

Engineering Explorations I (8450) 36 weeks

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weeks EE

A Demonstrating Personal Qualities and Abilities EE.1

- 1 Demonstrate creativity and innovation. EE.1.1
 - 2 Demonstrate critical thinking and problem solving. EE.1.2
 - 3 Demonstrate initiative and self-direction. EE.1.3
 - 4 Demonstrate integrity. EE.1.4
 - 5 Demonstrate work ethic. EE.1.5
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B Demonstrating Interpersonal Skills EE.2

- 6 Demonstrate conflict-resolution skills. EE.2.6
 - 7 Demonstrate listening and speaking skills. EE.2.7
 - 8 Demonstrate respect for diversity. EE.2.8
 - 9 Demonstrate customer service skills. EE.2.9
 - 10 Collaborate with team members. EE.2.10
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C Demonstrating Professional Competencies EE.3

- 11 Demonstrate big-picture thinking. EE.3.11
- 12 Demonstrate career- and life-management skills. EE.3.12
- 13 Demonstrate continuous learning and adaptability. EE.3.13
- 14 Manage time and resources. EE.3.14
- 15 Demonstrate information-literacy skills. EE.3.15
- 16 Demonstrate an understanding of information security. EE.3.16
- 17 Maintain working knowledge of current information-technology (IT) systems. EE.3.17
- 18 Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. EE.3.18
- 19 Apply mathematical skills to job-specific tasks. EE.3.19
- 20 Demonstrate professionalism. EE.3.20
- 21 Demonstrate reading and writing skills. EE.3.21
- 22 Demonstrate workplace safety. EE.3.22

D Examining All Aspects of an Industry EE.4

- 23 Examine aspects of planning within an industry/organization. EE.4.23
- 24 Examine aspects of management within an industry/organization. EE.4.24
- 25 Examine aspects of financial responsibility within an industry/organization. EE.4.25
- 26 Examine technical and production skills required of workers within an industry/organization. EE.4.26
- 27 Examine principles of technology that underlie an industry/organization. EE.4.27
- 28 Examine labor issues related to an industry/organization. EE.4.28
- 29 Examine community issues related to an industry/organization. EE.4.29
- 30 Examine health, safety, and environmental issues related to an industry/organization. EE.4.30

E Addressing Elements of Student Life EE.5

- 31 Identify the purposes and goals of the student organization. EE.5.31
- 32 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult. EE.5.32
- 33 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects. EE.5.33
- 34 Identify Internet safety issues and procedures for complying with acceptable use standards. EE.5.34

F Exploring Work-Based Learning EE.6

- 35 Identify the types of work-based learning (WBL) opportunities. EE.6.35
- 36 Reflect on lessons learned during the WBL experience. EE.6.36
- 37 Explore career opportunities related to the WBL experience. EE.6.37
- 38 Participate in a WBL experience, when appropriate. EE.6.38

G Applying Safety in Engineering Studies EE.7

- 39 Demonstrate knowledge of appropriate personal safety procedures. EE.7.39
- 40 Comply with safety rules in laboratory activities. EE.7.40

H Examining How Technology Affects Our World EE.8

- 41 Describe the characteristics and scope of technology. EE.8.41
- 42 Explain the influence of technological systems. EE.8.42
- 43 Identify historical technological milestones and advancements. EE.8.43
- 44 Identify the core concepts of technology. EE.8.44
- 45 Examine technological systems. EE.8.45

I Investigating How Engineering Affects Our World EE.9

- 46 Define engineering. EE.9.46
 - 47 Summarize the history of engineering. EE.9.47
 - 48 Identify a diverse selection of worldwide representatives of engineering. EE.9.48
 - 49 Research an engineering achievement. EE.9.49
 - 50 Present information pertaining to an engineering achievement. EE.9.50
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J Examining Engineering Practice EE.10

- 51 Describe the principal fields for specialization in engineering. EE.10.51
 - 52 Summarize the habits of mind of successful professional engineers. EE.10.52
 - 53 Differentiate between an engineer and a technologist. EE.10.53
 - 54 Describe continued education possibilities to support careers in engineering and technology. EE.10.54
 - 55 Explain the importance of communication between engineers and their stakeholders. EE.10.55
 - 56 Explain how ethical behavior of engineers is essential to the betterment of society. EE.10.56
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K Practicing Engineering Fundamentals EE.11

- 57 Identify the benefits of case study analysis. EE.11.57
- 58 Investigate an existing case study. EE.11.58
- 59 Apply measuring skills using instrumentation. EE.11.59
- 60 Demonstrate the use of engineering design graphics. EE.11.60
- 61 Demonstrate the techniques and benefits of visual communication. EE.11.61
- 62 Explain rapid prototyping to develop models. EE.11.62
- 63 Demonstrate research techniques/strategies used by engineers. EE.11.63
- 64 Define risk and safety. EE.11.64

L Examining the Engineering Design Process EE.12

- 65 Define an engineering design process. EE.12.65
- 66 Define an engineering design problem. EE.12.66
- 67 Identify the specifications/requirements of the design problem. EE.12.67
- 68 Research existing solutions to the design problem. EE.12.68
- 69 Generate multiple solutions to the design problem. EE.12.69
- 70 Visually communicate the solutions to a design problem. EE.12.70
- 71 Evaluate the criteria and constraints of each potential solution to the design problem. EE.12.71
- 72 Justify an optimal solution to the design problem. EE.12.72
- 73 Create a model or prototype for the chosen solution. EE.12.73
- 74 Create a test plan based on specifications/requirements. EE.12.74
- 75 Test the solution to the design problem. EE.12.75
- 76 Evaluate the test results. EE.12.76
- 77 Modify the solution to the design problem, if needed. EE.12.77
- 78 Test the modification/alternate solution, if needed. EE.12.78
- 79 Document the final project report. EE.12.79
- 80 Present the final project report. EE.12.80

M Identifying Real-world Problems EE.13

- 81 Research local problems that could benefit from engineering solutions. EE.13.81
- 82 Design an engineering solution to a local problem, using an engineering design process. EE.13.82