

1. Conduct engineering design and development tasks: This is the foundational activity in engineering, encompassing the entire process of identifying problems, conceptualizing solutions, designing prototypes, and developing products or systems. It involves applying scientific principles, creativity, and systematic methods to create innovative and effective solutions to meet specific needs or objectives. This task requires a multidisciplinary approach, combining elements of mechanical, electrical, software engineering, and more, depending on the project's requirements.
2. Analyze the operation or functional performance of a component or system: Engineers examine how parts or systems perform their intended functions, using various methods to assess efficiency, identify problems, and suggest improvements. This analysis is crucial for ensuring that designs meet operational requirements.
3. Perform thermal science or fluid dynamic analysis: This involves studying heat transfer and fluid movements to design systems that manage temperature effectively or optimize fluid flow, essential in HVAC systems, aerodynamic designs, and more.
4. Perform solid mechanics analysis: Engineers evaluate the behavior of materials under forces to ensure structural integrity. This analysis helps in designing objects that can withstand expected loads and stresses.
5. Perform dynamics or vibrational analysis: This task focuses on understanding how forces affect motion and vibrations, aiming to design systems that operate smoothly and withstand potential oscillations.
6. Perform control analysis: Designing and analyzing control systems to regulate processes automatically, ensuring stability, efficiency, and precision in operations like robotics and automated machinery.
7. Create or revise technical drawings: Producing detailed drawings that serve as blueprints for manufacturing or construction, outlining precise dimensions, materials, and assembly instructions.
8. Develop or modify computer codes and/or public software: Utilizing CAD, CAM, FEA, CFD, and programming languages to model, simulate, and analyze designs, enhancing development efficiency and accuracy.
9. Conduct experimental programs: Testing prototypes and components to validate designs and theories, ensuring products meet performance expectations under real-world conditions.
10. Conduct manufacturing activities or processes: Overseeing the design and operation of production processes to optimize for efficiency, quality, and safety.

11. Conduct quality control activities or troubleshooting a failure: Ensuring products meet quality standards and diagnosing issues to maintain reliability and performance.
12. Create written documentation: Documenting procedures, processes, and results to provide clear records and support knowledge sharing and compliance.
13. Communicate via oral presentations: Effectively conveying technical information to various audiences to ensure understanding and support for engineering projects.
14. Collaborate with or contribute to an engineering group, department, or multi-disciplinary team: Working together with professionals from diverse fields to foster innovation and solve complex problems.
15. Participate in on-the-job training and develop new technical skills or abilities: Staying updated with technological advancements and enhancing skills to remain effective in the ever-evolving field of engineering.