food inside of unused offices and empty industrial space.

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19. **Video: TEDxOrlando - Bert Roper - Managing Myself** [http://www.youtube.com/watch?v=zyCzJFFeF8o]
Notes: Source: http://www.youtube.com/results?search_query=hydroponic%2C+creativecommons

Description: Bert Roper, a citrus grower with deep ties to the local community, has a stellar record as an exemplar of service and leadership. Less well known are his accomplishments as a steward of the environment. Not only is the

citrus he grows organic; in a demonstration of remarkable creativity, he envisioned and built a rooftop, commercial scale, aqua-dynamic, high performance hydroponic greenhouse ? the first of its kind worldwide ? right here in Central Florida

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