AAS IN PRECISION CROP SCIENCE & SMART IRRIGATION

FOUR-SEMESTER CURRICULAR ROADMAP & FIELD COMPETENCY FRAMEWORK

Program Description & Objectives

The Associate of Applied Science in Precision Crop Science and Smart Irrigation prepares technicians and agricultural managers to engineer, operate, and troubleshoot automated micro-irrigation systems, soil moisture telemetry networks, and precision fertilization programs across California's permanent and row crops.

Four-Semester Prescribed Schedule (64 Credits)

Term	Course Code & Name	Units	Core Field Practicum
Fall 1	AGR-101 Principles of Sustainable Agronomy	3 cr	Soil texture determination & orchard sampling
Fall 1	IRR-101 Agricultural Hydraulics & Pump Systems	4 cr	Booster pump flow tests & manifold plumbing
Fall 1	IRR-105 Soil Moisture Sensing & Telemetry	3 cr	Installing watermark and capacitance sensors
Fall 1	MCH-101 Ag Machinery Operation & Safety	3 cr	John Deere 8R pre-operation and field driving
Fall 1	ENG-101 Technical Composition & Ag Reporting	3 cr	Preparing grower water compliance memorandums
Spring 1	AGR-104 Plant Nutrition & Fertility Management	3 cr	Tissue testing & leaf nitrogen analysis
Spring 1	IRR-202 Drip & Micro-Sprinkler Design	4 cr	CAD layout of 40-acre almond irrigation block
Spring 1	MCH-201 Drone NDVI Remote Sensing	3 cr	FAA Part 107 flight mapping over pistachio rows
Spring 1	AGB-101 Agricultural Economics & San Joaquin Crops	3 cr	Enterprise budgeting for stone fruit orchards
Fall 2	IRR-205 Variable Rate Irrigation & SGMA Compliance	4 cr	Groundwater extraction tracking & deficit cycles
Fall 2	AGR-205 Integrated Pest Management (IPM)	3 cr	Navel orangeworm trapping and degree-day calculation
Fall 2	MCH-205 Autonomous Machinery & RTK Guidance	3 cr	Geofence boundary programming & autosteer trials
Fall 2	MAT-105 Applied Technical Mathematics for Ag	3 cr	Chemical dilution ratios and hydraulic head formulas
Spring 2	IRR-290 Precision Irrigation Capstone Practicum	4 cr	Independent 50-acre commercial grower audit
Spring 2	AGR-210 Saline Soil Reclamation Strategies	3 cr	Gypsum soil injection & subsurface drainage
Spring 2	AGB-205 Farm Labor Supervision & Cal/OSHA Law	3 cr	Field supervisor heat illness prevention certification

Career Placement & Articulation

Graduates qualify as Certified Irrigation Designers (CID), Orchard Operations Managers, Precision Ag Specialists, and Field Agronomists. All 64 credits articulate seamlessly into Ashford Valley's BS in Sustainable Agronomy or Agribusiness.