

ITSC 113: MASTER CLOCKS

Foothill College Course Outline of Record

Heading	Value
Units:	0.5
Hours:	6 lecture, 3 laboratory per quarter (9 total per quarter)
Prerequisite:	Completion of recognized sound and communication apprenticeship or equivalent and recent employment as an installer/technician in the sound and communication industry.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Description

Covers the theory and installation of a master clock system. Lessons include: types of clocks, wired clocks, wireless clocks, clock syncing, and advanced clocks.

Course Objectives

The student will be able to:

- Identify types of clocks
- Describe how the clock correction circuit works
- Identify different types of wireless clocks
- Identify new advancements in clocks
- Install a wired clock system
- Install a wireless clock system
- Configure a master clock controller to send clock correction signals
- Configure a master clock controller to activate a wireless relay

Course Content

- Introduction (Lec)
- Types of Clocks (Lec)
 - Battery
 - Auto adjust
 - Radio (NIST)
 - AC powered
 - PoE clocks
 - Analog/digital
 - Wired synchronized
 - Wireless synchronized
- Wired Clocks (Lec)
 - Correction signal - master clock
 - AR-2
 - Frequency generated
 - 3-wire synchronous clock
 - Troubleshooting
- Wireless Clocks (Lec)
 - Battery powered
 - Broadcast signal - transmitters
 - Antenna location

- Time Sync (Lec)
 - NIST
 - CDMA
 - GPS
 - Ethernet
- Advanced Clocks (Lec)
 - PoE
 - WiFi
- Hands-on Lab (Lab)
 - Install wired clocks to master clock
 - Install wireless clock
 - Install wireless relay
 - Configure master IP address
 - Program clock event to activate wireless relay

Lab Content

- Work individually and in teams with basic tools of the trade, test instruments and tool safety.
- Included will be the installation of sound and/or communication devices using wired clock, wireless clock and a master clock.
- Equipment safety and safe handling practices are reviewed and applied.

Special Facilities and/or Equipment

- Master clock console/secondary clocks.
- When taught via Foothill Global Access, on-going access to email software and hardware; email address.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

- Results of assessments
- Results of quizzes and tests
- Discussion participation

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

- Lecture
- Group discussion
- Demonstration

Representative Text(s) and Other Materials

Handouts and/or worksheets provided by course instructor.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

A. Reading assignments:

- Read "American Time Universal Master Manual, Master/Secondary Clock Protocols" handout by American Time

2. Read "Training on Wired Clocks - Terminology and Operation Clarification" worksheet by T. Nelson of American Time

B. Writing assignments:

1. In your own words, explain what clock "correction protocol" is and how it works

2. In your own words, explain the operation and correction method of the three wire sync system

Discipline(s)

Telecommunication Technology