

AGRICULTURE

Master of Science in Agriculture

Irrigation Science Subplan

In the Department of Horticulture, Plant, and Soil Science

www.csupomona.edu/~horpss

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The Irrigation Science subplan in the Master of Science in Agriculture allows students to develop knowledge and competence in a specialized area of irrigation and water management. Graduate students may concentrate on enhancing their skills in research methodologies and design and statistical analysis and/or a professional technical track with more emphasis in irrigation system's design and water management and public water conservation programs.

The research track gives students an opportunity to learn and practice biological research methodologies applied to irrigation water use efficiency studies in the context of landscape and/or agriculture irrigation water quality and reclaimed water in irrigation, research into effective water conservation programs. This track will prepare students for technical and research positions within the industry and/or with the sound scientific grounding necessary for continuing on to a Ph.D. program.

The professional track gives the graduate student opportunity to enhance irrigation design skills, advanced irrigation controller system, evapotranspiration (ET), and soil moisture measurement systems, Geographic Information Systems (GIS), Global Positioning System (GPS), plant and soil science and landscape design issues. These students normally do not plan to continue their studies in a research-based Ph.D. program, and would seek employment in the public sector, in education, management, or other non-research industry positions.

Students on both the Research Track and the Professional Track will complete a master's thesis or a project report.

ADMISSION TO THE PROGRAM

An applicant for admission to the Irrigation Science Subplan in the MS degree program in Agriculture should have a baccalaureate degree in agriculture, engineering, landscape architecture, or in a closely related field. Applicants without such a degree will be required to take undergraduate level courses in the Colleges of Agriculture and Science prior to being admitted to the program. A cumulative grade point average of 2.75 overall is required, but at least a 3.0 is preferred in all agriculture and science courses. In addition, three letters of recommendation are required from individuals familiar with the applicant's academic qualifications and potential as a graduate student. All applicants are required to take the Graduate Record Examination General Test. International students seeking admission into the program must present a score of 550 on the TOEFL Exam. An applicant not meeting these standards may be conditionally admitted with the approval of the program's Graduate Admission Committee. The conditional student must comply with the requirements of admission within two quarters.

The student, along with an appointed advisory committee, will develop a program by the end of the second quarter based upon the student's interests and preparation. This will include the selection of a major

professor to direct the thesis work. The student's approved program will include required basic core courses, a selection of additional courses in a specialization, electives, independent study, and a thesis. The approved program must be on file by the end of the second quarter of unconditional admission to the program.

Please note that the department has established submission deadlines to allow for sufficient time to consider application packages. Contact the department for these dates.

ADVANCEMENT TO CANDIDACY

Admission to the program does not admit a student to candidacy for the degree. Advancement to Candidacy is contingent upon the recommendation of the Graduate Coordinator and the student's advisory committee. A student who has not been admitted to candidacy is not eligible to register for the thesis/project, (LIS 696). In order to qualify for Advancement to Candidacy for the Master of Science in Agriculture, Subplan in Irrigation Science, a student must: (1) complete at least 24 units of graduate coursework at Cal Poly with a GPA of 3.0 or better, (2) pass the Graduation Writing Test, and (3) with the major professor and Graduate Coordinator, develop and file a program of study. The official program of study must be prepared and submitted for approval no later than the end of the second quarter of attendance.

REQUIREMENTS

1. The degree program shall include a minimum of 45 quarter units of which at least 24 units shall be in graduate level courses. Additional coursework may be required to eliminate subject matter deficiencies. Students may need to complete pre-requisite courses for the graduate courses if they were not completed for the Bachelors degree. These courses would be taken prior to the student being admitted unconditionally to the MS program. Courses at the 300 level may apply toward the fulfillment of degree requirements only with permission of the Graduate Coordinator.
2. A grade point average of 3.0 (B) or better must be maintained in all upper division undergraduate and all graduate courses. No course with a grade lower than "C" (2), may apply toward the fulfillment of degree requirements,
3. No more than 13 units of acceptable graduate credit may be transferred from another graduate institution. No more than 13 units taken through Continuing Education may be used on a contract. No more than 13 units of acceptable graduate credit may be petitioned by an undergraduate student. A total limit of 13 transfer and/or Continuing Education and/or units petitioned for graduate credit may be included on a master's contract. The stipulated time limit of 7 years applies to all of the above.
4. The student will develop a program based upon the curriculum outline that follow, in consultation with the major professor and the Subplan Graduate Coordinator and with the approval of the Graduate Studies Analyst.
5. Advancement to Candidacy is required.
6. The candidate must complete a graduate formal thesis and submit at least two final copies for binding in accordance with University regulations.
7. A final oral examination covering the thesis and the candidate's area of specialization must be successfully completed.
8. The candidate must be enrolled in the University during the quarter of graduation.

THE CURRICULUM

Required Courses

College Core

Introduction to Graduate Research in the			
Agricultural Sciences	AG	500	(3)
Design and Analysis of Experimental Research	AG	510	(4)
Design and Analysis of Experimental Research II:			
Regression Methods	AG	520	(4)
Research Proposal	AG	530	(3)
Advanced Principles of Irrigation			
Advanced Irrigation System Design	LIS	512	(4)
Advanced Topics in GPS/GIS Application in	LIS	522	(4)
Irrigation/Horticulture and Agriculture	LIS	550	(4)
Thesis/Project Research	LIS	694	(1-6)
Masters Degree Thesis/Project	LIS	696	(1-6)
Subtotal			28-38

Elective Courses

To be selected from the following list with consent of the student's major professor and graduate committee 7-17

Graduate Independent Study	LIS	692	
Advanced Geographic Information Systems I	GEO	442/442A	
Advanced Geographic Information Systems II	GEO	443/443A	
Seminar in Water Resource Economics	EC	439	
Agricultural Water Resource Management	ABM	450	
Fresh Water Biology	BIO	430/430L	
Meteorology	ESC	304	
Seminar in Horticulture	HOR	550	
Seminar in Agronomy	AGR	550	
Foundations of Landscape Design	LA	510/510L	

Total units required for the master's degree 45

GRADUATE COURSE DESCRIPTIONS**LIS 512 Advanced Principles of Irrigation (4)**

Advanced studies in methods of estimating evapotranspiration (ET), methods of soil moisture measurement, and estimating irrigation efficiency to both landscape and agricultural applications. 4 lecture discussions. Prerequisite: graduate standing.

LIS 522 Advanced Irrigation System Design (4)

Advanced irrigation system design system hydraulics including looped piping systems, software for sprinkler head placement, water distribution metrics, pumping units and controls, and irrigation system computer controls. 4 lecture discussions. Prerequisites: LIS 231 or LIS 340, or consent of instructor.

LIS 550 Advanced Topics in Irrigation (4)

Analysis and discussion based on literature, recent research advancements, regulations and public policy. 4 lecture discussions. Prerequisite: unconditional graduate standing.

LIS 692 Graduate Independent Study (1-4)

Independent research and study on an irrigation and water management study chosen by the student with the consultation and approval of an advisor. May include research proposal writing to fund the research project. Prerequisite: permission of major professor.

LIS 694 Thesis/Project Research (1-6)

Research conducted as part of the preparation for writing a thesis or preparing a graduate project. May be repeated for a maximum of 6 units. Prerequisite: unconditional graduate standing.

LIS 696 Masters Degree Thesis/Project (1-6)

Compilation, evaluation, interpretation, and presentation in thesis or project form of supervised research. Open only to unconditional graduate students with the approval of the graduate advisor. May be repeated for a maximum of 6 units. Students are permitted to take 1-3 units per quarter.

LIS 699 Master's Degree Continuation (0)

Enrollment in this course allows candidates that have enrolled in the maximum number of thesis or project units to maintain resident status in order to receive university services. Approval of graduate program coordinator is required to register for this class. Advancement to candidacy is required. This course is graded on a mandatory credit/no credit basis.