

ELECTRONICS/3 (180 Hours)

Course No.: 72-55-70

COMPETENCY CHECKLIST

Student Name _____

Teacher Name _____ School Site _____

Start Date _____ Completion Date _____ Certificate Date _____

Teacher Signature _____ Student Signature _____

(Signatures verify completion of course competencies)

A. INTRODUCTION AND SAFETY (4 hrs)

- _____ 1. Scope and purpose of the course
- _____ 2. Course content as part of Linked Learning
- _____ 3. Classroom policies and procedures
- _____ 4. Occupations in energy & utilities industry
- _____ 5. Gender equity of non-traditional populations
- _____ 6. EPA legislation on energy & utilities industry
- _____ 7. Proper removal of hazardous materials/EPA
- _____ 8. Cal/OSHA laws & electronics technicians
- _____ 9. MSDS applies to electronics industry
- _____ 10. Class/workplace first Aid procedures
- _____ 11. Responsibilities to insure a safe workplace
- _____ 12. Pass the safety test with 100% accuracy

B. TRADE MATHEMATICS REVIEW (5 hrs)

- _____ 1. Applications of math in electronics work
- _____ 2. Solving techniques involving whole numbers
- _____ 3. Solving techniques of fractions problems
- _____ 4. Solving techniques of decimal problems
- _____ 5. Changing fractions to decimals
- _____ 6. Changing decimals to fractions
- _____ 7. English/metric system of measuring length
- _____ 8. English/metric system of measuring weight
- _____ 9. English/metric system of measuring volume
- _____ 10. English & metric measurement problems
- _____ 11. Measuring techniques w/tools of trade
- _____ 12. Metric: ascending /descending powers of ten
- _____ 13. English numbering system to metric
- _____ 14. Metric system to English numbering system
- _____ 15. Square roots of regular numbers
- _____ 16. Problem-solving of geometric problems
- _____ 17. Problem-solving of algebraic problems
- _____ 18. Problem-solving of percentages problems
- _____ 19. Interpreting graphs
- _____ 20. Decimal numbers to binary numbers
- _____ 21. Binary numbers to decimal numbers

C. RESOURCE MANAGEMENT REVIEW (1 hr)

- _____ 1. Review definitions related to topic
- _____ 2. Importance of proper resource management
- _____ 3. Examples of effective resource management
- _____ 4. Benefits of effective resource management
- _____ 5. Economic/environmental benefits & liabilities

D. ANALOG CIRCUITRY: OPERATIONAL AMPLIFIERS (20 hrs)

- _____ 1. Features/functions of listed topic items
- _____ 2. Define listed terms related to topic
- _____ 3. Characteristics of differential amplifier
- _____ 4. Schematic/symbols of operational amplifiers
- _____ 5. Characteristics of operational amplifiers
- _____ 6. Demo listed techniques related to topic

E. ANALOG CIRCUITRY: OSCILLATOR AND PULSE CONTROL CIRCUITS (20 hrs)

- _____ 1. Features/functions of topic items
- _____ 2. Time-domain analysis/ frequency domain
- _____ 3. Demo listed techniques related to topic
- _____ 4. Periodic vs. non-periodic waveforms
- _____ 5. Sine wave components in waveforms
- _____ 6. "555 timer" as stable or mono-stable
- _____ 7. Demo troubleshooting techniques

F. ANALOG CIRCUITRY: MODULATION (20 hrs)

- _____ 1. Define listed terms related to topic
- _____ 2. AM/SSB/FM; advantages & disadvantages
- _____ 3. Heterodyne principle
- _____ 4. Demo listed techniques related to topic

G. DIGITAL CIRCUITRY (30 hrs)

- _____ 1. Define listed terms related to topic
- _____ 2. Identify listed components/principles
- _____ 3. Discuss listed advantages/operations
- _____ 4. Demo listed techniques related to topic

H. MIXED-SIGNAL INTEGRATED CIRCUITRY (20 hrs)

- _____ 1. Mixed-signal circuitry
- _____ 2. Identify listed components/principles
- _____ 3. Discuss listed mixed-signal ICs
- _____ 4. Challenges of mixed signals
- _____ 5. Configure audio-video signal for multi-room

I. TELEPHONE AND WIRED SYSTEMS (20 hrs)

- _____ 1. Define listed terms related to topic
- _____ 2. Signals/messages used to operate services
- _____ 3. LAN transmission media
- _____ 4. Bandwidth: twisted pair/coaxial/fiber-optic
- _____ 5. Transmission distance of cabling technique
- _____ 6. Demo listed techniques related to topic

J. LOCAL AREA NETWORKS (30 hrs)

- _____ 1. Define listed terms related to topic
- _____ 2. Types of LANS; key components
- _____ 3. Workstations vs. servers
- _____ 4. Benefits of various cabling schemes
- _____ 5. Net-ware performance features
- _____ 6. Reason for mirroring hard drives
- _____ 7. Importance of UPS
- _____ 8. Identify/configure/install NICS
- _____ 9. Proper and appropriate network addresses
- _____ 10. Demo listed techniques related to LANS

K. EMPLOYABILITY SKILLS REVIEW (5 hrs)

- _____ 1. Employer requirements in employee
- _____ 2. Update list of potential employers
- _____ 3. Electronic social networking in job search
- _____ 4. Finalize resumes
- _____ 5. Review importance of job application
- _____ 6. Complete sample job application correctly
- _____ 7. Enthusiasm on a job
- _____ 8. Appropriate appearance on a job
- _____ 9. Upgrading job skills
- _____ 10. Customer service to build business
- _____ 11. Interviewing technicians
- _____ 12. Resources needed for a successful interview
- _____ 13. Appropriate follow-up procedures

L. ENTREPRENEURIAL SKILLS (5 hrs)

- _____ 1. Define entrepreneurship
- _____ 2. Characteristics of successful entrepreneurs
- _____ 3. Contributions of entrepreneurs to industry
- _____ 4. Purpose/components of business plan
- _____ 5. Personal goals prior to starting a business
- _____ 6. Sources of monetary investment in business
- _____ 7. Licensing for an electronics business

_____ 8. Scenario: student as business owner

_____ 9. LEED business practices vs. standard practices