ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: GNT 1225 – Quality & Measurement

Date: Spring 2015

Credit Hours: 2

Prerequisite(s): None

Delivery Method: ☑ Lecture 1 Contact Hours (1 contact = 1 credit hour)
☐ Seminar 0 Contact Hours (1 contact = 1 credit hour)
☑ Lab 2 Contact Hours (2 contact = 1 credit hour)
☐ Clinical 0 Contact Hours (3 contact = 1 credit hour)
☐ Online
☐ Blended

Offered: ☑ Fall ☑ Spring ☑ Summer

IAI Equivalent – Only for Transfer Courses - go to http://www.itransfer.org:

CATALOG DESCRIPTION:

This course provides an introduction to controlling and improving quality in a manufacturing setting. Explores ways that manufacturers use data and analysis to improve quality. Students will have the opportunity to earn the Quality and Measurement Certification through the Manufacturing Skill Standards Council (MSSC).
GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

☐ To apply analytical and problem solving skills to personal, social and professional issues and situations.
☐ To communicate orally and in writing, socially and interpersonally.
☐ To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
☐ To understand and use contemporary technology effectively and to understand its impact on the individual and society.
☐ To work and study effectively both individually and in collaboration with others.
☐ To understand what it means to act ethically and responsibly as an individual in one’s career and as a member of society.
☐ To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
☐ To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

1. Read multi-view drawings to visualize part shapes, identify features, and identify dimensions
2. Read drawings to determine part hole sizes and locations, scales, title blocks, part section features, and fastener sizes
3. Interpret part dimension tolerances, geometric dimensioning and tolerancing (GD&T) symbols and frames, and datums
4. Interpret English and S.I. measurements; perform system conversion; use tape measures and rules; accuracy and repeatability
5. Demonstrate making precision measurements using dial calipers, digital calipers, and micrometers
6. Demonstrate gauging parts using dial indicators, digital indicators, and data acquisition software; calibration of instruments; part mastering
7. Identify quality system elements, define quality, identify ISO 9000 standard, list types of quality management systems, explain the PDCA cycle, describe continuous improvement concepts, audits, and inspections
8. Explain methods of process improvement, the importance of data collection and analysis, and identify types of statistical tools
9. Explain the concepts of statistical process control, calculate mean, range, construct and analyze histograms, determine and interpret Cpk
10. Identify types and applications of control charts; construct and analyze an X bar and R chart
11. Identify applications of root cause failure analysis; construct and analyze Pareto charts; use brainstorming and fishbone diagrams to solve production problems, apply corrective and preventive action
12. Describe the role of managers and production workers in quality and quality teams
13. Describe the methods of quality inspection at different stages of manufacturing document and communicate inspection results
14. Identify types of quality audits, quality audit procedures, and document quality audit results; develop an action plan and recommendation from a quality audit
15. Identify types of nonconformities and methods of detection; perform a root cause failure analysis; decide when / how to take preventative and corrective action
16. Perform an effectiveness check; document and report preventative and corrective actions

COURSE TOPICS AND CONTENT REQUIREMENTS:
I. Blueprint Reading 1 (Multi-view Drawings)
II. Blueprint Reading 2 (Assembly Drawings and Fasteners)
III. Blueprint Reading 3 (GD&T)
IV. Basic Measurement
V. Precision Measurement Tools
VI. Dimensional Gauging
VII. Quality Systems
VIII. Quality Improvement
IX. Introduction to SPC
X. Control Charts
XI. Continuous Improvement-1
XII. Continuous Improvement-2
XIII. Quality Inspections
XIV. Quality Audits
XV. Preventative and Corrective Actions
XVI. Verification and Documentation

INSTRUCTIONAL METHODS:
1. Lecture
2. Demonstration
3. Problem solving and discussion
4. Hands-on Exercises
5. MSSC online e-Learning modules

INSTRUCTIONAL MATERIALS:


STUDENT REQUIREMENTS AND METHODS OF EVALUATION:
1. Tests and quizzes
2. Student presentations

OTHER REFERENCES
### Course Competency/Assessment Methods Matrix

For each competency/outcome place an “X” below the method of assessment to be used.

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