

Cerro Coso College

Course Outline of Record Report

12/06/2021

PTECC101X : Introduction to Process Technology

General Information

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Course Code (CB01) :	PTECC101X
Course Title (CB02) :	Introduction to Process Technology
Department:	Industrial Arts
Proposal Start:	Fall 2021
TOP Code (CB03) :	(0956.00) Manufacturing and Industrial Technology
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Course Control Number (CB00) :	No value
Curriculum Committee Approval Date:	11/20/2020
Board of Trustees Approval Date:	03/11/2021
External Review Approval Date:	03/11/2021
Course Description:	This course covers the duties, responsibilities, expectations, and the physical and mental requirements of the process technician. Students are provided with an overview of a typical process plant, identify process equipment, state the purpose of equipment, describe safety, health, and environmental components, and describe the roles, responsibilities, and work environment.
Submission Type:	New Course This is a new course attached to a new program
Author:	No value

Faculty Minimum Qualifications

Master Discipline Preferred:	<ul style="list-style-type: none"> • Engineering • Engineering Technology • Industrial Technology (Foundry occupations) • Manufacturing Technology (Quality control, process control)
Alternate Master Discipline Preferred:	<ul style="list-style-type: none"> • Engineering • Engineering Technology • Industrial Technology (Foundry occupations) • Manufacturing Technology (Quality control, process control)
Bachelors or Associates Discipline Preferred:	<ul style="list-style-type: none"> • Engineering • Engineering Technology • Industrial Technology (Foundry occupations) • Manufacturing Technology (Quality control, process control)
Additional Bachelors or Associates Discipline Preferred:	<ul style="list-style-type: none"> • Engineering • Engineering Technology

- Industrial Technology (Foundry occupations)
- Manufacturing Technology (Quality control, process control)

Course Development Options

Basic Skills Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Rationale For Credit By Exam/Challenge

No value

Course Support Course Status (CB26)

Course is not a support course

Course Special Class Status (CB13)

Course is not a special class.

Allowed Number of Retakes

0

Retake Policy Description

No value

Grade Options

- Letter Grade Methods

Course Prior To College Level (CB21)

Not applicable.

Allow Students To Audit Course

Associated Programs

Course is part of a program (CB24)

Associated Program

Award Type

Active

Industrial Process Technician

Certificate of Completion

Fall 2021

Transferability & Gen. Ed. Options

Course General Education Status (CB25)

Y

Transferability

Not transferable

Transferability Status

Not transferable

Units and Hours

Summary

Minimum Credit Units (CB07) 4

Maximum Credit Units (CB06) 4

Total Course In-Class (Contact) Hours 72

Total Course Out-of-Class Hours	144
Total Student Learning Hours	216
Faculty Load	0

Credit / Non-Credit Options

Course Credit Status (CB04) Credit - Degree Applicable	Course Non Credit Category (CB22) Credit Course.	Non-Credit Characteristic No Value
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Course Classification Status (CB11) Credit Course. <input type="checkbox"/> Variable Credit Course	Funding Agency Category (CB23) Not Applicable.	<input type="checkbox"/> Cooperative Work Experience Education Status (CB10)
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Weekly Student Hours

	In Class	Out of Class
Lecture Hours	4	8
Laboratory Hours	0	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	72
Laboratory	0
Activity	0
Total	72
Course Out-of-Class Hours	
Lecture	144
Laboratory	0
Activity	0
Total	144

Time Commitment Notes for Students

Students will be expected to show up on time and stay the duration of the class period along with completing work outside of the class.

Faculty Load

Extra Duties: 0 **Faculty Load:** 0

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

No Value

Entrance Skills

Entrance Skills	Description
No value	No value

Limitations on Enrollment

Limitations on Enrollment	Description
No value	No value

Specifications**Methods of Instruction**

Methods of Instruction	Discussion
Rationale	Students will be expected to participate in class discussions.

Methods of Instruction	Outside reading
Rationale	Students will be expected to complete textbook readings outside of class.

Assignments

Explain what a cooling tower is and how it works.
 Show a diagram of how an interlock system works in a process setting.
 What is PSM (Process Safety Management) and why is it important?

Methods of Evaluation**Rationale**

Tests	Students will take written tests on various topics such as: Safety, Health, and Environment; Basic math for process technician; Heat exchangers and cooling towers; Process instrumentation
Homework	Students will complete homework assignments on lecture material including but not limited to: Quality control Safety, Health, and Environment; Process equipment; Cooling towers; Process instrumentation
Final Exam	Students will take a written final exam on all of the material that is covered throughout the semester.

Equipment

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Charles E. Thomas	Introduction to Process Technology	Cengage Learning	2016	978-1-305-25147-2

Other Instructional Materials

No Value

Materials Fee

No value

Learning Outcomes and Objectives**Course Objectives**

No value

CSLOs

Explain the applications and usage of the various equipment found in the processing industry.	Expected SLO Performance: 70.0
Apply industry concepts and principles to draw conclusions about the roles and responsibilities of a process technician in an industry setting.	Expected SLO Performance: 70.0
Identify and summarize the important aspects of regulatory agencies in the industry.	Expected SLO Performance: 70.0

Outline

Course Outline

1. History of the Chemical Processing Industry
 - 1.1 History of the chemical processing industry
 - 1.2 Current issues and trends
 - 1.3 Working in the chemical processing industry
 - 1.4 Roles and responsibilities of a process technician
 - 1.5 Regulatory agencies
2. Introduction to Process Technology
 - 2.1 Safety, health, and environment
 - 2.2 Principles of quality control
 - 2.3 Instrumentation and process control
 - 2.4 Process equipment
 - 2.5 Process systems
 - 2.6 Process operations
 - 2.7 Troubleshooting
3. Safety, Health, and Environment
 - 3.1 Basic safety principles
 - 3.2 Occupational safety and health act
 - 3.3 The PSM standard
 - 3.4 Safe handling, storage, and transportation of hazardous chemical
 - 3.5 Physical hazards associated with chemicals
 - 3.6 Material safety data sheets
 - 3.7 Respiratory protective programs
 - 3.8 Personal protective equipment
 - 3.9 Emergency response
 - 3.10 Fire extinguisher classification
4. Applied Physics
 - 4.1 Basic principles of pressure
 - 4.2 Heat, heat transfer, and temperature
 - 4.3 Fluid flow
 - 4.4 Basic math for process technicians
5. Process Equipment
 - 5.1 Basic hand tools
 - 5.2 Valves
 - 5.3 Piping and storage tanks
 - 5.4 Pumps
 - 5.5 Compressors
 - 5.6 Steam turbines
 - 5.7 Gas turbines
 - 5.8 Electricity and motors
 - 5.9 Equipment lubrication, bearings and seals
 - 5.10 Steam traps
 - 5.11 Heat exchangers
 - 5.12 Cooling towers
 - 5.13 Furnaces
6. Process Instrumentation
 - 6.1 Introduction to process instruments
 - 6.2 Symbols and diagrams
 - 6.3 Process diagrams
 - 6.4 Interlocks and permissives
 - 6.5 Basic elements of a control loop
 - 6.6 Process variables and control loops
 - 6.7 Primary elements and variables

6.8 Transmitters and control loops

7. Process Technology

- 7.1 Pump systems
- 7.2 Compressor systems
- 7.3 Electrical systems
- 7.4 Lubrication systems
- 7.5 Hydraulic systems
- 7.6 Heat exchanger systems
- 7.7 Cooling tower systems
- 7.8 Separation systems
- 7.9 Water treatment systems
- 7.10 Utilities

Delivery Methods

Delivery Method: Please list all that apply -Face to face -Online (purely online no face-to-face contact) -Online with some required face-to-face meetings ("Hybrid") -Online course with on ground testing -iTV – Interactive video = Face to face course with significant required activities in a distance modality -Other

- Face to face

Rigor Statement: Assignments and evaluations should be of the same rigor as those used in the on-ground course. If they are not the same as those noted in the COR on the Methods of Evaluation and out-of-class assignments pages, indicate what the differences are and why they are being used. For instance, if labs, field trips, or site visits are required in the face to face section of this course, how will these requirements be met with the same rigor in the Distance Education section? Describe the ways in which instructor-student contact and student-student contact will be facilitated in the distance ed environments.

No Value

Good practice requires both asynchronous and synchronous contact for effective contact. List the methods expected of all instructors teaching the course. -Learning Management System -Discussion Forums -Message -Other Contact -Chat/Instant Messaging -E-mail -Face-to-face meeting(s) -Newsgroup/Discussion Board -Proctored Exam -Telephone -iTV - Interactive Video -Other

No Value

Software and Equipment: What additional software or hardware, if any, is required for this course purely because of its delivery mode? How is technical support to be provided?

No Value

Accessibility: Section 508 of the Rehabilitation Act requires access to the Federal government's electronic and information technology. The law covers all types of electronic and information technology in the Federal sector and is not limited to assistive technologies used by people with disabilities. It applies to all Federal agencies when they develop, procure, maintain, or use such technology. Federal agencies must ensure that this technology is accessible to employees and the public to the extent it does not pose an "undue burden". I am using -iTV—Interactive Video only -Learning management system -Publisher course with learning management system interface.

No Value

Class Size: Good practice is that section size should be no greater in distance ed modes than in regular face-to-face versions of the course. Will the recommended section size be lower than in on-ground sections? If so, explain why.

No Value

Emergency Distance Education Options The course will operate in remote delivery mode when all or part of the college service area is under an officially declared city, county, state, or federal state of emergency, including (check all that apply) - Online including all labs/activity hours - Hybrid with online lecture and onsite lab/activity hours - Correspondence education in high school and prison facilities - None. This course will be cancelled or paused if it cannot be held fully onsite.

- Online including all labs/activity hours