

# Engineering Practicum IV (2023)

## Demonstrating Personal Qualities and Abilities

**1 Demonstrate creativity and innovation.** 1

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**2 Demonstrate critical thinking and problem solving.** 2

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**3 Demonstrate initiative and self-direction.** 3

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**4 Demonstrate integrity.** 4

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**5 Demonstrate work ethic.** 5

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## Demonstrating Interpersonal Skills

**6 Demonstrate conflict-resolution skills.** 6

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**7 Demonstrate listening and speaking skills.** 7

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**8 Demonstrate respect for diversity.** 8

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**9 Demonstrate customer service skills.** 9

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**10 Collaborate with team members.** 10

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## Demonstrating Professional Competencies

**11 Demonstrate big-picture thinking.** 11

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**12 Demonstrate career- and life-management skills.** 12

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**13 Demonstrate continuous learning and adaptability.** 13

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**14 Manage time and resources.** 14

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**15 Demonstrate information-literacy skills.** 15

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**16 Demonstrate an understanding of information security.** 16

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**17 Maintain working knowledge of current information-technology (IT) systems.** 17

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**18 Demonstrate proficiency with technologies, tools, and machines common to a specific occupation.** 18

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**19 Apply mathematical skills to job-specific tasks.** 19

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**20 Demonstrate professionalism.** 20

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**21 Demonstrate reading and writing skills.** 21

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**22 Demonstrate workplace safety.** 22

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**Examining All Aspects of an Industry**

**23 Examine aspects of planning within an industry/organization.** 23

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**24 Examine aspects of management within an industry/organization.** 24

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**25 Examine aspects of financial responsibility within an industry/organization.** 25

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**26 Examine technical and production skills required of workers within an industry/organization.** 26

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**27 Examine principles of technology that underlie an industry/organization.** 27

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**28 Examine labor issues related to an industry/organization.** 28

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**29 Examine community issues related to an industry/organization.** 29

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**30 Examine health, safety, and environmental issues related to an industry/organization.** 30

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**Addressing Elements of Student Life**

**31 Identify the purposes and goals of the student organization.** 31

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**32 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.** 32

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**33 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.** 33

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**34 Identify Internet safety issues and procedures for complying with acceptable use standards.** 34

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**Exploring Work-Based Learning**

**35 Identify the types of work-based learning (WBL) opportunities.** 35

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**36 Reflect on lessons learned during the WBL experience.** 36

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**37 Explore career opportunities related to the WBL experience.** 37

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**38 Participate in a WBL experience, when appropriate.** 38

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**Examining Employability Skills**

**39 Research a principal field of interest in engineering.** 39

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**40 Identify educational requirements for the chosen field.** 40

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**41 Research postsecondary education opportunities.** 41

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**42 Compare requirements for select professional certifications and licensure. 42**

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**43 Build a complete work portfolio. 43**

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**44 Identify the process of applying for an engineering internship or job. 44**

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**45 Analyze the similarities and differences between the engineering design process and the scientific method. 45**

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## **Examining Intellectual Property**

**46 Explain how ethical behavior of engineers is essential to the betterment of society. 46**

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**47 Identify types of intellectual property rights and how they are protected and enforced. 47**

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**48 Compare professional and personal ethics. 48**

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## **Designing a Practicum Project**

**49 Identify the need or opportunity for an engineering solution. 49**

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**50 Use systems thinking in an engineering design process. 50**

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**51 Evaluate the safety of designs. 51**

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**52 Present a proposal to an engineering challenge. 52**

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**53 Peer review all proposals. 53**

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**54 Use the engineering design process to complete the practicum project. 54**

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**55 Develop a schedule using industry-standard applications to ensure the solution can be completed during the course. 55**

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**56 Research cost-estimation tools and methods in the engineering field. 56**

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**57 Use engineering project management tools. 57**

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**58 Develop a budget. 58**

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**59 Create a work schedule. 59**

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**60 Document the progression of the engineering practicum in a technical report. 60**

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**61 Apply model and simulation techniques to create a model. 61**

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**62 Analyze the potential risk list. 62**

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**63 Communicate the solution to stakeholders. 63**

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**64 Present the final project. 64**

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**65** Participate in a mock interview, preferably with professionals in the industry. 65

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**66** Exhibit technical and life skills necessary for success in the engineering field. 66