

Technical Skills Guide for Non-CS Engineering Students

GOAL

Become 'CS-Ready' without a CS Degree.

MUST-LEARN TECHNICAL SKILLS

1. Programming Fundamentals (Python First)

- Python is beginner-friendly and widely used.
- Learn: Variables, loops, functions, OOP

2. Data Structures & Algorithms (DSA)

- Important for interviews and problem-solving.
- Start with arrays, lists, trees, graphs.

3. Version Control (Git & GitHub)

- Essential for collaboration and real-world projects.

4. Web Development

- Frontend: HTML, CSS, JavaScript
- Backend: Node.js / Django (optional)

5. Database Management

- Learn SQL, CRUD operations, normalization.

6. Object-Oriented Programming (OOP)

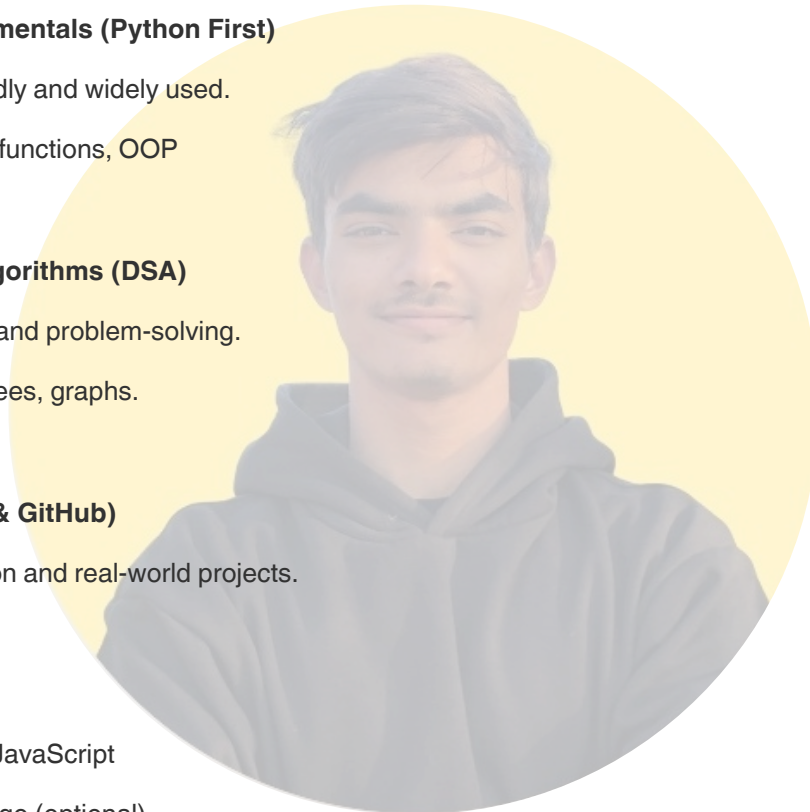
- Concepts like classes, inheritance, polymorphism.

7. Linux & Command Line

- Crucial for DevOps and system-level tasks.

8. Operating Systems & Computer Networks

- Learn theory of processes, memory, TCP/IP, DNS.



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OPTIONAL BUT HIGH-IMPACT SKILLS

- Software Jobs: Focus on DSA + OOP + OS
- Web Dev: Learn HTML, CSS, JavaScript, React
- AI/ML: Use Python, pandas
- DevOps: Learn Docker, CI/CD, Jenkins
- Cybersecurity: Start with TryHackMe labs
- Data Analytics: Excel, SQL

ROADMAP FOR 1ST/2ND YEAR STUDENTS

Phase 1: Foundation (2-3 Months)

- Python Basics, GitHub, HTML & CSS

Phase 2: Intermediate (3-4 Months)

- DSA, SQL & DBMS, JavaScript, Host a portfolio site

Phase 3: Specialization (Based on Interest)

- AI/ML, Web Dev, App Dev, Cybersecurity

CORE 10 SKILLS FOR CS CAREER SWITCH

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|---------------------------------|-----------------------|
| 1. Python Programming | 6. OOP in Java/Python |
| 2. Data Structures & Algorithms | 7. Linux Basics |
| 3. Git & GitHub | 8. OS & CN Theory |
| 4. HTML, CSS, JS | 9. Project Building |
| 5. SQL & DBMS | 10. Problem Solving |

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EXTRA TIPS

- Start small internships or gigs
- Build and showcase GitHub projects
- Use LinkedIn and GitHub to attract recruiters
- Certifications (Google IT, CS50x) are optional but works

