

**Clackamas Community College**

## Online Course/Outline Submission System

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**Section #1 General Course Information****Department:**Horticulture**Submitter**

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**Course Prefix and Number:**HOR - 231

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**# Credits:**3**Contact hours**

Lecture (# of hours): 33

Lec/lab (# of hours):

Lab (# of hours): 11

Total course hours: 44

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

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**Course Title:**Irrigation & Drainage Design**Course Description:**

Principles of irrigation and drainage system design for various situations, including underground and above-ground, residential and commercial systems. Class includes a lab component.

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**Type of Course:**Career Technical Preparatory

Is this class challengeable?

**Yes**

Can this course be repeated for credit in a degree?

**No**

Is general education certification being sought at this time?

**No**

Does this course map to any general education outcome(s)?

**No**

Is this course part of an AAS or related certificate of completion?

**Yes**

**Name of degree(s) and/or certificate(s):** Horticulture AAS, Landscape AAS & Certificate, Irr Technician pathway

Are there prerequisites to this course?

**No**

Are there corequisites to this course?

**No**

Are there any requirements or recommendations for students taken this course?

**No**

Are there similar courses existing in other programs or disciplines at CCC?

**No**

Will this class use library resources?

**No**

Is there any other potential impact on another department?

**No**

Does this course belong on the Related Instruction list?

**No**

**GRADING METHOD:**

A-F or Pass/No Pass

**Audit:Yes**

When do you plan to offer this course?

✓ **Winter**

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

**No**

Will this course appear in the college catalog?

**Yes**

Will this course appear in the schedule?

**Yes**

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. design residential and small commercial irrigation and drainage systems,
2. incorporate environmental and fiscal responsibility into an irrigation design,
3. produce a basic estimate for materials and installation of an irrigation or drainage system,
4. articulate a comprehensive understanding of irrigation when applying for a job.

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***This course does not include assessable General Education outcomes.***

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Major Topic Outline:

1. Irrigation material.
  - a. Pipe, heads, valves, controllers, accessories.
  - b. Specifications, tables, charts.
  - c. Material application
2. Introduction to hydraulics.
  - a. Characteristics of water movement.
  - b. Physics of water movement through a system.
3. Anti-siphon.
  - a. Types and uses of anti siphon devices.
4. Irrigation Design.
  - a. Gathering data.
  - b. Material selection.
  - c. Head layout.
  - d. Pipe sizing.
  - e. Zoning.
  - f. Valve sizing.
5. Drainage
  - a. Materials
  - b. Design
6. Estimating.
  - a. Material take off.
  - b. Material pricing.
  - c. Installation techniques.
  - d. Labor pricing.
7. Career opportunities.
  - a. Irrigation contracting.
  - b. Related occupations.

Does the content of this class relate to job skills in any of the following areas:

- |                                      |            |
|--------------------------------------|------------|
| 1. Increased energy efficiency       | <b>Yes</b> |
| 2. Produce renewable energy          | <b>No</b>  |
| 3. Prevent environmental degradation | <b>Yes</b> |
| 4. Clean up natural environment      | <b>No</b>  |
| 5. Supports green services           | <b>No</b>  |

Percent of course:50%

First term to be offered:

**Next available term after approval**

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