Course Prefix and Number: AMFG 100

Credit hours: 3-2-1

Course Title: Introduction to Manufacturing

Course Prerequisites: MATH 097

Textbook(s): None

Course Description: An overview of the functional and structural compositions of manufacturing; including processes, plant safety, and quality in the manufacturing environment. Presents the personal and interpersonal skills required to be part of a high performing team in a manufacturing environment. Topics include team building, effective communication skills, and ethics in the workplace.

Learning Outcomes:
At the end of the course, the student will:
A. demonstrate understanding of basic manufacturing terms;
B. illustrate how automation and technology influences manufacturing;
C. describe the importance of how the general safety culture impacts the manufacturing environment and show how awareness, attitude, and behavior impact the safety culture;
D. show the importance of quality and ethics in the manufacturing environment; and
E. apply the concepts, principles, and tools used in Lean manufacturing to identify and reduce waste in the workplace and explain why high performing teams are important in a manufacturing environment.

To achieve the learning outcomes, the student will or will be able to:
(The letter designations at the end of each statement refer to the learning outcome(s).)
1. describe the various terms used in the machining process; (A)
2. describe the various terms used in the assembly process; (A)
3. describe the various terms used in the fabricating process; (A)
4. describe the various terms used to describe forming operations; (A)
5. compare and contrast continuous processes and batch processes; (A)
6. describe the basic concepts of Just in Time manufacturing; (B)
7. discuss the advantages of using Pull rather than Push systems to schedule production; (B)
8. explain how technology can be used to shorten the lag time between order and delivery of the product; (B)
9. expound on the benefits of reducing inventory in finished goods, work in process and raw materials; (B)
10. explain automation’s positive impact on a manufacturing environment; (B)
11. illustrate how automation and technology influences manufacturing; (B)
12. describe the economic impact of automatic controls for distribution systems; (B)
13. list advantages for production when utilizing Programmable Logic Controllers; (B)

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14. contrast the machining operation using a live machinist as opposed to a NC operated machining center; (C)
15. discuss the benefits of using automated equipment for lifting and placing heavy loads as opposed to live operators; (C)
16. describe the importance of how the general safety culture impacts the manufacturing environment; (C)
17. discuss the reasons for machine guarding and Lockout/Tagout rules; (C)
18. discuss the requirements for identifying and safely handling chemicals in the workplace; (C)
19. show how awareness, attitude, and behavior impact the safety culture; (C)
20. discuss Safety attitudes toward safety policies and programs such as chemical labeling, Lockout/Tagout, grounding etc.; (C)
21. show how following (behavior) safety rules can prevent accidents (i.e. Lockout/Tagout, Grounding, GFCI use, Chemical Labeling, Fire and Electrical Safety); (C)
22. show the importance of quality in the manufacturing environment; (D)
23. define the concept of quality from the customer viewpoint; (D)
24. describe the attributes which define product quality; (D)
25. discuss the various roles and responsibilities for product quality; (D)
26. discuss methods to sample and measure quality in the manufacturing process; (D)
27. describe the importance of positive values and ethics in the workplace; (D)
28. discuss company values and why these values were chosen; (D)
29. define ethics and how ethics and our actions/behavior are impacted by our values; (D)
30. apply the concepts, principles, and tools used in Lean manufacturing to identify and reduce waste in the workplace; (E)
31. describe the purpose and benefits of implementing Lean Manufacturing in the manufacturing workplace; (E)
32. discuss the various Lean Tools available to reduce waste in the manufacturing environment; (E)
33. explain why high performing teams are important in a manufacturing environment; (E)
34. identify challenges individuals face when working as a team; (E)
35. apply the team building concepts and skills needed to be a high performing team; (E)
36. identify characteristics of successful High Performance Teams; (E)
37. identify the basic components of effective communication; (E) and
38. discuss the different ways individuals communicate today, and what mediums are used to communicate. (E)

Course Requirements: Complete all homework assignments, in-class equipment exercises, in class tests, and final exam.

Course Grading Scale:
  90 – 100 = A
  80 – 89  = B
  70 – 79  = C
  60 – 69  = D
  0 – 59   = F

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Attendance Policy: The college attendance policy is available at http://www.bpcc.edu/catalog/current/academicpolicies.html

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.

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