DEFENSE ACQUISITION UNIVERSITY

CMQ 230 - Creation and Evaluation of Quality Control Graphics in Statistical Process Control (SPC)

150220

Course Learning/Performance Objectives followed by its enabling learning objectives on separate lines if specified.

1	Given scenarios with supporting quality control data, identify examples of concepts related to quality-control graphics.
	Identify the difference between attribute and variable data.
	Identify the difference between statistical and non-statistical sampling.
	Identify the purpose of each quality control graphic type.
2	Given scenarios with supporting quality control data, identify examples of concepts related to SPC.
	Recognize the role of control limits and specification limits.
	Recognize the construction control limits for attribute charts and variable charts.
	Recognize the concepts of process capability (Cp) and process capability index (Cpk).
3	Given a scatter diagram and the supporting quality control data for the variables in question, identify the relationships between the variables.
	Define correlation analysis.
	Identify the purpose of correlation analysis.
	Identify correlation analysis techniques.
	Given scenario data and an accompanying scatter diagram, identify the features and relationships depicted in the correlation (scatter) diagram.
	Given correlation analysis results and an accompanying scatter diagram, identify relationships between variables.
4	Given a scenario with supporting quality control data, construct associated attribute-control charts.
	Identify the steps to create p, np, c and u attribute-control charts.
	Given a scenario with supporting data, construct p, np, c and u attribute-control charts from given data.
	Given a scenario with supporting data, calculate control limits for p, np, c, and u attribute-control charts.
	Given a scenario with supporting data and associated control charts, recognize potential indicators of special causes in p, np, c, and u attribute-control charts.
5	Given a scenario with supporting quality control data, construct associated variable-control charts.
	Identify the steps to create Xbar & R, Xbar & S, and Xbar & MR variable-control charts.
	Given a scenario with supporting data, Xbar & R, Xbar & S, and Xbar & MR variable-control charts.
	Given a scenario with supporting data, calculate the standard deviation, range, and control limits for Xbar & R, Xbar & S, and Xbar & MR variable-control charts.
	Given a scenario with supporting data and associated control charts, recognize potential indicators of special causes in Xbar & R, Xbar & S, and Xbar & MR variable-control charts.
6	Given source data and corresponding quality control charts, identify process triggers as part of the SPC troubleshooting process.
	Given source data and corresponding control charts, identify variation signals on quality control graphics to identify out-of-control occurrences, including runs, hugging, and trends.
	Given source data and corresponding control charts, identify the differences between control chart patterns to distinguish between common cause and special cause variation.
	Given source data and corresponding control charts, recognize process triggers (chart detection rules) for use as part of the SPC troubleshooting process.
7	Given scenario with supporting quality control data, interpret the calculated DPMO value.
	Recognize how Defects Per Million Opportunities (DPMO) relates to measurement of process performance.
	Recognize how DPMO relates to 3 Sigma and 6 Sigma.
	Given scenario with supporting data, calculate DPMO.
	Given scenario with supporting data, interpret the calculated DPMO value.
8	Given a scenario with supporting quality control data, interpret the calculated values of Cp, Cpk, and CR.
	Recognize the difference between the components of Cp, Cpk, and Capability Ratio (CR).
	Recognize when to use Cp, Cpk, and CR in various quality control situations.
	Given a scenario with supporting data, calculate Cp.
	Given a scenario with supporting data, calculate Cpk.
	Given a scenario with supporting data, calculate CR.

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	Given a scenario with supporting data, interpret the calculated Cp, Cpk, and CR values.