



University of Puerto Rico
Mayagüez Campus
College of Agricultural Sciences
Department of Agricultural and Biosystems Engineering



OFFICIAL SYLLABUS

**AGRICULTURAL HYDROLOGY
SAGA 4038**

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| Credit Hours: 3 | Contact Hours: Two (2) hours of lecture and a laboratory period of three (3) hours per week. |
| Prerequisites: FISI 3171 or FISI 3151 or FISI 3091. | Co-requisites: Ninguno |
| Course Description (English): The study of the hydrologic cycle, weather elements and climate, water precipitation, evaporation, transpiration, infiltration, soil moisture and run-off as related to soil and water management. | |
| Course Description (Spanish): Estudio del ciclo hidrológico, elementos meteorológicos y el clima, la precipitación pluvial, la evaporación, transpiración, infiltración, humedad del suelo y escorrentía en relación con el manejo de los suelos y el agua. | |
| Learning Objectives: At the end of the course the students will be able to: <ul style="list-style-type: none">a. To develop an understanding of the components of the hydrologic cycle and how they become partitioned within the agricultural environment.b. Controls related to runoff and sediment transport.c. Groundwater and surface water protection, and water supply development and storage | |

Content Outline and Time Distribution:

| <i>Topics to be covered</i> | | <i>Contact hours</i> |
|---|--|----------------------|
| I. | Introduction | 2 |
| II. | The Hydrologic Cycle | 2 |
| III. | Precipitation and Surface Runoff | 2 |
| IV. | Soil Moisture | 2 |
| V. | Infiltration, Evaporation and Transpiration | 2 |
| VI. | Evapotranspiration | 2 |
| VII. | The Water Balance Approach for Irrigation Management | 2 |
| VIII. | Groundwater | 2 |
| IX. | Water wells and Pumps | 2 |
| X. | Subsurface Drainage | 2 |
| XI. | Surface Drainage | 2 |
| XII. | Surface Water Flow and Measurement | 2 |
| XIII. | Farm Ponds | 2 |
| XIV. | Soil Erosion | 2 |
| XV. | Water Pollution Control | 2 |
| XVI. | | |
| XVII. | | |
| XVIII. | | |
| <i>Total hours: (equivalent to course contact period)</i> | | 30 |

| <i>Laboratories</i> | | <i>Contact hours</i> |
|---|--|----------------------|
| 1. | Laboratory Overview | 3 |
| 2. | MathCAD Training | 3 |
| 3. | Soil Moisture Measurement | 3 |
| 4. | Infiltration | 3 |
| 5. | Field Trip | 3 |
| 6. | Weather Data Analysis | 3 |
| 7. | CROPWAT Computer Program and Water Balance | 3 |
| 8. | Midterm Exam | 3 |
| 9. | Groundwater Mapping | 3 |
| 10. | Groundwater/Surface Water Interaction | 3 |
| 11. | Pipes and Pumps | 3 |
| 12. | Surface Water Flow Measurement | 3 |
| 13. | Revised Universal Soil Loss Equation (RUSLE) | 3 |
| 14. | Semester Project Meeting | 3 |
| 15. | Semester Project Meeting | 3 |
| <i>Total hours: (equivalent to laboratory contact period)</i> | | 45 |

Instructional Techniques:

- conference discussion computation laboratory
- seminar with formal presentation seminar without formal presentation workshop
- art workshop practice trip thesis special problems
- tutoring research others, please specify:

Learning Resources and Minimum Facilities Available or Required:

The course will be taught in a traditional classroom. Equipment such as transparencies and head projector will be used in lectures. The computer room will be used in some of the laboratories. General Library and University Computer Center is available to obtain professor’s reference materials.

This course will required the following text book:
Soil and Water Management Systems, 1996, 4th edition. By Glenn O. Schwab, Delmar D. Fangmeier, William J. Elliot. John Wiley and Sons Publisher.

Evaluation Techniques and Relative Weight:

| | Percent |
|--|----------------|
| <input checked="" type="checkbox"/> 2Exams (20% each) | 40 |
| <input type="checkbox"/> Final exam | |
| <input checked="" type="checkbox"/> Homework | 20 |
| <input checked="" type="checkbox"/> Laboratory | 20 |
| <input type="checkbox"/> Oral reports | |
| <input type="checkbox"/> Monographies | |
| <input type="checkbox"/> Portfolio | |
| <input type="checkbox"/> Journals | |
| <input checked="" type="checkbox"/> Projects | 20 |
| <input type="checkbox"/> Others, specify: | |
| | |
| | |
| TOTAL: 100% | 100% |

Grading System:

- Quantifiable (letters) Not Quantifiable

Standard Curve: 90 to 100 A; 80 < 90 B; 70 < 80 C; 60 < 70 D; 0 < 60 F

Bibliography:

Soil and Water Management Systems, 1996, 4th edition. By Glen O. Schwab, Delmar D. Frangmeier, William J. Elliot. John Wiley and Sons Publisher.

Allan, R. G., L. S. Pereira, Dirk Raes and M. Smith, 1998. Crop Evapotranspiration Guidelines for Computing Crop Water Requirements. FAO Irrigation and Drainage. Paper 56, Food and Agriculture Organization of the United Nations, Rome.
<http://www.fao.org/docrep/X0490E/x0490e00.htm>

Clark, D. 1998. CropWat for Windows: User Guide. Version 4.2.0013.
CropWat for Windows Manual: <http://www.fao.org/landandwater/aglw/cropwat.stm>

According to Law 51:

Law 51: The Comprehensive Educational Services Act for People with disabilities states that after identifying with the instructor and the institution, the student with disabilities will receive reasonable accommodation in their courses and evaluations. For more information contact the Department of Counseling and Psychological services at the Office of the Dean of Students (Office DE 21) or call 787-265-3864 or 787-832-4040 x 3772, 2040 and 3864.

Academic Integrity:

The University of Puerto Rico promotes the highest standards of academic and scientific integrity. Article 6.2 of the UPR Students General Bylaws (Board of Trustees Certification 13, 2009-2010) states that academic dishonesty includes, but is not limited to: fraudulent actions; obtaining grades or academic degrees by false or fraudulent simulations; copying the whole or part of the academic work of another person; plagiarizing totally or partially the work of another person; copying all or part of another person answers to the questions of an oral or written exam by taking or getting someone else to take the exam on his/her behalf; as well as enabling and facilitating another person to perform the aforementioned behavior. Any of these behaviors will be subject to disciplinary action in accordance with the disciplinary procedure laid down in the UPR Students General Bylaws.—.

Policy Against Discrimination Based on Sex, Sexual Orientation, and Gender Identity:

The University of Puerto Rico prohibits discrimination based on sex, sexual orientation, and gender identity in any of its forms, including that of sexual harassment. According to the Institutional Policy Against Sexual Harassment at the University of Puerto Rico, Certification Num. 130, 2014-2015 from the Board of Governors, any student subjected to acts constituting sexual harassment, may turn to the Office of the Student Ombudsperson, the Office of the Dean of Students, and/or the Coordinator of the Office of Compliance with Title IX for an orientation and/or formal complaint.

Sexual Harassment: Certification 130-2014-2015 states:

Sexual harassment in the workplace and in the study environment is an illegal and discriminatory act and is against the best interests of the University of Puerto Rico. All persons who understand they have been subject to acts of sexual harassment at the University of Puerto Rico may file a complaint and request that the institution investigate, where necessary, and assume the corresponding action by the university authorities. If the complainant is a student, he or she must refer his or her complaint to the Office of the Student Ombudsperson or that of the Dean of Students.

Certification 06-43 of the Academic Senate states, "The academic guidelines for offering online courses," defines:

Traditional face-to-face courses are those that have less than 25% of the course's regular contact hours via the Internet. Therefore, a three-credit course will be considered "face to face" if, of the 45 hours of regular contact, 11 or less are taught via the Internet. According to certification 16-43 of the Academic Senate, a course may include up to 25% of its total contact hours via the Internet. The objective of this is so that all professors have this alternative in the case of any unscheduled eventuality.

Includes attachments:

Yes

No