

TÓPICOS EN MANEJO DE AGUAS

IDENTIFICACIÓN DE LA ASIGNATURA

CÓDIGO	SEM	HT	HP	HA	SCT	REQUISITO	ÁREA DE FORMACIÓN Y TIPO DE ASIGNATURA	UNIDAD RESPONSABLE
AG040470	Primavera	1		2	2	Admisión	Electiva	Departamento de Ingeniería y Suelos

Horas teóricas y prácticas expresadas en horas pedagógicas de 45 minutos, horas alumno expresadas en horas cronológicas.

DESCRIPCIÓN DE LA ASIGNATURA

This course presents an overview of major water management topics in different countries, considering issues such as increasing water scarcity and pollution, and innovative tools such as water footprinting, hydrological modelling, remote sensing and geographical information system to help improve water management. Depending on invited lectures the course will focus on a particular country.

ESTRATEGIAS METODOLÓGICAS

Clases expositivas, grupos de discusión.

COMPETENCIAS DE LA ASIGNATURA (Tipo: B=Básica, G=Genérica, E=Específica)

- Reconoce y comprende la importancia de adquirir una visión general del manejo de aguas a nivel global (E).
- Integra conocimientos sobre aspectos de la dinámica del agua en sistemas agrícolas (G).
- Entrega capacidad para comprender tecnologías emergentes de manejo del agua y aplicarlas a problemas tecnológicos y de producción agrícola (G).

RECURSOS DOCENTES

Clases expositivas. Estudio de casos. Debate con estudiantes.

CONTENIDOS

Capítulo	Contenido
Increasing global water scarcity and pollution.	This topic will focus on global water availability and its use, and will examine and describe hidden links between human consumption and water use leading to increasing global water scarcity and pollution.
Overview of major water quantity and quality issues in New Zealand.	This topic gives an overview of New Zealand's freshwater resources, their distribution and use, and then presents and discusses major issues related with water quality and quantity in New Zealand.
Water quality management: New Zealand framework.	This topic presents and discusses concepts and tools used for freshwater quality management in New Zealand, followed by a brief introduction to emerging concepts and tools, nationally and internationally, for water quality management.
Water footprinting and its potential application.	This topic introduces and discusses an innovative approach of water footprinting to account for both direct and in-direct use of all freshwater components (green, blue and grey water) to assist with decision making for efficient, equitable and sustainable water use and its management.

Challenges and opportunities in water resources – Role of hydrological modelling, remote sensing and geographical information system	This topic presents major challenges and opportunities in the area of water resources management, with a particular focus on the role of hydrological modeling, and remote sensing and geographical information to assist with improved water management.
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BIBLIOGRAFÍA

- Entering an Era of Water Scarcity: The Challenges Ahead, published by Sandra L. Postel in Ecological Applications, Volume 10, 2000, pp. 941–948.
- The Demise of the Aral Sea – An Environmental Disaster, published by Tony Waltham and Ishan Sholji in Geology Today, Vol. 17(6), 2001, pp. 218-224.
- Water scarcity: Fact or fiction? by Rijsberman, F.R. (2006) in Agricultural Water Management 80, 5-22.
- Falling Water Tables and Shrinking Harvests, Chapter 2 in the 'World on the Edge: How to Prevent Environmental and Economic Collapse' by Lester R. Brown © 2011 Earth Policy Institute. This is available as an E-book on the Earth Policy Institute, [here is the link](#).
- Diffuse pollution and freshwater degradation: New Zealand perspectives, published by Howard-William et al., (2010), in the selected papers from the 14th International Conference of the IWA Diffuse Pollution Specialist Group, DIPCON 2010.
http://www.landcareresearch.co.nz/publications/researchpubs/Howard_williams_2013_Diffuse_pollution_and_freshwater_degradation.pdf
- Water footprint accounting, published by Hoekstra (2012) in Water accounting: International approaches to policy and decision-making, Edward Elgar, Cheltenham, UK, pp. 58-75.
<http://www.waterfootprint.org/Reports/Hoekstra-2012-WaterFootprintAccounting.pdf>
- Water footprinting of agricultural products: a hydrological assessment for the water footprint of New Zealand's wines, published by Hearsh et al (2013) in Journal of Cleaner Production 41, 232-243.
- Predicting effects of drainage water management in Iowa's subsurface drained landscapes, published by Singh et al (2007) in Agricultural Water Management 92, 162-170.
- Distributed ecohydrological modelling to evaluate irrigation system performance in Sirsa district, India II. Impact of viable water management scenarios, published by Singh et al (2006) in Journal of Hydrology 329, 714-723.

PROFESORES PARTICIPANTES (Lista no excluyente)

<i>Profesor</i>	<i>Departamento</i>	<i>Especialidad o área</i>
Ranvir Singh	Institute of Agriculture & Environment, Massey University	Environmental Hydrology and Soil Science
Osvaldo Salazar	Ingeniería y Suelos	Génesis, manejo y protección de suelos

EVALUACIÓN DEL APRENDIZAJE (Se redefine todos los semestres)

<i>Actividades</i>	<i>Ponderación</i>
Ensayo escrito de la bibliografía del curso	50%
Presentación caso estudio	50%