

Minnesota State College Southeast

INDS 1614: Tools, Processes, Drives & Programs

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

An introduction to basic tools, common materials and processes will be covered. The various types of mechanical drives and their features will be discussed along with building and preventive maintenance programs. (Prerequisite: None) (3 credits: 2 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 04/30/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. Describe maintenance tools
2. Explain correct tool usage
3. Explain rigging methods
4. Inspect lifting apparatus
5. Select appropriate lifting apparatus
6. Analyze a lifting scenario
7. Calculate lifting weight
8. Differentiate ladder and scaffold usage
9. Describe scaffolding assembly
10. Perform an elevated work task
11. Design a simple hydraulic circuit
12. List hydraulic system maintenance requirements
13. Troubleshoot a simple hydraulic system
14. Compare hydraulic power to pneumatic power systems
15. Design a simple pneumatic system
16. List pneumatic system maintenance requirements
17. Troubleshoot a simple pneumatic system
18. Explain lubrication purposes
19. Explain lubrication techniques
20. Describe components and applications for oil lubricants
21. Describe components and applications for grease lubricants
22. Select lubricant
23. Lubricate mounted and unmounted bearings
24. Calculate correct interval and quantity for relubrication
25. List types and purposes of anti-friction bearings
26. Differentiate ball and roller bearings
27. Differentiate housed and naked bearings
28. Select correct housing and shaft fit
29. Explain installation techniques
30. Select correct type belt drive
31. Differentiate various types of drive belts
32. Explain types and usages of various drive belts
33. Calculate pulley and belt sizes
34. Differentiate belt and gear drives
35. Explain various types of gear drives
36. Differentiate various types of gear drives
37. Select gear drive
38. List various types of couplings
39. Design drive system
40. Analyze the causes of excessive vibration
41. Explain the dangers of excessive vibration
42. Explain vibration corrective measures
43. Analyze misalignment hazards
44. Explain alignment techniques

45. Explain electrical installation
46. Select electric motor drive
47. Construct preventative maintenance program
48. Differentiate machining processes

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted