CV and Interview preparation

Guide on technical skills needed in the Engineering Career

What are technical skills?

Technical skills are the specialized knowledge and expertise required to perform specific tasks and use specific tools and programs in real world situations. Diverse technical skills are required in just about every field and industry, from IT and business administration to health care and education.

In fact, many entry-level positions across industries require basic technical skills, such as cloud computing in Google Drive and navigating social media platforms. Examples of more advanced technical skills that a job might require include programming languages, technical writing, or data analysis.

Technical skills, sometimes referred to as hard skills, that your resume/cv should always show the practical knowledge you use in order to complete tasks.

This guide will help you with the technical skills companies are expecting to see listed on your resume/cv based on the career field you are applying for.

What is engineering?

General engineering is the branch of science and technology dealing with the design, building, maintenance and use of engines, machines and structures. It includes subcategories such as electrical, chemical, mechanical, civil, architectural engineering and computer engineering.

Engineers are essential to finding solutions to both developing and developed economies' problems.

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General skills needed

General hard skills you may need

- CAD design
- Design and analysis
- Prototyping and Testing
- Product research
- Solidworks
- Autodesk
- Visual Basic
- Python
- Catia
- ZW3D
- MechDesigner
- PTC Creo
- BricsCAD
- Solid Edge
- Rhino
- SolidFace
- Geomagic Design
- TurboCAD
- COMSOL Multiphysics
- CircuitLab
- IronCAD
- Eagle PCB

General soft skills

Often, engineers think soft skills just aren't important in their field. However, this is completely untrue and often the soft skills play a more important role within an internship setting.

In fact, soft skills are often what can distinguish an engineer, especially for someone with no formal work experience

- The ability to work under pressure
- Problem-solving skills
- Creativity
- Interpersonal skills
- Verbal and written communication skills
- Commercial awareness
- Teamwork
- assessing project requirements
- measuring the performance of mechanical components, devices and engines
- Budgeting with clients and managers
- Liaising with suppliers
- Research
- Implementing designs and test procedures
- Presenting to managers and clients
- Writing reports and documentation
- Technical advisement
- Analyzing and interpreting data

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Role Specific Skills

Career Field Role	Technical Skills required	Additional
Mechanical Engineering	SolidWorks, CAD design (2D drawings and 3D models) or CAE; Ansys (Engineering Simulation Software); 3D printer/laser cutter/CNC (for rapid prototyping and Laser Cutting); MATLAB, Simulink; Python or programming knowledge is a plus	A Portfolio will be required
Electrical Engineering	CAD Design & Modelling; MATLAB/Simulink, System Design & Analysis; Electrical Circuit knowledge and capability of preparing/analyzing documents/drawings, and specifications for electrical systems; Project Management/Project Data Analysis; Electronic Troubleshooting; Quality Assurance/Control; knowledge of Programming Languages (C/C++) is a plus	A Portfolio will be required
Biochemical Engineering	Research-based projects or administrative work: general skills or any experience related to medical/clinical research, report writing, stakeholder management, workshops/training assistance on the topic of medical equipment operations, and effectiveness on patient care, etc. -Engineering-based: be familiar with SolidWorks, CAD Design & Modelling used for prototyping, system design & analysis; safety/quality inspections & testing; or knowledge of MATLAB, and C++ programming for developing medical applications is a plus.	
Human Systems Engineering	Research-based projects: experience in doing research on human behavior/abilities and limitations, conducting human factors/human systems integration analysis (requires knowledge in medicine/life sciences, psychology/biology/chemistry/neuroscience, or BG in healthcare analytics or health informatics, etc.), for the purpose of designing devices, machines and systems. -Engineering based: familiar with system design & testing, data analysis, knowledge of safety functions/requirements for related system/hardware/software, etc.	

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Role Specific Skills

Career Field Role	Technical Skills required	Additional
Industrial Engineering	Same as ME, plus knowledge of 3D rendering software; SolidWorks/ProE, Key Shot, Rhino, Photoshop, Ai, CorelDraw etc. (for virtual models development and prototyping) is an advantage	A Portfolio will be required
Automotive Engineering	Same as ME: Solidworks, AutoCAD, Autodesk Inventor, Rhino, Ansys Fluent, Blender for design of machine elements, Engineering Analysis and Numerical Methods, or Modelling Simulation; plus C/C++, Python	
Aerospace Engineering	SolidWorks, 3D CAD design/Catia/Unigraphics, and Ansys Fluent/Workbench for aerospace modeling and simulation/design/testing & troubleshooting; Matlab, Programming (C++, Python, Java); plus knowledge of manufacturing processes, Quality Control, Project Management, Data Analysis, etc.	A Portfolio will be required
Civil Engineering	Software for 3D modeling of structure/architecture: AutoCad Civil 3D, SketchUp, Autodesk Revit, RStudio, Ansys Fluent (for Fluid Mechanics) -Software for Structural Analysis and Design: SAP2000, STAAD, etc. -Microsoft Project (MS Project) for project/construction planning/executing/management, cost estimation, quality control/estimation, etc.	A Portfolio will be required
Construction Engineering	-Microsoft Project (MS Project) for project/construction planning/executing/management, cost estimation, quality control/estimation, etc. -Software for 3D modeling of structure/architecture: AutoCad Civil 3D, SketchUp, Autodesk Revit, RStudio, Ansys Fluent (for Fluid Mechanics) -Software for Structural Analysis and Design: SAP2000, STAAD, etc.	

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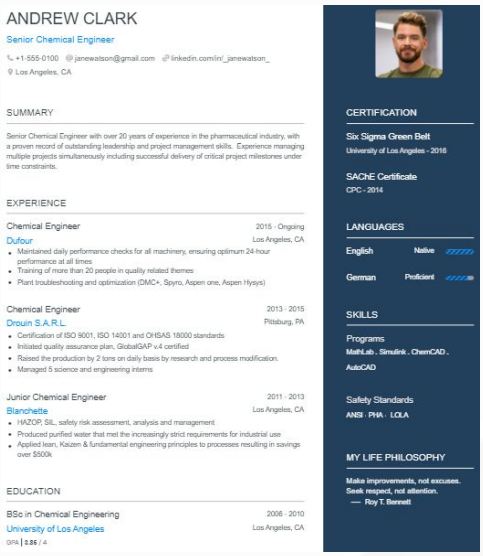
CV example



ANDREW CLARK

Senior Chemical Engineer

+1-555-0100 janewatson@gmail.com linkedin.com/in/_janewatson_

Los Angeles, CA

SUMMARY

Senior Chemical Engineer with over 20 years of experience in the pharmaceutical industry, with a proven record of outstanding leadership and project management skills. Experience managing multiple projects simultaneously including successful delivery of critical project milestones under time constraints.

EXPERIENCE

Chemical Engineer — 2015 - Ongoing
Dufour — Los Angeles, CA
- Maintained daily performance checks for all machinery, ensuring optimum 24-hour performance at all times
- Training of more than 20 people in quality related themes
- Plant troubleshooting and optimization (DMC+, Spyro, Aspen one, Aspen Hysys)

Chemical Engineer — 2013 - 2015
Drouin S.A.R.L. — Pittsburg, PA
- Certification of ISO 9001, ISO 14001 and OHSAS 18000 standards
- Initiated quality assurance plan, GlobalGAP v.4 certified
- Raised the production by 2 tons on daily basis by research and process modification.
- Managed 5 science and engineering interns

Junior Chemical Engineer — 2011 - 2013
Blanchette — Los Angeles, CA
- HAZOP, SIL, safety risk assessment, analysis and management
- Produced purified water that met the increasingly strict requirements for industrial use
- Applied lean, Kaizen & fundamental engineering principles to processes resulting in savings over $500k

EDUCATION

BSc in Chemical Engineering — 2006 - 2010
University of Los Angeles — Los Angeles, CA
GPA | 3.86 / 4

CERTIFICATION

Six Sigma Green Belt
University of Los Angeles - 2016

SAChE Certificate
CPC - 2014

LANGUAGES

English — Native
German — Proficient

SKILLS

Programs
MathLab , Simulink , ChemCAD , AutoCAD

Safety Standards
ANSI · PHA · LOLA

MY LIFE PHILOSOPHY

Make improvements, not excuses.
Seek respect, not attention.
— Roy T. Bennett

How to prepare for an interview

- Show complete project experience
- Show your ability to work within a modern engineering environment
- Express your short and long-term career goals
- Showcase work in multidisciplinary teams
- Show that you can utilize engineering trends to move the target company's business forward.
- Sell what good you can bring to a company and what you can learn from them

Possible interview questions

1. Tell me about the most challenging engineering project you've worked on.
2. Describe a written technical report or presentation you had to complete.
3. Explain a time you had to use logic to solve an engineering problem.
4. Describe a time you demonstrated leadership skills at work.
5. What processes do you follow to catch any mistakes in your work?
6. What engineering skills have you learned or improved upon in the past six months?
7. What software packages are you familiar with?
8. What strengths do you have that make you a good engineer?
9. What's your most successful engineering project?
10. How do you stay current with the latest technology?
11. Describe a time you had to work on a team and something didn't go well. What would you do differently?