<table>
<tr><th colspan="9">AGROHYDROLOGY AND COMPUTER MODELING</th></tr>
<tr><th>CÓDIGO</th><th>SEM</th><th>HT</th><th>HP</th><th>HA</th><th>SCT</th><th>REQUISITO</th><th>ÁREA DE FORMACIÓN Y TIPO DE ASIGNATURA</th><th>UNIDAD RESPONSABLE</th></tr>
<tr><td>AG100535</td><td>Otoño
Primavera</td><td>1</td><td>0</td><td>2</td><td>2</td><td>Postgraduate Inscription</td><td>Elective</td><td>Postgraduate School</td></tr>
<tr><td>Descripción del curso</td><td colspan="8">This course presents advanced and applicable knowledge on applied agrohydrology and computer modelling at different scale levels affecting plant production and the environment</td></tr>
<tr><td>Competencias:
B: básica
G: genérica
E: específica</td><td colspan="8">Identify and analyze the most important agrohydrological factors in relation to their primary focus, interpret the results of their analysis and draw the relevant conclusions (E).
Understand the applications of agrohydrological models (E).
Integrate knowledge about the water dynamics in agricultural systems (G).
Understand new concepts and technologies and their potential applications to solve agricultural water management problems (G).</td></tr>
<tr><td>Contenidos</td><td colspan="8">Applied Agrohydology : Water in soil (hydraulic properties), soil structure and water flow in soil. Pedotransfer function models. Transport of N and P on soils.
Agrohydological models: Model classification: deterministic, stochastic, and hybrid approaches. Model applications at different scale levels: soil column, plot, field and watershed. Model comparison: DAISY, DRAINMOD and AQUACROP.
Model calibration, validation and application: Model parametrization. Model input and output. Warm-up period. Calibration vs validation. Statistical measures. Model application: future scenarios.
Uncertainty and sensitivity analysis: Source of errors. Spatial soil variability. Uncertainty analysis. Sensitivity analysis.</td></tr>
<tr><td>Modalidad de evaluación</td><td colspan="8">Model presentation (50%) & Exercise (50%)</td></tr>
<tr><td>Bibliografía</td><td colspan="8">Básica:
Pachepsky, Y., Smettem, K., Vanderborght, J., Herbst M., Vereecken, H., Wösten, J. 2004. Reality and fiction of models and data in soil hydrology. R. Feddes et al. (Ed.), Unsaturated-Zone Modeling, Kluwer Academic Publ., Dordrecht, the Netherlands.
Steduto, P., Hsiao, T.C., Raes, D., Fereres, E. 2009. Aquacrop-the FAO crop model to simulate yield response to water: I. concepts and underlying principles. Agronomy Journal 101, 426-437.
Recomendada:
Abrahamsen, P., Hansen. S. 2000. Daisy: an open soil-crop-atmosphere system model. Environmental Modelling & Software 15, 313-330.
Arheimer, B., Lidén, R. 2000. Nitrogen and phosphorus concentrations from agricultural catchments-Influence of spatial and temporal variables. Journal of Hydrology 227, 140-159.
Beven, K., Freer, J., 2001. Equifinality, data assimilation, and uncertainty estimation in mechanistic modeling of complex environmental systems using the GLUE methodology. Journal of Hydrology 249 (1-4), 11-29.
Hansen, S., Abrahamsen, P., Petersen, C.T., Styczen, M., 2012. DAISY: model use, calibration, and validation. Transactions of the ASABE 55, 1315-1333.
Moriasi, D.N., Arnold, J.G., Van Liew, M.W., Bingner, R.L., Harmel, R.D., Veith, T.L., 2007. Model evaluation guidelines for systematic quantification of accuracy in watershed simulations. Transactions of the ASABE 50, 885−900.
Obropta, C.C, Kardos, J.S. 2007. Review of Urban Stormwater Quality Models: Deterministic, Stochastic, and Hybrid Approaches. Journal of the American Water Resources Association 43, 1508-1523.</td></tr>
</table>

	Radcliffe, D.E., Freer, J., Schoumans, O. 2009. Diffuse phosphorus models in the United States and Europe: Their usages, scales, and uncertainties. Journal of Environmental Quality 38: 1956-1967. Youssef, M.A., Skaggs, R.W., Chescheir, G.M., Gilliam, J.W. 2005. The nitrogen simulation model, DRAINMOD-N II. Transactions of the ASAE 48, 611-626.