FREE TO LEARN

The Ultimate Guide to
Free Online Resources
for Indian Students

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Dedicated

to

My University RGUKT Basar

With heartfelt gratitude for shaping my future

Introduction

The Digital Revolution and the Rise of Free Education in India

India has one of the largest student populations in the world, yet millions of learners still face a common challenge – the lack of access to quality teachers and faculty. While a few institutions in metro cities provide world-class education, many schools and colleges across the country struggle with outdated teaching methods, shortage of qualified faculty, and limited exposure to global knowledge. This uneven access creates wide gaps in learning and prevents students from realizing their full potential.

Fortunately, the digital revolution is changing this story. Today, Indian students have the power to access world-class knowledge from anywhere, at any time – often at no cost. With just an internet connection, learners can explore free online courses, lectures from top universities, interactive tutorials, e-books, and platforms designed to bridge the very gaps that traditional classrooms leave behind.

This e-book, *"Free to Learn: The Ultimate Guide to Free Online Resources for Indian Students"* is created to help you discover, explore, and make the most of these opportunities. Whether you are in a small town or a big city, whether you are preparing for competitive exams, pursuing higher education, or simply curious to learn, this guide will show you the best free online resources available.

Learning should never be limited by geography, money, or the availability of teachers. With the right resources, every student in India can take charge of their own education, gain new skills, and unlock opportunities for the future.

The Digital Revolution in India

India's digital revolution began with the launch of affordable mobile data plans and the widespread adoption of smartphones. Today, India is one of the largest internet markets in the world, with over **800 million users**. This digital boom has created unprecedented opportunities for students across the country, especially in rural and underserved areas. No longer do students need to rely

solely on expensive coaching classes or limited library resources. The internet has become the great equalizer, offering every student—regardless of their socioeconomic background—the tools to succeed.

The government's initiatives, such as **Digital India** and **BharatNet**, have further accelerated this transformation. Programs like **SWAYAM**, **DIKSHA**, and **NPTEL** have brought world-class education to the fingertips of millions. The result? A new generation of learners who are empowered, informed, and ready to take on the world.

The Power of Free Education

Education is the foundation of progress, both for individuals and for society as a whole. Yet, for decades, the high cost of education in India has been a significant barrier for millions. From expensive textbooks and coaching classes to the rising fees of private institutions, the financial burden has often forced students to abandon their dreams. But the digital revolution has changed this narrative.

Today, **free education** is not just a possibility—it is a reality. Whether you're a school student preparing for board exams, a college student looking to upskill, or a competitive exam aspirant aiming for the top ranks, the internet offers a wealth of resources that cost nothing. From free NCERT textbooks and online lectures to mock tests and coding tutorials, the tools to achieve your goals are just a click away.

This e-book is a celebration of this new era of free education. It is a comprehensive guide to the best free online resources available to Indian students, curated to help you unlock your full potential.

Why This Book?

In a world overflowing with information, finding reliable and high-quality resources can be overwhelming. A simple Google search for "free online resources for students" yields millions of results, but not all of them are trustworthy or useful. This book does the hard work for you by:

- **Curating the Best Resources**: We've handpicked the most trusted and effective platforms, ensuring that you have access to the best tools available.

- **Saving Your Time**: No more endless searching—everything you need is organized in one place, with clear descriptions and easy-to-follow instructions.
- **Providing Guidance**: From tips on how to use these resources effectively to success stories that inspire, this book is your personal mentor in the journey of learning.

How to Use This Book

This book is designed to be your ultimate companion in the pursuit of knowledge. Here's how you can make the most of it:

1. **Identify Your Goals**: Are you looking to improve your grades, prepare for an exam, or learn a new skill? Start with the chapter that aligns with your goals.
2. **Explore the Resources**: Each section provides detailed descriptions of free platforms, tools, and websites. Clickable links (in the digital version) will take you directly to the resources.
3. **Take Action**: Don't just read—act! Sign up for courses, download study materials, and start practicing.
4. **Share and Collaborate**: Share these resources with friends, classmates, and teachers. Learning is always better when it's collaborative.

A Call to Action

The digital revolution has opened the doors to a world of possibilities. Education is no longer confined to classrooms or limited by financial constraints. It is now a journey that you can embark on from the comfort of your home, at your own pace, and on your own terms.

This book is your key to unlocking that world. Whether you're aiming for academic excellence, career growth, or personal development, the resources in this book can help you get there. So, are you ready to take the first step toward a brighter future? Let's dive in and explore the world of free online resources together. Remember, the only limit is your willingness to learn.

Note

1) Websites often update or change their hyperlinks, which may result in broken or outdated links. If you find that a link isn't working, simply type the name of the site (without any domain extension like *.com*, *.org*, etc.) into your browser or a search engine. This will usually lead you to the current, working version of the site so you can continue your learning without interruption.

2) Some resources appear multiple times intentionally to ensure you don't miss them, even if you jump straight to your subject of interest.

3) Unlike a traditional book, this guide is a dynamic resource that I will continuously update. As I discover the best new resources for students, I will integrate them into the book and on the companion website. Be sure to check back for the latest information.

Chapter 1
Academic Resources for School Students (Class 1st to 12th)

Education is the foundation of a student's future, and the school years (Class 1st to 12th) are crucial for building a strong academic base. However, not all students have access to quality schooling or expensive resources. Fortunately, the internet has revolutionized learning, offering a wealth of **free resources** that cater to every subject and grade level. This chapter is your guide to the best free online resources for school students in India.

1.1 Free NCERT Textbooks and lectures

The National Council of Educational Research and Training (NCERT) is the backbone of school education in India. Its textbooks are not only prescribed by the Central Board of Secondary Education (CBSE) but are also widely used by state boards. Here's how you can access NCERT resources for free:

- **NCERT Official Website**:
  The NCERT website offers free access to all textbooks and solutions for Classes 1 to 12.
  - **Website**: https://ncert.nic.in

- **Features**:
  - Download PDFs of NCERT textbooks for all subjects.
  - Available in both English and Hindi.
- **NCERT Official YouTube Channel:-** It hosts video lectures by renowned teachers for each subject
- **Website**:https://www.youtube.com/@NCERTOFFICIAL/playlists
- **NCERT Solutions** (https://www.learncbse.in/ncert-solutions/):
  - Free solutions for NCERT textbook questions.

1.2 DIKSHA : DIGITAL INFRASTRUCTURE FOR KNOWLEDGE SHARING

DIKSHA is a revolutionary initiative that offers a range of **free educational resources** to students and teachers across India. By providing quality learning content and professional development opportunities for teachers, DIKSHA helps improve the overall education system and ensures that learning is accessible to everyone, irrespective of location or financial status. There is also an app in google play store, where you can download and use it for video lectures and reading material.

Website: https://diksha.gov.in/

1.3 e-Pathashala (https://epathshala.nic.in/):
  - NCERT textbooks, audio, and video resources.

1.4 NIOS (National Institute of Open Schooling)

It is an educational organization under the **Ministry of Education, Government of India**, that provides opportunities for students who wish to pursue school education in a flexible and open learning environment. NIOS is one of the largest open schooling systems in the world, offering courses at the **secondary (Class 10)** and **senior secondary (Class 12)** levels.

NIOS Website: https://www.nios.ac.in
NIOS Youtube Channel for learning
:https://www.youtube.com/@nationalinstituteofopensch3427/playlists

Key Features of NIOS:

1. **Open and Flexible Learning**:
   o NIOS offers a **flexible learning system** that caters to students who cannot attend traditional schools due to various reasons such as geographical constraints, financial limitations, health issues, or other personal reasons.
   o It allows students to study at their own pace and schedule.

2. **Wide Range of Courses**:
   o NIOS offers **academic courses** in various streams, including:
     ▪ **Secondary (Class 10)**
     ▪ **Senior Secondary (Class 12)**
     ▪ Subjects include Mathematics, Science, Social Science, English, Hindi, Languages, and more.
   o NIOS also offers **vocational courses**, including courses in skills development, technical education, and various other trades.
   o Special **bridging courses** are available for students who want to re-enter the formal education system after a break.

3. **Examinations**:
   o NIOS conducts **public examinations** twice a year (in **April-May** and **October-November**). Students can register for these exams based on their individual schedule and readiness.
   o The examination system allows flexibility, enabling students to appear for the exams after they feel adequately prepared.

4. **Certification**:
   o Upon successful completion of the courses and exams, NIOS provides certification, which is recognized by **all universities, colleges, and employers** in India and abroad.
   o The certificates issued by NIOS are equivalent to the certificates issued by other boards like **CBSE (Central Board of Secondary Education)** and **ICSE (Indian Certificate of Secondary Education)**.

5. **Accessibility**:
   o NIOS provides **education in multiple languages**, ensuring that students from diverse linguistic backgrounds can access learning in their preferred language.

- o It offers education through both **online** and **offline** modes, allowing students to choose the mode that best suits their learning style.
6. **Inclusion**:
   - o NIOS is an inclusive system that supports **different categories of learners**, including:
     - ▪ **Women and girls** who need to balance education with family responsibilities.
     - ▪ **Children with special needs**.
     - ▪ **Workers** who want to pursue education while being employed.
     - ▪ **Migrants** and students in remote areas who do not have access to traditional schools.
7. **Academic Support**:
   - o NIOS provides **study materials** in printed and digital formats, which are available through the NIOS website and regional centers.
   - o The study material is designed to be easy to understand and suitable for self-study.
   - o **Online learning** resources, video lessons, and interactive content are available for students to enhance their understanding.

1.5 NMEICT – Unlocking India's Digital Education Gateway

1. Introduction

The **National Mission on Education through Information and Communication Technology (NMEICT)** is a flagship initiative of the Ministry of Education, Government of India. Its aim is to provide **quality education to all learners—from school to postgraduate level**—using digital platforms, online courses, and ICT-enabled tools.

Website: The official portal nmeict.ac.in acts as a **single-window gateway** to all these resources.

2. Facilities of the NMEICT Website

The website is structured to make it easy for **students, teachers, researchers, and administrators** to access resources.

a) Learning Platforms

- **SWAYAM** – Online courses from school to postgraduate level.
- **SWAYAM Prabha** – 40+ DTH TV channels delivering 24x7 educational content.
- **National Digital Library of India (NDLI)** – Millions of e-books, articles, theses, and journals.
- **eGyanKosh** – IGNOU's open learning resources.

b) Skill Development & Practical Learning

- **Spoken Tutorial** – Self-learning modules for software and IT skills.
- **FOSSEE** – Free and Open Source Software for Education.
- **Virtual Labs** – Online simulation of science and engineering experiments.
- **e-Yantra** – Robotics education and projects.

c) Research & Higher Education Support

- **e-ShodhSindhu** – Access to academic journals and e-resources.
- **VIDWAN** – Database of researchers and experts.
- **Shodhganga** – Indian theses repository.
- **Baadal** – Cloud services for academic institutions.

3. Real-World Navigation Tips

Here's how a student or teacher can practically use the site:

1. **Finding Free Online Courses (SWAYAM)**
   o Visit **nmeict.ac.in** → Click **SWAYAM** under "Undergraduate/Postgraduate".
   o Browse categories like Engineering, Science, Humanities, and Commerce.
   o Enroll using your email or Aadhaar-linked ID.
2. **Watching Educational TV Channels (SWAYAM Prabha)**
   o On the home page, select **SWAYAM Prabha**.
   o You'll see the list of channels broadcasting lectures (Class 9–12, IIT, NEET/JEE prep, UPSC, and more).
   o Access via **DTH (Tata Sky, Airtel, DD FreeDish)** or live stream.

3. **Exploring Digital Library (NDLI)**
   - Click **NDLI** from the website.
   - Sign up for free using your email ID.
   - Search millions of resources filtered by subject, level (School, UG, PG, Research), and type (Books, Videos, Papers).

4. **Performing Science Experiments Virtually (Virtual Labs)**
   - Navigate to **Virtual Labs** from NMEICT.
   - Choose subject area (Physics, Chemistry, Electrical, Civil, etc.).
   - Perform simulations of experiments step by step, useful for lab-constrained institutions.

5. **Learning Software Skills (Spoken Tutorial)**
   - Select **Spoken Tutorial** from the portal.
   - Choose from Python, C, Linux, LaTeX, Excel, Java, Blender, etc.
   - Download tutorials in English or regional languages.

6. **Accessing Journals (e-ShodhSindhu)**
   - For college/university students, click **e-ShodhSindhu**.
   - Institutions registered under UGC can log in to access thousands of research papers and databases.

4. Why This Website is Important

- **One-Stop Solution**: All government-backed digital learning platforms in one place.
- **Free Access**: Most services are **100% free** for Indian learners.
- **Multilingual Content**: Resources are available in English, Hindi, and regional languages.
- **Bridging Rural–Urban Gap**: Especially beneficial for students from rural areas without access to coaching or libraries.

5. Conclusion

The NMEICT website is not just a digital catalog—it is a **gateway to India's vision of inclusive education**. Whether you are a school student preparing for board exams, an engineering student exploring virtual labs, a researcher looking for journals, or a teacher searching for open resources—**NMEICT brings everything under one umbrella**.

By using this portal effectively, learners can **replace dependence on expensive private coaching and paid resources** with **free, high-quality, government-backed education tools**.

1.6 Khan Academy:

Khan Academy is a nonprofit educational platform that offers free online courses, lessons, and practice exercises. It aims to provide a world-class education to anyone, anywhere, for free. Founded by Sal Khan in 2008, the platform offers high-quality, interactive learning resources primarily in subjects such as mathematics, science, economics, history, and more.

Key Features of Khan Academy:

Comprehensive Subjects:

- **Mathematics**: Covers everything from basic arithmetic to advanced calculus and linear algebra.
- **Science**: Includes subjects like Physics, Chemistry, Biology, and more.
- **Economics and Finance**: Offers lessons on microeconomics, macroeconomics, personal finance, and more.
- **Humanities**: Covers topics like History, Art History, and Social Studies.
- **Computer Programming**: Provides beginner to advanced courses in computer science and coding languages such as JavaScript and SQL.
- **Test Preparation**: Offers free preparation resources for standardized tests like the SAT, LSAT, IIT JEE and others.

- **Website**: https://www.khanacademy.org
- **Features**:
  - Video lessons for Classes 1 to 12.
  - Interactive exercises and quizzes.
  - Personalized learning dashboard to track progress.
  - Youtube: https://www.youtube.com/@khanacademy/playlists
  - Download the app**:** Google Play Store (Android) | Apple App Store (iOS)
  - For interactive learning to there is a great website from Khan academy https://learn.khanacademy.org/khan-academy-kids/

1.7 **Magnet Brains:-**

Founded in 2013 by Neeraj and Pankaj Agarwal in Bhopal, India, is a 100% free online education platform offering courses for K-12 students (CBSE/NCERT, UP Board, Bihar Board, MP Board) in English and Hindi, covering subjects like Math, Physics, Chemistry, Biology, Political Science, Geography, Economics, Hindi, English, and specialized topics like Artificial Intelligence, Psychology, and Sanskrit. It also provides preparation for competitive exams such as IIT JEE, NEET, UPSC, SSC, Banking, and Olympiads/NTSE/CUET, with resources like video lectures, daily practice problems, MCQs, live doubt-solving, and e-books. The platform, accessible via its website and Android app serves over 50 million monthly learners, emphasizing high-quality, subscription-free content to make education accessible.

https://www.magnetbrains.com/

https://www.youtube.com/channel/UC3HS6gQ79jjn4xHxogw0HiA

https://www.youtube.com/@magnetbrainscompetition

https://www.youtube.com/channel/UCwO6AYOIRYgyP1KJ5aPbDlw

1.8 UNICEF Career Guidance Portal:-

This is actually a **career guidance portal** for **Indian Students** by the **Department of School Education and Literacy, Ministry of Education**, in collaboration with **UNICEF India** and **NCERT**. This Portal **500 detailed "Career Choices"** designed to help school students make informed decisions about their future. This portal cover information on responsibilities, qualifications, and potential career paths, and are aligned with the **National Education Policy (NEP) 2020** framework.

https://careerguidance.unilearn.org.in/

1.9 Different resources for individual subjects

Science Stream (Physics, Chemistry, Math, Biology)
Physics

- **Khan Academy** (https://www.khanacademy.org/):
  - Free video lessons and practice exercises for Chemistry.
- **Physics Classroom** (https://www.physicsclassroom.com/):

- **Youtube:** [The Physics Classroom - YouTube](#)

Chemistry

- **Khan Academy** (https://www.khanacademy.org/):
    - Free video lessons and practice exercises for Chemistry.
- **OLabs** (https://www.olabs.edu.in/):
    - Virtual labs for Chemistry experiments.

Math

- **Khan Academy** (https://www.khanacademy.org/):
    - Free video lessons and practice exercises for Math.

- **Math centre from UK(**https://www.mathcentre.ac.uk/**)**

    - Free video lessons and Books and exercises for Math

- **From BSc Data Science IIT Madras:-**
  https://www.youtube.com/playlist?list=PLZ2ps__7DhBZYDZo9A0pZ_i0xhstrk5cR

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBYrMs3zybOqr1DzMFCX49xG

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBboGlwPVSsWP8loAJCLrKc8

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBbLZ6RdNTIXvFdaMpvqagt0

- **Lectures form Prof.robbob** (https://www.profrobbob.com/)

- **GeoGebra** (https://www.geogebra.org/):
    - Interactive Math tools for geometry, algebra, and calculus.

Biology

- **Khan Academy** (https://www.khanacademy.org/):
    - Free video lessons and practice exercises for Biology.
- **Amoeba Sisters** (https://www.youtube.com/c/AmoebaSisters):
    - Fun and engaging Biology videos on YouTube.
- **OLabs** (https://www.olabs.edu.in/):
    - Virtual labs for Biology experiments.

Accountancy, Economics, Business Studies, History, Geography, Political Science, Psychology

Accountancy
- **Meritnation** ([NCERT Solutions for CBSE 2024-25 - Merination](#)):
  - o Free NCERT solutions and revision notes.
  - o Youtube: [Meritnation - YouTube](#)

Economics

- **Khan Academy** (https://www.khanacademy.org/):
  - o Free video lessons and practice exercises for Economics.
- **Economics Discussion** (https://www.economicsdiscussion.net/):
  - o Free articles and resources for Economics.

Business Studies

- **Toppr** (https://www.toppr.com/):
  - o Free video lessons and practice questions for Business Studies.
- **Meritnation** (https://www.meritnation.com/):
  - o Free NCERT solutions and revision notes.

History

- **CrashCourse** (https://www.youtube.com/c/crashcourse):
  - o Free YouTube channel for History.
- **World History Encyclopedia** (https://www.worldhistory.org/):
  - o Free resources for learning history.

Geography
- **World Geography Games** (https://world-geography-games.com/):
  - o Fun games to learn geography.
- **National Geographic Education** (https://www.nationalgeographic.org/education/):
  - o Free resources for Geography.

Political Science

- **CrashCourse** (https://www.youtube.com/c/crashcourse):
  - o Free YouTube channel for Political Science.
- **Political Science Notes** (https://www.politicalsciencenotes.com/):

o   Free articles and resources.

Psychology

- **Khan Academy** (https://www.khanacademy.org/):
    o   Free video lessons and practice exercises for Psychology.
- **Simply Psychology** (https://www.simplypsychology.org/):
    o   Free articles and resources.

General Resources for All Classes

1. Practice and Revision

- **OLabs** (https://www.olabs.edu.in/):
    o   Free virtual labs for Science and Math experiments.
- **CBSE Sample Papers** (https://cbseacademic.nic.in/):
    o   Free sample papers and marking schemes for Classes 1 to 10.
- **Quizizz** (https://quizizz.com/):
    o   Free quizzes for practice and revision.

2. Coding and Technology

- **Code.org** (https://code.org/):
    o   Free coding resources for beginners.
- **Scratch** (https://scratch.mit.edu/):
    o   Free platform to learn coding through games.

3. YouTube Channels

- **Pebbles CBSE Board Syllabus** (https://www.youtube.com/user/PebblesKidsLearning):
    o   Free video tutorials for CBSE students.
- **LearnFatafat** (https://www.youtube.com/c/LearnFatafat):
    o   Animated video lessons for all classes.

4. E-Libraries and eBooks

- **National Digital Library of India** (https://ndl.iitkgp.ac.in/):
    o   Free access to textbooks, videos, and other educational resources.
- **OpenStax** (https://openstax.org/):
    o   Free peer-reviewed textbooks for college and high school students.

5. Additional Resources

- **TED-Ed** (https://ed.ted.com/):
  - o Free educational videos on a wide range of topics.
- **CrashCourse Kids** (https://www.youtube.com/c/crashcoursekids):
  - o Free YouTube channel for Science and Social Studies.

1.10 Government of India Initiative for competitive Exams

Government of India Initiatives for Class 11th and 12th

1) IIT-PAL (IIT-Professor Assisted Learning) is an initiative by the **Government of India** to provide free, high-quality educational resources for Class 11 and 12 students preparing for **competitive exams like JEE and NEET**. The program is designed and delivered by **IIT professors** and aims to make learning accessible to all students, especially those who cannot afford expensive coaching.

What is IIT-PAL?
- **Objective**: To provide free, high-quality video lectures and study materials for Class 11 and 12 students preparing for JEE, NEET, and board exams.
- **Developed by**: Professors from **IITs** and other premier institutions.
- **Subjects Covered**: Physics, Chemistry, Mathematics, and Biology.
- **Platform**: Available on **YouTube** and the **SWAYAM Prabha** DTH channels.
- **Website**: https://iitpal.iitd.ac.in/
- Content: Physics:193 videos/ Maths:218 videos/ Chemistry:146 videos/ Biology:120 videos
- IITPal lectures are telecast on Swayam Prabha Channels. Channel no 22 has been allocated for this.https://www.swayamprabha.gov.in/index.php/channel_profile/profile/22

2) **SATHEE:** Sathee is an **AI-based learning platform** that focuses on helping students prepare for competitive exams and board exams.(https://sathee.iitk.ac.in/)

It offers:

- **Personalized learning paths** based on the student's strengths and weaknesses.
- **AI-powered doubt-solving** for instant answers to questions.
- **Practice questions and mock tests** for JEE, NEET, CUET,ICAR, Statff Selection, Banking and board exams.
- **Performance analysis** to track progress.

3) Swayam Prabha :- DTH channels bringing quality education from leading and professors directly to your home, completely free of cost.

Website:- [Swayam Prabha | Educational DTH channels | India](#)

4) Test Practice

- E-Abhyas is a personalised adaptive learning platform for students taking competitive exams – JEE and NEET - conducted by the National Testing Agency.

- The App will publish one full test every day for preparation in both English and Hindi. https://www.nta.ac.in/abhyas

Other Important Resources
Prof. HC VERMA CLASSES:

1) https://www.youtube.com/@PrutorAi/search?query=VERMA

2) https://www.hcverma.in/videos-lectures

3) https://www.youtube.com/@hcverma2928/playlists

Mohit Tyagi Mathematics

https://www.youtube.com/@MohitTyagi/playlists

Physics Galaxy

https://www.youtube.com/@physicsgalaxyworld/playlists

Khan Academy

https://www.khanacademy.org/

Lectures by Walter Lewin.

https://www.youtube.com/@lecturesbywalterlewin.they9259/playlists

UNACADEMY IIT JEE

https://www.youtube.com/@UnacademyJEE/playlists

UNACADEMY NEET

https://www.youtube.com/@UnacademyNEET

Physics Wallah - Alakh Pandey

https://www.youtube.com/@PhysicsWallah/playlists

Physics Wallah IIT JEE

https://www.youtube.com/@PW-JEEWallah/playlists

Physics Wallah NEET

https://www.youtube.com/@PW-NEETWallah

LEARN HUB (Learnohub)

Free video lessons for CBSE and competitive exams.
Youtube channel:- LearnoHub - Class 11, 12 - YouTube
Meritnation

 (NCERT Solutions for CBSE 2024-25 - Merination):

o   Free NCERT solutions and revision notes.
o   Youtube: Meritnation - YouTube

Vedantu JEE

https://www.youtube.com/@VedantuMath/playlists

https://www.youtube.com/@JEEVedantu

For free JEE preparation videos.

Vedantu NEET

https://www.youtube.com/@NEETEnglish/playlists

https://www.youtube.com/@NEETEnglish

https://www.youtube.com/@VedantuSankalpNEET

Chapter 2
Academic Resources for Engineering Students

Engineering students often face the challenge of finding high-quality, affordable resources to supplement their studies. Fortunately, there are numerous free online platforms, tools, and communities that cater specifically to engineering disciplines. This chapter provides a detailed list of free resources for engineering students in India, covering core subjects, coding, project ideas, and competitive exam preparation.

1. Online Learning Platforms

Common Platforms for all Engineering Courses

1. **NPTEL (National Programme on Technology Enhanced Learning)**: It is one of India's largest digital education initiatives. It was launched in 2003 by the **Indian Institutes of Technology (IITs)** and the **Indian Institute of Science (IISc)**, with support from the Ministry of Education, Government of India. The main goal of NPTEL is to make high-quality education in engineering, science, and humanities accessible to everyone, regardless of location or financial background.

Website:- https://nptel.ac.in/

Mission and Vision

NPTEL's vision is ***"to bring the knowledge and teaching resources of premier Indian institutions to the doorstep of every learner."*** It seeks to bridge the gap between urban and rural students by providing free access to top-quality lectures.

Courses Offered

NPTEL has evolved into a vast digital library of academic and professional courses, covering:

- **Engineering & Technology:** Core subjects like Civil, Electrical, Mechanical, Computer Science, Electronics, and more.
- **Science:** Physics, Chemistry, Biology, Mathematics.
- **Humanities & Social Sciences:** English, Economics, Philosophy, and Sociology.
- **Management & Entrepreneurship:** Business studies, finance, and start-up guidance.
- **Multidisciplinary Courses:** Data Science, Artificial Intelligence, Cloud Computing, Environmental Studies, etc.

Learning Format

- **Video Lectures:** Recorded by IIT and IISc professors.
- **Assignments:** Weekly practice questions to reinforce learning.

- **Exams & Certification:** Learners can register for proctored exams held at designated centers across India. Successful candidates receive an **NPTEL certificate**, which is widely recognized by universities and employers.
- **Open Access:** Most content is freely available online through YouTube and the official NPTEL website.

NPTEL and SWAYAM

NPTEL is also a key part of **SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds)**, the Government of India's online learning platform. Through SWAYAM, students can even earn academic credits for NPTEL courses, which are transferable to their university degrees.

Website:- https://swayam.gov.in/

Benefits of NPTEL

- **Free Quality Education:** World-class lectures accessible to all.
- **Language Support:** Many courses are now available in regional Indian languages.
- **Industry-Relevant:** Skill-oriented courses such as Artificial Intelligence, Programming, and Data Analytics.
- **Career Advantage:** NPTEL certificates are valued in job applications and higher studies.
- **Flexibility:** Learn anytime, anywhere, at one's own pace.

Impact in India

- More than **2,000+ courses** across multiple disciplines.
- Over **1.5 crore enrollments** from students, professionals, and lifelong learners.
- Partnerships with industries to align skills with employment needs.
- Adopted by many colleges as supplementary learning material.

2. **NMEICT – Unlocking India's Digital Education Gateway**

The **National Mission on Education through Information and Communication Technology (NMEICT)** is a flagship initiative of the Ministry of Education, Government of India. Its aim is to provide **quality education to all learners—from school to postgraduate level**—using digital

platforms, online courses, and ICT-enabled tools. Please explore this website. You will get great learning experience.

Website: The official portal nmeict.ac.in acts as a **single-window gateway** to all these resources.

3. **edX :-** edX is one of the world's leading online education platforms, founded in 2012 by Harvard University and the Massachusetts Institute of Technology (MIT). It was created with the vision of making high-quality education from top universities and institutions available to learners everywhere. Today, edX offers thousands of courses across diverse subjects, serving millions of students worldwide.

Website: [edx.org](edx.org)

Mission and Vision

edX's mission is *"to increase access to high-quality education for everyone, everywhere."* It emphasizes affordability, flexibility, and career-oriented learning, allowing students to learn from some of the best universities and companies in the world.

Courses and Programs Offered

edX provides a wide variety of learning opportunities, including:

- **University-Level Courses:** Subjects ranging from Engineering, Science, and Computer Programming to Humanities, Business, and Social Sciences.
- **Professional Certificates:** Industry-recognized programs in Data Science, Cybersecurity, Artificial Intelligence, Business Management, etc.
- **MicroMasters Programs:** Series of graduate-level courses that can contribute towards a Master's degree at partner universities.
- **Master's Degrees:** Affordable, fully online Master's programs in collaboration with global universities.
- **Skill-Based Learning:** Courses in communication, leadership, critical thinking, and entrepreneurship.

Learning Approach

- **Flexible & Self-Paced:** Learners can study at their convenience.
- **Interactive Content:** Video lectures, quizzes, assignments, and peer discussions.
- **Verified Certificates:** Available for a fee, providing credibility for career advancement.
- **Free Access:** Most courses can be audited for free, making knowledge accessible to all.

Partnerships and Reach

- Partnered with **over 160 institutions**, including Harvard, MIT, Oxford, IITs, IIMs, and industry leaders like Microsoft, IBM, and Google.
- Millions of learners from across the world, including a significant number from India.
- Collaboration with Indian institutions helps bring global-quality learning closer to Indian students.

Benefits of edX

- **Global Quality:** Learn directly from leading universities and experts.
- **Career-Oriented:** Courses aligned with skills demanded in the job market.
- **Affordable Degrees:** Online Master's programs cost significantly less than traditional on-campus ones.
- **Language and Diversity:** Content from international universities makes students globally competitive.
- **Accessible Anywhere:** Requires only internet connectivity, making it useful for students in both cities and rural areas.

edX for Indian Learners

- Popular among students preparing for **placements, competitive exams, and higher education abroad**.
- Courses on Data Science, AI, and Programming are especially valuable for engineering students.
- Business and management programs benefit working professionals seeking growth.
- Many universities in India now recognize edX certifications for credit transfers.

4. **Coursera**: It is one of the world's most popular online learning platforms, founded in 2012 by two Stanford University professors, Andrew Ng and Daphne Koller. The platform partners with leading universities and organizations to provide affordable, flexible, and career-oriented online courses to learners worldwide. Today, Coursera has grown into a hub for millions of students, professionals, and lifelong learners.

   Website:- https://www.coursera.org/

Mission and Vision

Coursera's mission is **"to provide universal access to the world's best education**.*"* It aims to connect learners with knowledge and skills that directly improve their academic, professional, and personal growth.

Courses and Programs Offered

Coursera provides a wide range of programs, including:

- **Individual Courses:** Covering subjects like Computer Science, Engineering, Data Science, Health, Humanities, Business, and Languages.
- **Specializations:** A series of related courses designed to build expertise in areas like Artificial Intelligence, Cloud Computing, or Marketing.
- **Professional Certificates:** Developed with industry leaders such as Google, IBM, and Meta, these programs focus on job-ready skills like IT support, Data Analytics, UX Design, and Project Management.
- **Guided Projects:** Short, hands-on projects that allow learners to practice specific tools and skills.
- **Degrees:** Fully online Bachelor's and Master's degree programs offered by universities at comparatively lower costs.

Learning Approach

- **Flexible & Self-Paced:** Learners can set their own schedule.
- **Interactive Content:** Video lectures, quizzes, peer-reviewed assignments, and real-world projects.

- **Certification:** Paid certificates add value to resumes and LinkedIn profiles.
- **Mobile-Friendly:** The Coursera app makes learning easy on the go.

Partnerships and Reach

- Collaborates with **more than 300 universities and companies** worldwide, including Stanford, Yale, University of London, IITs, and industry leaders like Google, Amazon, and IBM.
- Over **120 million registered learners** globally.
- Provides government and institutional partnerships, including collaborations with the Government of India under the **Skill India initiative**.

Benefits of Coursera

- **Industry-Relevant:** Courses are designed with real-world applications in mind.
- **Career-Oriented:** Especially useful for professionals looking to upskill or switch careers.
- **Affordable Education:** Many courses are free to audit; financial aid is also available.
- **Recognized Certificates:** Widely accepted by employers.
- **Global Exposure:** Access to top global faculty and peer learning opportunities.

Coursera for Indian Learners

- Widely used by engineering and management students to supplement classroom learning.
- Professional certificates from **Google, IBM, and Meta** are highly valued in IT and business job markets.
- Coursera's partnerships with Indian institutions bring global-quality content to Indian classrooms.

5. **MIT OpenCourseWare** (OCW):- **It is** a groundbreaking digital learning initiative launched in 2001 by the **Massachusetts Institute of Technology (MIT)**. It makes almost all of MIT's undergraduate and graduate-level course materials freely available to anyone, anywhere in the world. This includes lecture notes, assignments, exams, and in many cases, recorded video lectures from real MIT classes.
   - **Website**: ocw.mit.edu

- https://openlearning.mit.edu/?utm_source=youtube&utm_medium=channel&utm_campaign=ol
- **YouTube:**- https://www.youtube.com/@mitocw
- **What it offers**: Free lecture notes, videos, and assignments from MIT courses.

Mission and Vision

The vision of MIT OCW is simple yet powerful: ***"to unlock MIT's knowledge and share it openly with the world."*** It aims to break barriers of cost, location, and access, bringing world-class education to learners who otherwise may never set foot in an MIT classroom.

Courses Offered

MIT OCW covers a vast range of academic fields:

- **Engineering & Technology:** Mechanical, Civil, Electrical, Computer Science, Aeronautics, and more.
- **Science & Mathematics:** Physics, Chemistry, Biology, and Mathematics (famous courses like *Linear Algebra (18.06)* and *Single Variable Calculus (18.01)* are widely used by learners worldwide).
- **Management & Economics:** Courses from the MIT Sloan School of Management.
- **Humanities, Arts & Social Sciences:** Literature, History, Philosophy, Linguistics, and Political Science.
- **Special Programs:** Interdisciplinary studies and research-focused courses.

Features of MIT OCW

- **Open Access:** 100% free to use, with no registration required.
- **Authentic Course Materials:** Syllabi, lecture slides, readings, problem sets, and solutions.
- **Video Lectures:** Available for many courses, often directly from MIT classrooms.
- **Self-Paced Learning:** Students can explore courses in their own time and order.
- **Creative Commons License:** Content can be downloaded, reused, and even remixed for educational purposes.

Recent Developments

- **NextGen OCW (2022):** MIT redesigned the platform to be mobile-friendly, with better search tools and easier navigation. Professors can now update content more frequently.
- **AI-Assisted Translations (2023–2024):** Using advanced dubbing and captioning tools, some MIT courses are now being translated into other languages with the aim of expanding global accessibility.
- **Community Impact:** OCW continues to inspire the Open Educational Resources (OER) movement, encouraging universities worldwide to share their content freely.

Benefits for Learners

- **For Students:** Helps in strengthening fundamentals for school, college, and competitive exams.
- **For Teachers:** Acts as a high-quality teaching resource to supplement classroom instruction.
- **For Professionals:** Provides opportunities for skill upgradation in areas like Computer Science, Data Science, and Business.
- **For Lifelong Learners:** Enables anyone to learn advanced topics purely out of interest.

Impact

- Over **2,500 courses** freely available.
- Accessed by millions of learners worldwide every year.
- Recognized as a leader in the global open education movement.

6. **Stanford Online**: (https://www.youtube.com/@stanfordonline/playlists)

You can gain access to a world of education through Stanford Online, the Stanford School of Engineering's portal for academic and professional education offered by schools and units throughout Stanford University.

Website:- https://online.stanford.edu/

7. **Yale Courses:**

Yale's philosophy of teaching and learning begins with the aim of training a broadly based, highly disciplined intellect without specifying in advance how that intellect will be used. The

Yale Courses channel provides entry into the core of the University--its classrooms and academic programs--including complete sets of lectures from the Open Yale Courses initiative. Complementary syllabi, transcripts, and other resources may also be accessed from the Open Yale Courses website listed below.

Website : https://online.yale.edu/

Youtube: https://www.youtube.com/@YaleCourses

8. **Harvard University Courses:-** Harvard University, one of the most prestigious institutions in the world, offers a wide range of **free online courses** through platforms such as **Harvard Online, edX, and HarvardX**. These courses make high-quality Ivy League education accessible to learners across the globe, including students and professionals in India, without the need to step onto the Harvard campus.

    Website:- https://www.youtube.com/@harvard/playlists

    https://pll.harvard.edu/catalog/free

    https://www.harvardonline.harvard.edu/search/courses?q=Free+Courses

    https://www.youtube.com/@HarvardOnline/playlists

    https://www.youtube.com/@cs50/playlists

    https://www.youtube.com/@HMSContinuingEd/playlists

9. **Mathematics Lectures from Oxford University:**

    Oxford Mathematics - YouTube

    https://www.youtube.com/playlist?list=PL4d5ZtfQonW0A4VHeiY0gSkX1QEraaacE

10. **UNESCO Open Learning Courses:-**

    https://openlearning.unesco.org/courses

11. **Gate Preparation using NPTEL**

    NPTEL has launched a **dedicated GATE Portal** with video solutions, question discussions, test series and structured playlists mapped to the GATE syllabus.

    https://gate.nptel.ac.in/

Subject-Specific Resources

1. Computer Science and Programming

Computer Science Engineering (CSE) is a dynamic field that requires continuous learning and hands-on practice. Fortunately, there are countless free resources available online to help students master programming, software development, data science, artificial intelligence, and more. This chapter provides a detailed list of free resources tailored specifically for CSE students in India.

1. **NPTEL (National Programme on Technology Enhanced Learning)**
   - **Website**: nptel.ac.in
   - **What it offers**: Free courses from IITs and IISc in Computer Science and related fields.
   - **Certification**: Free (with optional paid certification).
2. **MIT OpenCourseWare**
   - **Website**: ocw.mit.edu
   - **What it offers**: Free lecture notes, videos, and assignments from MIT's Computer Science courses.
3. **Harvard CS50**
   - **Website**: cs50.harvard.edu
   - **What it offers**: Harvard's flagship introductory course to Computer Science, covering C, Python, SQL, JavaScript, and more.
   - **Why it's great**: Engaging lectures, hands-on problem sets, and a vibrant online community.
   - **Certification**: Free (with optional paid certificate).
4. **Stanford Online**
   - **Website**: online.stanford.edu
   - **What it offers**: Free courses like *Machine Learning* (by Andrew Ng) and *Introduction to Databases*.
5. **freeCodeCamp** (https://www.freecodecamp.org/):

o   Free coding tutorials and projects for web development, Python, JavaScript, and more.

6. **Codecademy** (https://www.codecademy.com/):

    o   Free coding lessons for beginners (premium content requires payment).

7. **Khan Academy** (https://www.khanacademy.org/):

    o   Free tutorials on computer programming and computer science concepts.

8. **GeeksforGeeks** (https://www.geeksforgeeks.org/):

    o   Free tutorials and articles on algorithms, data structures, and programming languages.

9. **W3Schools** (https://www.w3schools.com/):

    o   Free tutorials for web development (HTML, CSS, JavaScript, etc.).

    o   Free course materials for Computer Science and Electrical Engineering.

B. YouTube Channels for Core CS Concepts

1. **MIT OpenCourseWare**

    o   **Link**: YouTube Channel

    o   **What it offers**: Full-length lectures from MIT courses.

2. **CS50**

    o   **Link**: YouTube Channel

    o   **What it offers**: Full lectures from Harvard's CS50 course.

3. **NPTEL HRD**

    o   **Link**: YouTube Channel

    o   **What it offers**: Full-length lectures from NPTEL courses.

2. Programming and Coding

A. Free Coding Platforms

1. **freeCodeCamp**

    o   **Website**: freecodecamp.org

    o   **What it offers**: Interactive coding tutorials in HTML, CSS, JavaScript, Python, and more.

2. **HackerRank**

   o **Website**: hackerrank.com

   o **What it offers**: Practice coding problems and participate in coding challenges.

3. **LeetCode**

   o **Website**: leetcode.com

   o **What it offers**: Coding problems for interview preparation.

B. YouTube Channels for Coding

1. **CodeWithHarry**

   o **Link**: YouTube Channel

   o **What it offers**: Tutorials on Python, Java, C++, and web development.

2. **Telusko**

   o **Link**: YouTube Channel

   o **What it offers**: Java, Python, and Android development tutorials.

3. **Coding Ninjas**

   o **Link**: https://www.youtube.com/@CodingNinjasIndia/playlists

3. Data Science and Machine Learning

A. Free Resources

1. **Kaggle**

   o **Website**: kaggle.com

   o **What it offers**: Free datasets, notebooks, and competitions to practice data science.

2. **Google AI**

   o **Website**: ai.google

   o **What it offers**: Free resources and tutorials on AI and machine learning.

4. Competitive Programming

1. **Codeforces**

   o **Website**: codeforces.com

- o **What it offers**: Coding contests and practice problems.
  2. **TopCoder**
     - o **Website**: topcoder.com
     - o **What it offers**: Competitive programming challenges and competitions.

5. Open Source Contributions

1. **GitHub**
   - o **Website**: github.com
   - o **What it offers**: Collaborate on open-source projects and build a portfolio.

6. Free Tools and Software

1. **Visual Studio Code**
   - o **Website**: code.visualstudio.com
   - o **What it offers**: Free, open-source code editor.

7. Communities and Forums

1. **Stack Overflow**
   - o **Website**: stackoverflow.com
   - o **What it offers**: Q&A platform for coding and technical queries.

8. Free Certifications

1. **Google IT Support Professional Certificate (Coursera)**
   - o **Website**: coursera.org
   - o **What it offers**: Free with financial aid.
2. **Microsoft Learn**
   - o **Website**: learn.microsoft.com
   - o **What it offers**: Free certifications for Azure, AI, and more.

Why MIT OpenCourseWare, NPTEL, and Harvard CS50 Are Must-Haves

- **MIT OpenCourseWare**: Provides **world-class content** directly from MIT, covering advanced topics in Computer Science.
- **NPTEL**: Tailored for **Indian students**, with courses aligned to the Indian curriculum and taught by IIT professors.
- **Harvard CS50**: A **beginner-friendly yet comprehensive** introduction to Computer Science, perfect for building a strong foundation

2. Mechanical Engineering

Mechanical Engineering is a versatile field that combines principles of physics, mathematics, and material science to design, analyze, and manufacture mechanical systems. For Indian students, there are numerous free online resources to master core concepts, software tools, and practical skills. This chapter provides a detailed list of free resources tailored specifically for Mechanical Engineering students in India.

1. Core Mechanical Engineering Subjects

A. Free Courses from Top Platforms
1. **NPTEL (National Programme on Technology Enhanced Learning)**
    - **Website**: nptel.ac.in
    - **What it offers**: Free courses from IITs and IISc in Mechanical Engineering
    - **Certification**: Free (with optional paid certification).
2. **MIT OpenCourseWare**
    - **Website**: [ocw.mit.edu](ocw.mit.edu)
    - **What it offers**: Free lecture notes, videos, and assignments from MIT's Mechanical Engineering courses.
3. **Coursera (with Financial Aid)**
    - **Website**: coursera.org
    - **What it offers**: Free courses in Mechanical Engineering topics like Robotics, CAD, and Manufacturing.
    - **Certification**: Apply for financial aid to get free certificates.

4. **edX**

   o **Website**: [edx.org](edx.org)

   o **What it offers**: Free courses from top universities like MIT, Purdue, and IIT Bombay.

5. **SWAYAM**

   o **Website**: swayam.gov.in

   o **What it offers**: Free courses aligned with the Indian curriculum, including Mechanical Engineering subjects.

B. YouTube Channels for Core Mechanical Engineering

1. **NPTEL HRD**

   o **Link**: YouTube Channel

   o **What it offers**: Full-length lectures from NPTEL courses.

2. **Lesics**

   o **Link**: YouTube Channel

   o **What it offers**: Animated explanations of Mechanical Engineering concepts like engines, gears, and thermodynamics.

3. **Ekeeda**

   o **Link**: YouTube Channel

   o **What it offers**: Tutorials on subjects like Thermodynamics, Fluid Mechanics, and Machine Design and more.

2. CAD and Design Tools

A. Free Software and Tutorials

1. **Fusion 360 (Free for Students)**

   o **Website**: autodesk.com

   o **What it offers**: Free CAD software for 3D modeling and simulation.

2. **FreeCAD**

   o **Website**: freecadweb.org

   o **What it offers**: Open-source parametric 3D CAD tool.

3. **Onshape (Free for Students)**

- o **Website**: https://www.onshape.com/en/
- o **What it offers**: Cloud-based CAD software for collaborative design.

B. YouTube Channels for CAD and Design

1. **Product Design Online**

   - o **Link**: YouTube Channel
   - o **What it offers**: Tutorials on Fusion 360 and other CAD tools.

2. **The Fusion Essentials**

   - o **Link**: YouTube Channel
   - o **What it offers**: Beginner to advanced Fusion 360 tutorials.

3. Simulation and Analysis Tools

1. **Ansys Student**

   - o **Website**: ansys.com
   - o **What it offers**: Free simulation software for structural, thermal, and fluid analysis.

2. **SimScale**

   - o **Website**: simscale.com
   - o **What it offers**: Cloud-based simulation platform with a free tier for students.

3. **OpenFOAM**

   - o **Website**: openfoam.com
   - o **What it offers**: Open-source computational fluid dynamics (CFD) software.

4. Manufacturing and Robotics

A. Free Resources

1. **MIT OpenCourseWare - Manufacturing**

   - o **Website**: ocw.mit.edu
   - o **What it offers**: Free courses on manufacturing processes and systems.

2. **Robotics: University of Pennsylvania (Coursera)**

   - o **Website**: coursera.org
   - o **What it offers**: Free course on robotics with financial aid.

3. **Additive Manufacturing (3D Printing)**

- o **Website**: all3dp.com
- o **What it offers**: Free guides and tutorials on 3D printing.

B. YouTube Channels for Manufacturing and Robotics

1. **NYC CNC**

   - o **Link**: YouTube Channel
   - o **What it offers**: Tutorials on CNC machining and manufacturing.

2. **Maker's Muse**

   - o **Link**: YouTube Channel
   - o **What it offers**: 3D printing tips and tutorials.

5. Open Source Contributions

1. **GitHub**

   - o **Website**: github.com
   - o **What it offers**: Collaborate on open-source projects related to Mechanical Engineering.

6. Free Tools and Software

1. **LibreCAD**

   - o **Website**: librecad.org
   - o **What it offers**: Free 2D CAD software.

2. **Scilab**

   - o **Website**: scilab.org
   - o **What it offers**: Free open-source software for numerical computation.

7. Communities and Forums

1. **Eng-Tips**

   - o **Website**: eng-tips.com
   - o **What it offers**: Q&A platform for Mechanical Engineering professionals and students.

2. **Reddit Communities**

    o   **Subreddits**: r/MechanicalEngineering, r/EngineeringStudents.

8. Free Certifications

1. **Autodesk Certified User (Free Training)**

    o   **Website**: autodesk.com

    o   **What it offers**: Free training resources for Autodesk software.

2. **Coursera (with Financial Aid)**

    o   **Website**: coursera.org

    o   **What it offers**: Free certifications for Mechanical Engineering courses.

3. Electrical, Electronics, and Communication Engineering

Electrical, Electronics, and Communication Engineering (EECE) is a multidisciplinary field that combines electrical systems, electronics, and communication technologies. For Indian students, there are numerous free online resources to master core concepts, software tools, and practical skills. This chapter provides a detailed list of free resources tailored specifically for EECE students in India.

1. Core EECE Subjects

A. Free Courses from Top Platforms

1. **NPTEL (National Programme on Technology Enhanced Learning)**

    o   **Website**: nptel.ac.in

    o   **What it offers**: Free courses from IITs and IISc

    o   **Certification**: Free (with optional paid certification).

2. **MIT OpenCourseWare**

    o   **Website**: [ocw.mit.edu](ocw.mit.edu)

    o   **What it offers**: Free lecture notes, videos, and assignments from MIT's EECE courses.

3. **Coursera (with Financial Aid)**

    o   **Website**: coursera.org

- o **What it offers**: Free courses in EECE
- o **Certification**: Apply for financial aid to get free certificates.

4. **edX**

- o **Website**: [edx.org](edx.org)
- o **What it offers**: Free courses from top universities like MIT, Stanford, and IIT Bombay.
- o **Popular Courses**:

5. **SWAYAM**

- o **Website**: swayam.gov.in
- o **What it offers**: Free courses aligned with the Indian curriculum, including EECE subjects.

B. YouTube Channels for Core EECE

1. **NPTEL HRD**

- o **Link**: YouTube Channel
- o **What it offers**: Full-length lectures from NPTEL courses.

2. **GreatScott!**

- o **Link**: YouTube Channel
- o **What it offers**: Tutorials on electronics projects, circuit design, and DIY experiments.

3. **ElectroBOOM**

- o **Link**: YouTube Channel
- o **What it offers**: Fun and educational videos on electrical and electronics concepts.

4. **All About Electronics**

- o **Link**: YouTube Channel
- o **What it offers**: Tutorials on analog and digital electronics, communication systems, and more.

2. Circuit Design and Simulation Tools

A. Free Software and Tutorials

1. **KiCad**

- o **Website**: kicad.org
- o **What it offers**: Free open-source software for PCB design.

2. **LTspice**

- o **Website**: analog.com
- o **What it offers**: Free circuit simulation software from Analog Devices.

3. **Proteus (Free Student Version)**

- o **Website**: labcenter.com
- o **What it offers**: Free version of Proteus for students to design and simulate circuits.

4. **Tinkercad**

- o **Website**: tinkercad.com
- o **What it offers**: Free online tool for circuit design and simulation.

B. YouTube Channels for Circuit Design

1. **GreatScott!**

- o **Link**: YouTube Channel
- o **What it offers**: Tutorials on circuit design and electronics projects.

2. **Andreas Spiess**

- o **Link**: YouTube Channel
- o **What it offers**: Tutorials on IoT, sensors, and circuit design.

3. Communication Systems and Signal Processing

A. Free Resources

1. **MIT OpenCourseWare - Signal Processing**

- o **Website**: ocw.mit.edu
- o **What it offers**: Free courses on digital signal processing and communication systems.

2. **Coursera - Digital Signal Processing**

- o **Website**: coursera.org
- o **What it offers**: Free courses on DSP with financial aid.

3. **NPTEL - Communication Systems**

- o **Website**: nptel.ac.in

o **What it offers**: Free courses on analog and digital communication systems.

B. YouTube Channels for Communication Systems

1. **DSP Related**

   o **Link**: [YouTube Channel](#)

   o **What it offers**: Tutorials on digital signal processing and MATLAB.

2. **All About Electronics**

   o **Link**: [YouTube Channel](#)

   o **What it offers**: Tutorials on communication systems and signal processing.

4. Embedded Systems and IoT

A. Free Resources

1. **Arduino**

   o **Website**: [arduino.cc](#)

   o **What it offers**: Free tutorials and resources for learning embedded systems and IoT.

2. **Embedded Systems - University of Texas (edX)**

   o **Website**: [edx.org](#)

   o **What it offers**: Free course on embedded systems design.

3. **IoT - Coursera**

   o **Website**: [coursera.org](#)

   o **What it offers**: Free courses on IoT with financial aid.

B. YouTube Channels for Embedded Systems

1. **Andreas Spiess**

   o **Link**: [YouTube Channel](#)

   o **What it offers**: Tutorials on IoT and embedded systems.

2. **Exploring Embedded**

   o **Link**: [YouTube Channel](#)

   o **What it offers**: Tutorials on ARM microcontrollers and embedded systems.

5. Open Source Contributions

1. **GitHub**

   o **Website**: github.com

   o **What it offers**: Collaborate on open-source projects related to EECE.

7. Free Tools and Software

1. **Octave**

   o **Website**: gnu.org/software/octave

   o **What it offers**: Free open-source alternative to MATLAB.

2. **Arduino IDE**

   o **Website**: arduino.cc

   o **What it offers**: Free software for programming Arduino boards.

8. Communities and Forums

1. **EEVblog**

   o **Website**: eevblog.com

   o **What it offers**: Forum for electronics enthusiasts and professionals.

2. **Reddit Communities**

   o **Subreddits**: r/ElectricalEngineering, r/ECE, r/embedded

4. Civil Engineering

Civil Engineering is a broad field that encompasses the design, construction, and maintenance of infrastructure like buildings, roads, bridges, and water systems. For Indian students, there are numerous free online resources to master core concepts, software tools, and practical skills. This chapter provides a detailed list of free resources tailored specifically for Civil Engineering students in India.

1. Core Civil Engineering Subjects

A. Free Courses from Top Platforms

1. **NPTEL (National Programme on Technology Enhanced Learning)**

- o **Website**: nptel.ac.in
- o **What it offers**: Free courses from IITs and IISc in Civil Engineering
- o **Certification**: Free (with optional paid certification).

2. **MIT OpenCourseWare**

   - o **Website**: ocw.mit.edu
   - o **What it offers**: Free lecture notes, videos, and assignments from MIT's Civil Engineering courses.

3. **Coursera (with Financial Aid)**

   - o **Website**: coursera.org
   - o **What it offers**: Free courses in Civil Engineering topics like Construction Management, Sustainable Building Design, and Water Resource Management.
   - o **Certification**: Apply for financial aid to get free certificates.

4. **edX**

   - o **Website**: edx.org
   - o **What it offers**: Free courses from top universities like MIT, Stanford, and IIT Bombay.

5. **SWAYAM**

   - o **Website**: swayam.gov.in
   - o **What it offers**: Free courses aligned with the Indian curriculum, including Civil Engineering subjects.

B. YouTube Channels for Core Civil Engineering

1. **NPTEL HRD**

   - o **Link**: YouTube Channel
   - o **What it offers**: Full-length lectures from NPTEL courses.

2. **Structurefree**

   - o **Link**: YouTube Channel
   - o **What it offers**: Tutorials on structural analysis, design, and engineering concepts.

3. **Practical Engineering**

   - o **Link**: YouTube Channel

- o **What it offers**: Simplified explanations of civil engineering concepts and real-world applications.
4. **Lectures from Ranadheer Sagi:-** My favorite faculty from my University RGUKT Basar
   - o **Link**: https://www.youtube.com/@rscreativeminds3238/playlists

2. Design and Analysis Tools

A. Free Software and Tutorials

1. **FreeCAD**
   - o **Website**: freecadweb.org
   - o **What it offers**: Free open-source software for 3D modeling and design.
2. **SketchUp Free**
   - o **Website**: sketchup.com
   - o **What it offers**: Free version of SketchUp for 3D modeling and design.
3. **LibreCAD**
   - o **Website**: librecad.org
   - o **What it offers**: Free open-source 2D CAD software.
4. **SAP2000 (Student Version)**
   - o **Website**: csiamerica.com
   - o **What it offers**: Free version of SAP2000 for structural analysis and design.

B. YouTube Channels for Design and Analysis

1. **Structurefree**
   - o **Link**: YouTube Channel
   - o **What it offers**: Tutorials on structural analysis and design software.
2. **The Structural World**
   - o **Link**: YouTube Channel
   - o **What it offers**: Tutorials on structural engineering concepts and software.
3. **Civil Engineering Academy**
   - o **Link**: Civil Engineering Academy - YouTube

7. Free Tools and Software

1. **QGIS**

    o **Website**: qgis.org

    o **What it offers**: Free open-source GIS software for mapping and spatial analysis.

2. **OpenRoads Designer (Student Version)**

    o **Website**: bentley.com

    o **What it offers**: Free version of OpenRoads for road design and analysis.

8. Communities and Forums

1. **Reddit Communities**

    o **Subreddits**: r/CivilEngineering, r/StructuralEngineering.

2. **The Constructor** (https://theconstructor.org/):

    o Free articles and resources for Civil Engineering.

5. Chemical Engineering

Chemical Engineering is a multidisciplinary field that combines principles of chemistry, physics, mathematics, and biology to design and optimize processes for producing chemicals, materials, and energy. For Indian students, there are numerous free online resources to master core concepts, software tools, and practical skills. This chapter provides a detailed list of free resources tailored specifically for Chemical Engineering students in India.

1. Core Chemical Engineering Subjects

A. Free Courses from Top Platforms

1. **NPTEL (National Programme on Technology Enhanced Learning)**

    o **Website**: nptel.ac.in

    o **What it offers**: Free courses from IITs and IISc in Chemical Engineering

    o **Certification**: Free (with optional paid certification).

2. **MIT OpenCourseWare**

    o **Website**: [ocw.mit.edu](ocw.mit.edu)

    o **What it offers**: Free lecture notes, videos, and assignments from MIT's Chemical Engineering courses.

3. **Coursera (with Financial Aid)**

   o **Website**: coursera.org

   o **What it offers**: Free courses in Chemical Engineering topics like Process Optimization, Polymer Science, and Renewable Energy.

   o **Certification**: Apply for financial aid to get free certificates.

   o

4. **edX**

   o **Website**: [edx.org](edx.org)

   o **What it offers**: Free courses from top universities like MIT, Stanford, and IIT Bombay.

5. **SWAYAM**

   o **Website**: swayam.gov.in

   o **What it offers**: Free courses aligned with the Indian curriculum, including Chemical Engineering subjects.

B. YouTube Channels for Core Chemical Engineering

1. **NPTEL HRD**

   o **Link**: YouTube Channel

   o **What it offers**: Full-length lectures from NPTEL courses.

2. **LearnChemE**

   o **Link**: LearnChemE - YouTube

   o **What it offers**: Tutorials on chemical engineering concepts like thermodynamics, fluid mechanics, and process control.

3. **The Chemical Engineering Guy**

   o **Link**: Chemical Engineering Guy - YouTube

   o **What it offers**: Simplified explanations of chemical engineering topics and career advice.

2. Process Simulation and Design Tools

A. Free Software and Tutorials

1. **DWSIM**

- o **Website**: dwsim.in
- o **What it offers**: Free open-source process simulation software.
2. **COCO Simulator**
   - o **Website**: cocosimulator.org
   - o **What it offers**: Free process simulation tool for chemical engineers.
3. **ChemSep**
   - o **Website**: chemsep.org
   - o **What it offers**: Free software for distillation and absorption process simulation.
4. **OpenModelica**
   - o **Website**: openmodelica.org
   - o **What it offers**: Free open-source modeling and simulation software.

3. Free Tools and Software

1. **Octave**
   - o **Website**: gnu.org/software/octave
   - o **What it offers**: Free open-source alternative to MATLAB.
2. **Cantera**
   - o **Website**: cantera.org
   - o **What it offers**: Free software for chemical kinetics and thermodynamics.

6. Material and Metallurgical Engineering:-

Materials and Metallurgical Engineering is a specialized field that focuses on the study of materials, their properties, and their applications in industries like manufacturing, aerospace, and energy. For Indian students, there are numerous free online resources to master core concepts, software tools, and practical skills. This chapter provides a detailed list of free resources tailored specifically for Materials and Metallurgical Engineering students in India.

1. Core Materials and Metallurgical Engineering Subjects

A. Free Courses from Top Platforms
1. **NPTEL (National Programme on Technology Enhanced Learning)**

- o **Website**: nptel.ac.in
- o **What it offers**: Free courses from IITs and IISc in Materials and Metallurgical Engineering
- o **Certification**: Free (with optional paid certification).

2. **MIT OpenCourseWare**

- o **Website**: ocw.mit.edu
- o **What it offers**: Free lecture notes, videos, and assignments from MIT's Materials Science and Engineering courses.
- o **Popular Courses**:
  - *Introduction to Solid-State Chemistry*
  - *Materials Processing*
  - *Mechanical Behavior of Materials*

3. **Coursera (with Financial Aid)**

- o **Website**: coursera.org
- o **What it offers**: Free courses in Materials and Metallurgical Engineering topics like Nanotechnology, Biomaterials, and Composite Materials.
- o **Certification**: Apply for financial aid to get free certificates.

4. **edX**

- o **Website**: edx.org
- o **What it offers**: Free courses from top universities like MIT, Stanford, and IIT Bombay.

5. **SWAYAM**

- o **Website**: swayam.gov.in
- o **What it offers**: Free courses aligned with the Indian curriculum, including Materials and Metallurgical Engineering subjects.

B. YouTube Channels for Core Materials and Metallurgical Engineering

1. **NPTEL HRD**

- o **Link**: YouTube Channel
- o **What it offers**: Full-length lectures from NPTEL courses.

2. **The Metallurgical Engineering**

- o **Link**: [Metallurgical Engineering - YouTube](#)
- o **What it offers**: Tutorials on metallurgical processes and corrosion engineering.

2. Materials Characterization and Simulation Tools

A. Free Software and Tutorials

1. **OOF2**

   - o **Website**: [ctcms.nist.gov/oof/oof2](#)
   - o **What it offers**: Free software for microstructure analysis and material property simulation.

2. **Avogadro**

   - o **Website**: [avogadro.cc](#)
   - o **What it offers**: Free open-source molecular modeling software.

3. **LAMMPS**

   - o **Website**: [lammps.sandia.gov](#)
   - o **What it offers**: Free open-source molecular dynamics simulator.

4. **Quantum ESPRESSO**

   - o **Website**: [quantum-espresso.org](#)
   - o **What it offers**: Free software for materials modeling and simulation.

6. Free Tools and Software

1. **Octave**

   - o **Website**: [gnu.org/software/octave](#)
   - o **What it offers**: Free open-source alternative to MATLAB.

2. **OpenCalphad**

   - o **Website**: [opencalphad.com](#)
   - o **What it offers**: Free software for thermodynamic calculations in materials science.

Chapter 3
Academic Resources for Architecture and Planning Students

Detailed list of free educational resources for students pursuing Architecture and Planning. These resources cover a wide range of topics, including **architectural design, urban planning, sustainable design, and construction technology**, and are ideal for students, professionals, and aspiring architects.

1. Online Learning Platforms

General Architecture and Planning

- **NPTEL (National Programme on Technology Enhanced Learning)**: Offers free online courses on architecture, urban planning, and sustainable development.
- NPTEL Architecture Courses

- **Coursera** (https://www.coursera.org/):
    - Free courses from top universities like Yale, University of Copenhagen, and others.
    - Popular courses: "Roman Architecture" (Yale University), "Sustainable Urban Development" (University of Copenhagen).
- **edX** (https://www.edx.org/):
    - Free courses from institutions like MIT, Delft University of Technology, and others.

- **FutureLearn** (https://www.futurelearn.com/):
  - Free courses on architecture and urban planning.
  - Popular courses: "Designing for Sustainable Cities" (University of Glasgow).
- **MIT OpenCourseWare (OCW)** (https://ocw.mit.edu/):
  - Free course materials for architecture and design, including urban planning and sustainable development.
- **Stanford Online** (https://online.stanford.edu/):
  - Free (audit) courses on sustainable cities, design thinking, and energy innovation.

2. Subject-Specific Resources

Architectural Design

- **Open Online Academy** (https://openonlineacademy.org/):
  - Free courses on architectural design and theory.
- **30X40 Design Workshop
  (YouTube)** (https://www.youtube.com/c/30X40DesignWorkshop):
  - Free tutorials and videos on architectural design.

Urban Planning

- **Urban Planning and Design** (https://www.urbanplanninganddesign.org/):
  - Free resources and tutorials on urban planning.
- **Planetizen Courses** (https://courses.planetizen.com/):
  - Free courses on urban planning and design.
- **City Beautiful (YouTube)** (https://www.youtube.com/c/CityBeautiful):
  - Free videos on urban planning and design.
- **Not Just Bikes (YouTube)** (https://www.youtube.com/c/NotJustBikes):
  - Free videos on urban planning and sustainable transportation.

Sustainable Design

- **Sustainable Design Masterclass** (https://www.sustainabledesignmasterclass.com/):
  - Free tutorials and resources on sustainable design.
- **Green Building Council** (https://www.usgbc.org/resources):

o   Free resources on green building and sustainable design.

Construction Technology

- **Construction Knowledge** (https://www.constructionknowledge.net/):

    o   Free resources and tutorials on construction technology.

- **Building Technology Educators' Society** (https://www.bte.org/):

    o   Free resources for learning about building technology.

3. Research and Academic Resources

Research Papers

- **Google Scholar** (https://scholar.google.com/):

    o   Free access to research papers and academic articles.

- **ResearchGate** (https://www.researchgate.net/):

    o   A platform to access and share research papers.

- **SSRN** (https://www.ssrn.com/):

    o   Free repository of research papers in architecture and planning.

E-Books

- **Project Gutenberg** (https://www.gutenberg.org/):

    o   Free access to classic architecture books.

- **OpenStax** (https://openstax.org/):

    o   Free peer-reviewed textbooks for architecture and planning.

- **Internet Archive** (https://archive.org/):

    o   A vast digital library offering free access to books, including textbooks on architecture and planning.

4. YouTube Channels

- **The Architectural Digest** (https://www.youtube.com/user/ArchitecturalDigest):

    o   Free videos on architecture and design.

- **Show It Better** (https://www.youtube.com/c/ShowItBetter):

      o   Free tutorials on architectural visualization and presentation.

5. Mobile Apps

- **Autodesk SketchBook**:
  - o Free drawing and sketching app for architects.
- **Morpholio Board**:
  - o Free app for creating mood boards and presentations.
- **Sun Seeker**:
  - o Free app for sun path analysis and solar studies.

6. Tools and Software

- **Blender** (https://www.blender.org/):
  - o Free 3D modeling and rendering software.
- **SketchUp Free** (https://www.sketchup.com/plans-and-pricing/sketchup-free):
  - o Free version of SketchUp for 3D modeling.
- **QGIS** (https://qgis.org/en/site/):
  - o Free and open-source geographic information system (GIS) software.

7. Communities and Forums

- **Reddit Communities**:
  - o Subreddits like r/architecture, r/urbanplanning, and r/landscapearchitecture.
- **Archinect** (https://archinect.com/):
  - o A forum for architects and designers.
- **SketchUp Community** (https://forums.sketchup.com/):
  - o A forum for SketchUp users.

8. Additional Resources

Books and E-Books
- **Project Gutenberg** (https://www.gutenberg.org/):

- o   Free access to classic architecture books.
- **OpenStax** (https://openstax.org/):
  - o   Free peer-reviewed textbooks for architecture and planning.

Podcasts

- **99% Invisible** (https://99percentinvisible.org/):
  - o   Free podcast on design and architecture.
- **The Urbanist** (https://monocle.com/radio/shows/the-urbanist/):
  - o   Free podcast on urban planning and design.

9. Government and NGO Resources

- **Ministry of Housing and Urban Affairs (MoHUA)** (https://mohua.gov.in/):
  - o   Provides reports, guidelines, and policies related to urban planning and development in India.
- **Smart Cities Mission** (https://smartcities.gov.in/):
  - o   Offers resources and case studies on smart city projects in India.

10. Professional Organizations

- **Council of Architecture (COA)** (https://www.coa.gov.in/):
  - o   Official website for architecture regulations and guidelines in India.
- **Indian Institute of Architects (IIA)** (https://www.iia-india.org/):
  - o   Offers resources, publications, and networking opportunities.

Chapter 4
Academic Resources for students pursuing undergraduate (BSc, BA) and postgraduate (MSc, MA) degrees

Detailed list of free educational resources for students pursuing undergraduate (BSc, BA,) and postgraduate (MSc, MA) degrees. These resources cover a wide range of subjects, including **Science, Arts, Commerce, and Humanities**, and provide access to courses, study materials, research papers, and more.

1. Online Learning Platforms

General Courses
- **SWAYAM** (https://swayam.gov.in/):
  - Free online courses by the Government of India, covering subjects like Science, Arts, Commerce, and Humanities.

- **e-PG Pathshala** (https://epgp.inflibnet.ac.in/):
  - Free postgraduate-level course materials in various disciplines, developed by the University Grants Commission (UGC).

- **Consortium for Educational Communication (CEC)**

  The **Consortium for Educational Communication (CEC)** is one of the **Inter-University Centres (IUCs) of the University Grants Commission (UGC)** in India. Established in **1993**, CEC plays a vital role in using **multimedia and ICT** (Information and Communication Technology) to improve the quality of higher education in the country.

  Why It Matters for Indian Students

  The CEC is especially significant for students in **Arts, Humanities, and Commerce**, since many government-backed digital initiatives (like NPTEL) focus mainly on engineering and sciences. With CEC's contributions, Indian learners in every discipline now have access to **structured, free, and high-quality online courses**.

  Website: https://cec.nic.in/cec/

  YouTube: https://www.youtube.com/user/cecedusat

- **Coursera** (https://www.coursera.org/):
  - Free courses from top universities worldwide (certificates may require payment).
  - Financial aid is available for eligible students.
- **edX** (https://www.edx.org/):
  - Free courses from universities like Harvard, MIT, and others.
- **Khan Academy** (https://www.khanacademy.org/):
  - Free tutorials for Math, Science, Economics, and more.
- **MIT OpenCourseWare (OCW)** (https://ocw.mit.edu/):
  - Free course materials for Science, Humanities, and Management.
- **Stanford Online** (https://online.stanford.edu/):
  - Free (audit) courses in various disciplines, including data science, economics, and humanities.
- **Open Yale Courses** (https://oyc.yale.edu/):
  - Free courses in literature, history, and philosophy.

2. Subject-Specific Resources

Science (BSc/MSc)

- **Khan Academy** (https://www.khanacademy.org/):
    - Free tutorials in math, physics, chemistry, biology, and computer science.
- **NPTEL** (https://nptel.ac.in/):
    - Free courses in physics, chemistry, mathematics, and computer science.
- **MIT OpenCourseWare (OCW)** (https://ocw.mit.edu/):
    - Free course materials for Science, Humanities, and Management.
- **Coursera** (https://www.coursera.org/):
    - Courses like "Introduction to Data Science" (University of Washington), "Machine Learning" (Stanford University).
- **edX** (https://www.edx.org/):
    - Courses like "Introduction to Computer Science" (Harvard University), "Introduction to Biology" (MIT).
- **Physics Classroom** (https://www.physicsclassroom.com/):
    - Free resources for learning physics.
- **ChemCollective** (https://chemcollective.org/):
    - Free virtual labs and tutorials for chemistry students.
- **From BSc Data Science IIT Madras:-**
  https://www.youtube.com/playlist?list=PLZ2ps__7DhBZYDZo9A0pZ_i0xhstrk5cR

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBYrMs3zybOqr1DzMFCX49xG

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBboGlwPVSsWP8loAJCLrKc8

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBbLZ6RdNTIXvFdaMpvqagt0

  https://www.youtube.com/playlist?list=PLZ2ps__7DhBb2cXAu5PevO_mzgS3Fj3Fs

  https://www.youtube.com/watch?v=reUOojtbU3A&list=PLZ2ps__7DhBYSzaAFqpyQK
  qmoni-EefS7

- **Open Yale Courses** (https://oyc.yale.edu/)
- **3Blue1Brown** – Visual math.

- **Numberphile** – Fun math concepts.
- Dr. Gajendra Purohit (Higher Math) – Dr.Gajendra Purohit - YouTube   BSc/MSc topics.

For BA and MA (Arts and Humanities)

- **Coursera** (https://www.coursera.org/):
  - Courses like "Introduction to Philosophy" (University of Edinburgh), "The Modern World" (University of Virginia).
- **edX** (https://www.edx.org/):
  - Courses like "Shakespeare's Life and Work" (Harvard University), "World Literature" (Harvard University).
- **Open Yale Courses** (https://oyc.yale.edu/):
  - Free courses in literature, history, and philosophy.
- **Project Gutenberg** (https://www.gutenberg.org/):
  - Free access to classic literature and historical texts.
- **Internet Archive** (https://archive.org/):
  - Free access to books, movies, and historical archives.

For BCom and MCom (Commerce)

- **Coursera** (https://www.coursera.org/):
  - Courses like "Financial Markets" (University of Illinois), "Introduction to Corporate Finance" (University of Pennsylvania).
- **edX** (https://www.edx.org/):
  - Courses like "Introduction to Financial Accounting" (University of Pennsylvania), "Economics of Money and Banking" (Columbia University).
- **Khan Academy** (https://www.khanacademy.org/):
  - Free tutorials in economics, finance, and accounting.
- **NPTEL** (https://nptel.ac.in/):
  - Free courses in management, economics, and finance.
- **SEBI Investor Education** (https://investor.sebi.gov.in/):
  - Free resources on financial markets and investment.

For Psychology:

- o **Khan Academy** (https://www.khanacademy.org/):

  - ▪ Free video lessons for Psychology.

- o **Simply Psychology** (https://www.simplypsychology.org/):

  - ▪ Free articles and resources.

For Literature:

- o **Project Gutenberg** (https://www.gutenberg.org/):

  - ▪ Free access to classic literature.

- o **Shmoop** (https://www.shmoop.com/):

  - ▪ Free study guides for literature.

3. Research and Academic Resources

Research Papers

- **Google Scholar** (https://scholar.google.com/):

  - o Free access to research papers and academic articles.

- **ResearchGate** (https://www.researchgate.net/):

  - o A platform to access and share research papers.

- **JSTOR** (https://www.jstor.org/):

  - o Free access to select research papers (check for open-access content).

E-Books

- **Project Gutenberg** (https://www.gutenberg.org/):

  - o Free access to classic literature and textbooks.

- **OpenStax** (https://openstax.org/):

  - o Free peer-reviewed textbooks for college and university students.

- **Bookboon** (https://bookboon.com/):

  - o Free textbooks and study materials.

4. YouTube Channels

Science

- **Khan Academy** (https://www.youtube.com/user/khanacademy):
  - Free video lessons for Science and Math.
- **CrashCourse** (https://www.youtube.com/c/crashcourse):
  - Free YouTube channel for Science and Humanities.
- **MIT OpenCourseWare (OCW)** https://www.youtube.com/@mitocw
- **Yale University Courses :** https://www.youtube.com/@YaleCourses

Arts and Humanities

- **CrashCourse** (https://www.youtube.com/c/crashcourse):
  - Free YouTube channel for History, Literature, and Psychology.
- **The School of Life** (https://www.youtube.com/user/schooloflifechannel):
  - Free videos on philosophy, literature, and psychology.
- **MIT OpenCourseWare (OCW**) **https://www.youtube.com/@mitocw**
- **Yale University Courses :** https://www.youtube.com/@YaleCourses

Commerce

- **EcoBus** (https://www.youtube.com/c/EcoBus):
  - Free videos on Economics and Business Studies.
- **Accountancy Class** (https://www.youtube.com/c/AccountancyClass):
  - Free tutorials for Accountancy.

5. Mobile Apps

- **Coursera**:
  - Access free courses on the go.
- **Khan Academy**:
  - Free tutorials for Math, Science, and Economics.
- **Duolingo**:
  - Free language learning app.

6. Tools and Software

- **Google Colab** (https://colab.research.google.com/):

- o Free cloud-based platform for Python programming and data analysis.
- **Zotero** (https://www.zotero.org/):
  - o Free tool for managing research papers and citations.

7. Communities and Forums

- **Reddit Communities**:
  - o Subreddits like r/AskAcademia, r/Science, r/Economics, and r/Literature.
- **ResearchGate** (https://www.researchgate.net/):
  - o A platform to connect with researchers and access papers.

8. Internships and Projects

- **Internshala** (https://internshala.com/):
  - o Free platform to find internships in various fields.
- **Kaggle** (https://www.kaggle.com/):
  - o Free platform for data science projects and competitions.

Chapter 5
Academic Resources for students pursuing Business Administration (BBA) and Master of Business Administration (MBA)

Detailed list of free educational resources for students pursuing Bachelor of Business Administration (BBA) and Master of Business Administration (MBA)**.** These resources cover a wide range of topics, including management, finance, marketing, entrepreneurship, and leadership**,** and are ideal for students, professionals, and aspiring business leaders.

1. Online Learning Platforms

General Business and Management

- **Coursera** (https://www.coursera.org/):
    - ○ Free courses from top universities like Wharton, University of Illinois, and others.

- Popular courses: "Introduction to Marketing" (University of Pennsylvania), "Financial Markets" (Yale University).

- **edX** (https://www.edx.org/):
  - Free courses from institutions like MIT, Harvard, and IIMB.
  - Popular courses: "Entrepreneurship 101" (MIT), "Business Analytics" (Columbia University).

- **SWAYAM** (https://swayam.gov.in/):
  - Free online courses by the Government of India, including management and business studies.

- **Khan Academy** (https://www.khanacademy.org/):
  - Free tutorials on economics, finance, and accounting.

- **MIT Opencourseware** (https://ocw.mit.edu/)

- **NPTEL** (https://nptel.ac.in/):
  - Free courses in management, economics, and finance

- **IIM Bangalore:- This is the excellent platform for Business Management Courses from Top IIM.**(https://iimbx.iimb.ac.in/)

2. Specialized Business Skills

Courses from World Bank:- World Bank is offering various courses current world problems and their solutions.
https://courses.wbginstitute.org/courses
https://academy.worldbank.org/en/home

Finance and Accounting

- **Corporate Finance Institute (CFI)** (https://corporatefinanceinstitute.com/resources/):
  - Free courses on financial modeling, Excel, and accounting.
- **Investopedia Academy** (https://academy.investopedia.com/):
  - Free tutorials on investing, trading, and financial analysis.
- **Alison** (https://alison.com/):
  - Free courses on financial management and accounting.

Marketing

- **Google Digital Garage** (https://learndigital.withgoogle.com/digitalgarage/):
    - Free courses on digital marketing, SEO, and analytics.
- **HubSpot Academy** (https://academy.hubspot.com/):
    - Free courses on inbound marketing, content marketing, and social media.
- **SEMRush Academy** (https://www.semrush.com/academy/):
    - Free courses on SEO, PPC, and content marketing.

Entrepreneurship

- **Coursera** (https://www.coursera.org/):
    - Free courses like "Entrepreneurship: Launching an Innovative Business" (University of Maryland).
- **edX** (https://www.edx.org/):
    - Free courses like "Entrepreneurship 101" (MIT).
- **Startup India Learning Program** (https://www.startupindia.gov.in/):
    - Free online entrepreneurship courses by the Government of India.

Leadership and Management

- **Coursera** (https://www.coursera.org/):
    - Free courses like "Leading People and Teams" (University of Michigan).
- **edX** (https://www.edx.org/):
    - Free courses like "Leadership and Emotional Intelligence" (University of Washington).
- **MindTools** (https://www.mindtools.com/):
    - Free resources for leadership, time management, and teamwork.

3. Case Studies and Research

Case Studies

- **Harvard Business Review (HBR) Case Studies** (https://hbr.org/store/case-studies):

    o   Free access to select case studies (check for open-access content).

- **The Case Centre** (https://www.thecasecentre.org/):

    o   Free case studies for students and educators.

Research Papers

- **Google Scholar** (https://scholar.google.com/):

    o   Free access to research papers and academic articles.

- **ResearchGate** (https://www.researchgate.net/):

    o   A platform to access and share research papers.

- **SSRN** (https://www.ssrn.com/):

    o   Free repository of research papers in business and management.

4. YouTube Channels

Business and Management

- **CrashCourse** (https://www.youtube.com/c/crashcourse):

    o   Free videos on business, economics, and entrepreneurship.

- **The Futur** (https://www.youtube.com/c/TheFuturIsHere):

    o   Free tutorials on business, branding, and design.

- **GaryVee** (https://www.youtube.com/user/GaryVaynerchuk):

    o   Free videos on entrepreneurship and marketing.

Finance and Investing

- **Investopedia** (https://www.youtube.com/user/investopediacom):

    o   Free videos on finance, investing, and trading.

- **The Plain Bagel** (https://www.youtube.com/c/ThePlainBagel):

    o   Free videos on personal finance and investing.

5. Mobile Apps

- **Coursera**:

  - Access free business courses on the go.

- **LinkedIn Learning**:

  - Free trial for business and management courses (requires subscription after trial).

- **Duolingo**:

  - Free language learning app (useful for international business).

6. Tools and Software

- **Google Workspace Learning Center** (https://workspace.google.com/learning-center/):

  - Free tutorials for Google Sheets, Docs, and Slides (useful for business analytics and presentations).

- **Trello** (https://trello.com/):

  - Free project management tool.

- **Canva** (https://www.canva.com/):

  - Free design tool for creating presentations and marketing materials.

7. Communities and Forums

- **Reddit Communities**:

  - Subreddits like r/business, r/entrepreneur, and r/finance.

- **LinkedIn Groups**:

  - Join groups related to business, management, and entrepreneurship.

- **Quora** (https://www.quora.com/):

  - Q&A platform for business-related questions.

9. Additional Resources

Books and E-Books

- **Project Gutenberg** (https://www.gutenberg.org/):

  - Free access to classic business books.

- **OpenStax** (https://openstax.org/):

      o   Free peer-reviewed textbooks for business and economics.

Podcasts

- **How I Built This** (https://www.npr.org/podcasts/510313/how-i-built-this):
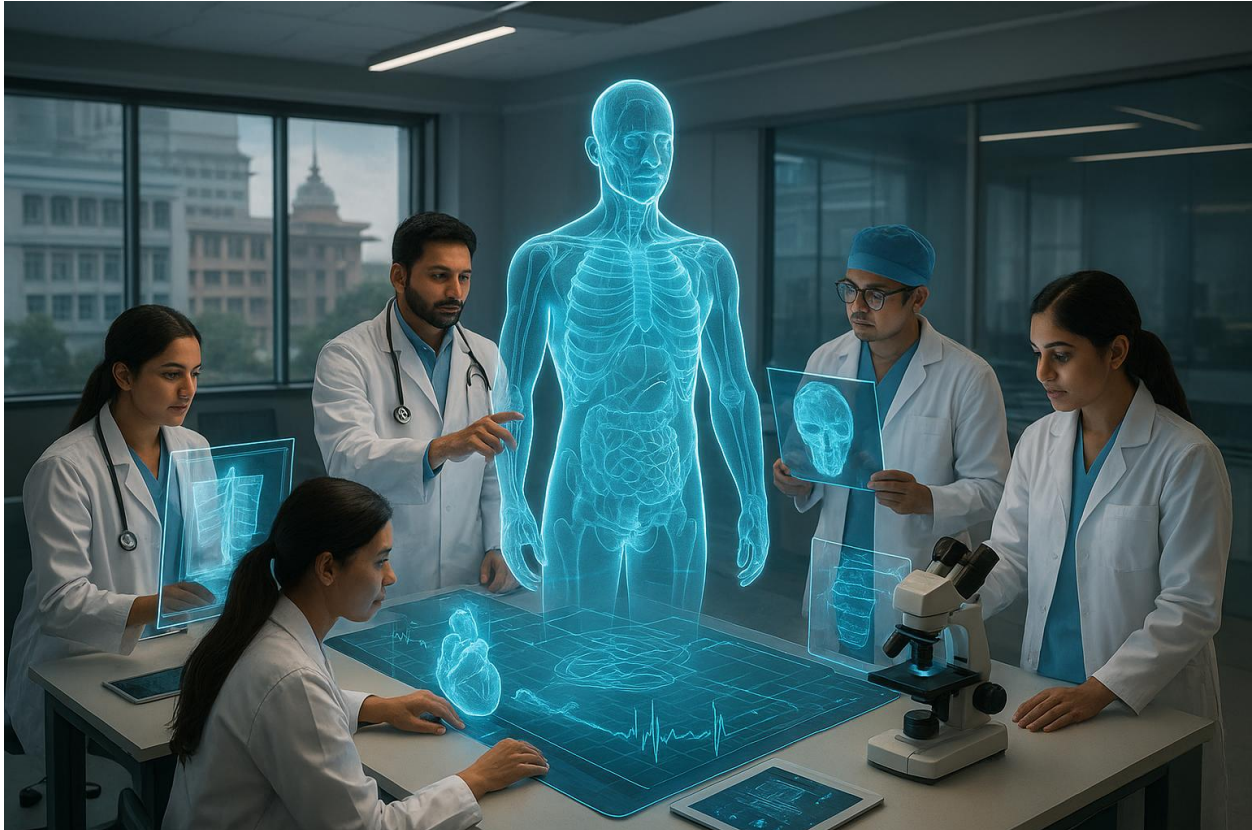 - o   Free podcast featuring interviews with entrepreneurs and business leaders.
- **The Tim Ferriss Show** (https://tim.blog/podcast/):
  - o   Free podcast on productivity, business, and leadership.

Chapter 6
Academic Resources for Medical Students

There are many resources available throughout the world. I am furnishing the best suited for Indian students.

1. Core Learning and Exam Preparation (India-Specific)

a. Online Courses and Lectures

- **Swayam**

  https://swayam.gov.in/

  Free courses from Indian institutions like AIIMS, covering medical sciences, anatomy, and clinical skills.

- **Dr. Najeeb Lectures**

  https://www.drnajeeblectures.com/

Highly detailed video lectures on anatomy, physiology, pathology, and more. Free previews are available.

- **NPTEL (Medical Sciences)**

  https://nptel.ac.in/

  Free online courses from IITs and other top Indian institutions.

- **Unacademy (Medical Courses)**

  https://unacademy.com/

  Affordable courses focused on NEET PG, FMGE, and other competitive exams.

b. Textbooks and Study Materials

- **National Digital Library of India (NDLI)**

  https://ndl.iitkgp.ac.in/

  Free access to medical textbooks, research papers, and educational content.

- **NCBI Bookshelf**

  https://www.ncbi.nlm.nih.gov/books/

  Free medical textbooks and resources.

- **OpenStax**

  https://openstax.org/

  Free peer-reviewed textbooks for medical and health sciences.

c. Clinical Skills and Practical Knowledge

- **Medscape India**

  https://www.medscape.com/

  Trusted platform for clinical information, case studies, and guidelines.

- **Geeky Medics**

  https://geekymedics.com/

  Free tutorials and videos on clinical skills and procedures.

- **Practical Anatomy**

  https://www.practicalanatomy.net/

  3D models and videos for visualizing human anatomy.

2. Supplementary Learning (Global Resources)

a. Online Courses

- **Coursera**

  https://www.coursera.org/

  Free and paid courses from top universities like Johns Hopkins and Stanford. Popular

  courses: "Anatomy" (University of Michigan), "Medical Neuroscience" (Duke University).

- **edX**

  https://www.edx.org/

  Free courses from institutions like Harvard and MIT. Popular courses: "Global Health"

  (Harvard), "Introduction to Human Physiology" (University of Washington).

- **Khan Academy**

  https://www.khanacademy.org/

  Free tutorials on anatomy, physiology, pharmacology, and MCAT preparation.

b. Interactive Learning Tools

- **AnatomyZone**

  https://www.anatomyzone.com/

  Free 3D anatomy videos and tutorials.

- **Visible Body**

  https://www.visiblebody.com/

  Free 3D anatomy models and interactive content.

- **Kenhub**

  https://www.kenhub.com/

  Free anatomy quizzes and articles (premium content available).

c. Research and Academic Resources

- **PubMed**

  https://pubmed.ncbi.nlm.nih.gov/

  Free access to biomedical literature.

- **ResearchGate**

  https://www.researchgate.net/

  Platform to access and share research papers.

- **Google Scholar**

  https://scholar.google.com/

  Free access to research papers and academic articles.

3. YouTube Channels for Visual Learning

- **AnatomyZone**

  https://www.youtube.com/user/anatomyzone

  Free 3D anatomy videos and tutorials.

- **Khan Academy Medicine**

  https://www.youtube.com/user/khanacademymedicine

  Health and medicine | Science | Khan Academy

  MCAT | Test prep | Khan Academy

  Free video lessons on anatomy, physiology, and pathology.

- **Osmosis**

  https://www.youtube.com/c/osmosis

  Free medical education videos on various topics.

- **Dr. Najeeb Lectures (YouTube)**

  https://www.youtube.com/c/DrNajeebLectures

  Free previews of detailed medical lectures.

4. Mobile Apps for On-the-Go Learning

- **Complete Anatomy**

  https://www.3d4medical.com/

  Free 3D anatomy models and interactive content.

- **Medscape**

  https://www.medscape.com/

  Free medical news, reference, and education.

- **Epocrates**

  https://www.epocrates.com/

  Free drug reference and clinical guidelines.

5. Networking and Community Platforms

- **Docplexus**

  https://www.docplexus.com/

  Community for Indian doctors and medical students offering resources, discussions, and CME programs.

- **All India Medical Students Association (AIMSA)**

  https://www.aimsa.in/

  Platform for Indian medical students offering resources, events, and discussions.

6. Advanced and Specialized Resources

- **Radiopaedia**

  https://radiopaedia.org/

  Free resources on radiology, including imaging techniques and case studies.

- **MedEdPORTAL**

  https://www.mededportal.org/

  Peer-reviewed educational materials, case studies, and clinical modules.

- **British Journal of Surgery**

  https://bjssjournals.onlinelibrary.wiley.com/

  Free access to surgical research and educational content.

Chapter 7
Academic Resources for Agriculture and Allied Sectors

For students of Agriculture, the theoretical knowledge from textbooks must be complemented with practical insights, the latest research, and an understanding of global and local contexts. The following resources, ranging from full university courses to Indian government portals, will help you build a strong, holistic foundation for your academic and professional career.

A. Core Resources

Get world-class education from the best institutions for free.

1) **SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds):**

   Why it's great: Offers free courses from introductory to advanced levels in various agricultural disciplines taught by professors from top Indian agricultural universities. You can even get academic credit for them, when you write the proctored exam.

Website:- https://swayam.gov.in/

2) **NPTEL (National Programme on Technology Enhanced Learning)**

What it is: A project by IITs and IISc offering online courses in engineering and science, including agriculture-adjacent topics.

Why it's great: Perfect for courses on Agricultural Engineering, Soil Mechanics, Remote Sensing, GIS, Food Technology, and Water Resource Management. The depth is exceptional.

Website:- https://nptel.ac.in/courses

3) **Coursera & edX:**

What they are: Global MOOC platforms.

Why they're great: Many top universities offer free-to-audit courses on agriculture- related topics. You can access all course materials for free; you only pay if you need a certificate.

Website:- https://www.coursera.org/
Example Course: Sustainable Agricultural Land Management on Coursera.

Website:- https://www.edx.org/

Example Course: https://www.edx.org/search?q=agriculture on edX.

4) **FAO e-learning Academy**
The FAO elearning Academy, a part of the **Food and Agriculture Organization of the United Nations**, offers free, multilingual e-learning courses and other learning opportunities. Its primary goal is to **strengthen the capacity of member countries** to address global challenges related to food and nutrition security, social and economic development, and sustainable management of natural resources. The academy's courses are designed for professionals, policymakers, researchers, and students, and are aligned with the **Sustainable Development Goals (SDGs)**.

Website:- https://elearning.fao.org/
https://virtual-learning-center.fao.org/admin/tool/custompage/view.php?id=3

5) **ICAR E-Courses**

The Indian Council of Agricultural Research (ICAR) offers various e-courses and e-learning resources to support agricultural education and capacity building in India. These resources are primarily aimed at students of agricultural universities, researchers, and professionals in the field.

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Website:- https://ecourses.icar.gov.in/

6) **Kerala Agriculture University e-Courses:** MOOCS Offered by Kerala Univeristy

   Website:- https://www.celkau.in/MOOC/Defaulteng.aspx

   https://kau.in/certificate-courses-online-registration-forms

7) **Agrignan:-** Agrignan is a dedicated educational platform for students pursuing agricultural courses, offering a range of study materials and resources. Its primary mission is to provide free educational services to students to help them achieve their academic and professional goals in the agricultural field.

   Website:- https://www.agrignan.in/

8) **World Bank Courses on Agriculture:-**

   https://academy.worldbank.org/en/planet/agriculture

B. YouTube Channels (Visual Learning)

1) Discover Agriculture:

Covers a vast range of topics with clear animations and explanations on modern farming techniques, crop-specific guides, and business ideas.

https://www.youtube.com/c/DiscoverAgriculture

2) Agricoaching for Competive Exams

A fantastic resource for students preparing for competitive exams like ICAR-JRF, SRF, NET, and ASRB. They provide subject-wise lectures and mock tests.

https://www.youtube.com/c/AGRICOACHINGCHANDIGARH

3) Indian Council of Agricultural Research (ICAR): The official YouTube channel of ICAR provides educational videos on a range of topics, including farming techniques, research updates, and new technologies.

https://www.youtube.com/@icarindia

C . Research Repositories & Digital Libraries

Access the latest scientific research and classic textbooks.

1) Krishikosh:- It is a unique repository of knowledge in agriculture and allied sciences, having collection of thesis, old and valuable books, institutional publications.

Website:- https://krishikosh.egranth.ac.in/home

2) Shodhganga: -A digital repository of Indian theses and dissertations. Students can find a wealth of research papers and academic work on various agricultural topics.

Link: https://shodhganga.inflibnet.ac.in/

4) IARI Library:- The library of the Indian Agricultural Research Institute provides   access to a vast collection of e-resources. While some resources require a subscription, many are freely accessible.

Link: https://www.iari.res.in/en/library-e-resources.php

4) National Agricultural Library (NAL) – AGRICOLA & PubAg

Comprehensive indexing and full-text access to agricultural science literature, including journals, books, and datasets. Excellent for **literature reviews and academic research**.
Website:- https://www.nal.usda.gov/

5) **AGRIS (FAO's International System for Agricultural Science and Technology)**

A global, multilingual bibliographic database with over 15 million records in 118+ languages.
Website:- https://agris.fao.org/

6) **TEEAL (The Essential Electronic Agricultural Library)**

A digital collection (Cornell University) with full-text articles and graphics from 200+ agricultural journals.
Website:- https://www.teeal.org/

D. Official Government Portals

These are non-negotiable for any Indian agriculture student. They provide data, schemes, and research directly relevant to the Indian agrarian landscape.

1) **e-NAM (National Agriculture Market):** https://www.enam.gov.in/web/

2) **DAHDF (Department of Animal Husbandry, Dairying & Fisheries):** https://www.dahd.nic.in/

3) **Krishi Vigyan Kendra (KVK) Portal:** http://kvk.icar.gov.in/

E. Interactive Tools & Apps

Learn by doing with these digital tools.

1. **FAO (Food and Agriculture Organization of the UN) Hand-in-Hand Geospatial Platform:** https://data.apps.fao.org/

   What it is: A massive collection of hundreds of layered maps and satellite data related to food and agriculture.
   Why it's great: Explore global data on rainfall, land use, crop yields, soil carbon, and poverty. An amazing tool for projects.

2. **AgriApp:** Download from play store

   What it is: An Indian app that provides information on crop management, weather, market prices, and expert advice.

3. **FAO Corporate Document Repository:** https://www.fao.org/documents/en/

4. **FAOSTAT Database:** https://www.fao.org/faostat/en/

   The world's largest database of food and agriculture statistics.

5. **World Bank Open Data:** https://data.worldbank.org/

   Provides free and open access to global development data on agricultural land use, rural development, and food security.

Chapter 8
Academic Resources For LAW Students

Law students today can access a wide array of online resources that are essential for their education and professional development. These platforms and databases have revolutionized legal research and learning, making information more accessible than ever before.

A. Online Courses & MOOCs

1) **SWAYAM Law Courses**:- Offers free online courses on Constitutional Law, Cyber Law, Intellectual Property Rights (IPR), Environmental Law, International Humanitarian Law, and more. It is developed by NLU professors and IITs.
   Website:- https://swayam.gov.in/

2) **NPTEL (National Programme on Technology Enhanced Learning)**
   Though STEM-focused, it also hosts courses relevant to **Law & Technology, IPR, and Ethics**.
   Website:- https://nptel.ac.in/courses

3) **e-Pathshala (UGC/CEC)**

Provides digital modules in law, covering subjects like Administrative Law, Company Law, Jurisprudence, and Family Law.

Website:

https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=ZzUApmBk4i7kYctp+aiP1w==

4) Vidyamitra:- Government of India Portal for many subjects from leading instititues
Website:-

https://vidyamitra.inflibnet.ac.in/index.php/home/subjects?domain=Social+Sciences&subdomain=Law

5) **edX & Coursera (Global Access)**

Host courses on International Law, Human Rights, Arbitration, Environmental Law, and more. Certificates are optional (paid), but course materials can be accessed free.

Website:- https://www.coursera.org/

Website:- https://www.edx.org/

6) **Learning Resources from the United Nations:-**
UNITAR:- https://unitar.org/free-and-open-courses

UN CC e-Learn:- https://unccelearn.org/

UNODC e-Learn:- https://elearningunodc.org/blocks/unodc_courselist/view_courses.php

https://www.unodc.org/elearning/en/courses/course-catalogue.html#index

United Nations Commission On International Trade Law :-

https://uncitral.un.org/en/onlinecourses

B. Government & Institutional Resources

- **National Judicial Academy (NJA)**

Provides training resources for judges and legal researchers; selected publications and reports are publicly accessible.

Website:- https://nja.gov.in/

- **Ministry of Law & Justice**

Publishes bare acts, amendments, law commission reports, and draft bills online. Essential for authentic legislative updates.

Website:- https://legislative.gov.in/

- **PRS Legislative Research**

  Independent platform providing detailed bill summaries, legislative briefs, and analysis of Indian parliamentary proceedings ery useful for law students.

  Website:- https://prsindia.org/

- **Law Commission of India Reports**

  Archives of reports and recommendations that shape Indian legal reforms.

  Website:- https://lawcommissionofindia.nic.in/

C. Legal Research Databases & Libraries

- **Manupatra**

  One of India's leading legal databases providing case law, statutes, notifications, bills, and international legal resources. Many universities provide institutional access.

  Website:- https://www.manupatrafast.com/

- **SCC Online**

  A premier legal research tool with judgments from the Supreme Court, High Courts, Tribunals, and international courts. Especially useful for **case law research and citations**.

  Website:- https://www.scconline.com/

- **Indian Kanoon (Free)**

  Open-access database of judgments from Indian courts. Easy to use and free for students.

  Website:- https://indiankanoon.org/

- **Judgments Information System (JUDIS)**

  Official database of the Supreme Court of India containing case judgments and orders.

  Website:- https://judgments.ecourts.gov.in/pdfsearch/index.php

- **Legal Information Institute of India (LII of India)**

  Free access to legislation, case law, treaties, and law reform reports from across India.

  Website:- http://www.liiofindia.org/

D. YouTube Channels

Ideal for understanding complex concepts, courtroom procedures, and career guidance.

- **LawSikho:** https://www.youtube.com/c/LawSikho

- o **Focus:** Excellent for practical career advice, especially on building a career in corporate law, IPR, and legal drafting. They offer free webinars and tips.
- **Supreme Court of India Live Proceedings:** https://www.youtube.com/@SupremeCourtofIndia-1950/streams
- o **Focus:** The official YouTube channel. Watch live arguments by India's top lawyers and judgments being delivered. It's the best way to learn courtroom etiquette and legal reasoning.

E. Artificial Intelligence and Data Science for Legal Professionals

The practice of law is undergoing a profound transformation. Artificial Intelligence (AI) and Data Science are no longer futuristic concepts—they are tools already reshaping how lawyers research, draft, argue, and manage cases. From contract review to predictive analytics, lawyers who adapt to these technologies gain a clear advantage in efficiency and decision-making.

1. **CS50 & AI for Lawyers – Harvard Law School**
- A specialized version of Harvard's CS50 for law students and practitioners.
- Covers computing basics, programming, cybersecurity, and AI's legal implications.
  https://www.edx.org/search?q=CS50%20FOR%20LAWYERS
2. **AI & Law – Lund University (Coursera)**
- Explains AI's role in public and private law, including ethics and regulation.
  https://www.coursera.org/learn/ai-law
3. **AI for Lawyers and Other Advocates – University of Michigan (Coursera Specialization)**
- Multi-course specialization on AI in drafting, communication, leadership, and ethics.
- Focuses on prompt engineering and practical legal applications.
  AI for Lawyers and Other Advocates | Coursera
4. **. Legal AI Fundamentals Certification (Clio)**
- **Description**: A self-paced, **100% free** video course designed for legal professionals new to AI. Covers AI basics, prompt writing, cybersecurity, tool selection, and using Clio's AI features. Includes quizzes and a shareable certificate.

- [Take the Legal AI Fundamentals Certification](#) [Clio](#)

5. Artificial Intelligence, Law and Justice (NPTEL / SWAYAM – India)

- **Description**: Free-to-enroll course by NALSAR, covering AI's role in law and justice. Topics include algorithmic decision-making, Responsible AI, IP implications, and legal tech transformation. It is a good course for Indian law students interested in AI's judicial and legal system impact.

- [Artificial Intelligence, Law and Justice - Course](#)

6. AI, Ethics, Law and Policy (National Tsing Hua University – via Class Central)

- **Description**: A three-week course on AI's legal and ethical interfaces—automated vehicles, algorithmic bias, GDPR, and more.

- [Explore AI, Law & Policy](#) [Class Central](#)

7. Artificial Intelligence and Legal Issues (Politecnico di Milano – via Class Central)

- **Description**: Focuses on AI-related legal topics such as liability, IP, privacy, and non-discrimination.

- **Ideal for**: Lawyers interested in digital rights and civil/criminal liability frameworks.

- [Explore AI & Legal Issues](#) [Class Central](#)

8. AI for Legal Professionals (I): Law and Policy (via Class Central)

- **Description**: Four-week course covering algorithmic bias, human rights, AI governance, regulation, and judicial applications.

- **Ideal for**: Legal educators, regulators, and professionals focused on AI ethics and policy.

- [Start AI for Legal Professionals I](#) [Class Central](#)

8. AI Ethics, Law, and Policy (FutureLearn)

- **Description**: Offers a global perspective on AI's regulatory, legal, and ethical issues, including automated vehicles and criminal justice.

- **Ideal for**: Professionals desiring a high-level overview of legal-AI intersections.

- [Join AI Ethics, Law & Policy](#) [FutureLearn](#)

9. Elements of AI (University of Helsinki & MinnaLearn)

- **Description**: A broad, **free introductory MOOC** on AI fundamentals—including machine learning, neural networks, and ethical implications. While not law-specific, it offers a solid technical foundation.
- **Ideal for**: Legal professionals needing core AI literacy.
- https://www.elementsofai.com/

Chapter 9
Top online Simulators and Virtual labs for Practical learning

Here's a list of the **top online simulators and virtual labs** for practical learning across various fields, including **science, engineering, medicine, and programming**. These platforms provide hands-on, interactive experiences to help students and professionals learn and practice skills in a virtual environment.

1. Science and Engineering

Experience practical learning from anywhere with Virtual Labs, a flagship initiative by the Ministry of Education. Coordinated by IIT Delhi and developed by a consortium of top institutes, this project brings the laboratory to your screen.

It offers:

- **Massive Collection:** Access over **175 virtual labs** and more than **1,590 web-enabled experiments**.
- **Remote Experimentation:** Perform experiments online that were once only possible in physical labs, a revolutionary shift in science and engineering education.
- **Free Access:** Conduct experiments anytime, anywhere, at no cost.
- **Focus**: Engineering and Science.
- **Why Use**: Free virtual labs developed by IITs and other premier institutions.
- **Link**: https://www.vlab.co.in/

OLabs (Online Labs)

- **Focus**: Science and Math experiments.
- **Why Use**: Developed by Amrita University and CDAC, it offers virtual labs for school and college students.
- **Link**: https://www.olabs.edu.in/

PhET Interactive Simulations

- **Focus**: Physics, Chemistry, Math, and Biology.
- **Why Use**: Free, interactive simulations for K-12 and higher education.
- **Link**: PhET Simulations

ChemCollective

- **Focus**: Chemistry.
- **Why Use**: Virtual labs and simulations for chemistry experiments.
- **Link**: ChemCollective

2. Programming and Computer Science

Codecademy Labs

- **Focus**: Coding and programming.
- **Why Use**: A built-in coding environment for practicing programming languages like Python, Java, and more.
- **Link**: [Codecademy](#)

Replit

- **Focus**: Coding and collaboration.
- **Why Use**: An online IDE for coding in multiple languages with real-time collaboration.
- **Link**: [Replit](#)

JSFiddle

- **Focus**: Web development (HTML, CSS, JavaScript).
- **Why Use**: A sandbox environment for testing and sharing web code snippets.
- **Link**: [JSFiddle](#)

CodePen

- **Focus**: Front-end web development.
- **Why Use**: A social development environment for testing and showcasing HTML, CSS, and JavaScript code.
- **Link**: [CodePen](#)

3. Medicine and Healthcare

Anatomy.TV

- **Focus**: Human anatomy and physiology.
- **Why Use**: Interactive 3D models and virtual dissections for medical students.
- **Link**: [Anatomy.TV](#)

BioDigital Human

- **Focus**: Human anatomy and medical conditions.
- **Why Use**: A 3D virtual body platform for exploring anatomy and diseases.
- **Link**: [BioDigital Human](#)

Virtual Physiology Lab

- **Focus**: Physiology experiments.
- **Why Use**: Simulates physiological experiments like muscle contraction and nerve conduction.
- **Link**: [Virtual Physiology Lab](#)

4. Robotics and Electronics

Tinkercad

- **Focus**: 3D design, electronics, and coding.
- **Why Use**: A free, browser-based tool for designing circuits and 3D models.
- **Link**: [Tinkercad](#)

CircuitLab

- **Focus**: Electronics and circuit design.
- **Why Use**: An online circuit simulator for designing and testing electronic circuits.
- **Link**: [CircuitLab](#)

Falstad Circuit Simulator

- **Focus**: Electronics and circuit simulation.
- **Why Use**: A free, interactive tool for simulating electronic circuits.
- **Link**: [Falstad Circuit Simulator](#)

5. Business and Economics

Capsim

- **Focus**: Business strategy and management.
- **Why Use**: A business simulation platform for learning strategic decision-making.
- **Link**: Capsim

Virtonomics

- **Focus**: Business management and economics.
- **Why Use**: An online business simulator for managing virtual companies.
- **Link**: Virtonomics

6. Environmental Science

Climate Interactive

- **Focus**: Climate change and sustainability.
- **Why Use**: Simulations for understanding climate systems and policy impacts.
- **Link**: Climate Interactive

EcoMUVE

- **Focus**: Ecosystems and environmental science.
- **Why Use**: A virtual environment for exploring ecosystems and ecological concepts.
- **Link**: EcoMUVE

7. Aviation and Space

FlightGear

- **Focus**: Flight simulation.
- **Why Use**: An open-source flight simulator for aviation enthusiasts.

- **Link**: [FlightGear](#)

NASA Eyes

- **Focus**: Space exploration and astronomy.
- **Why Use**: Interactive simulations of NASA missions and space phenomena.
- **Link**: [NASA Eyes](#)

Chapter 10
Educational resources for skill development

Detailed list of free educational resources for skill development that cater to a wide range of interests, including **technical skills, soft skills, language learning, coding, digital marketing, design, and more**. These resources are ideal for students, professionals, and anyone looking to upskill or reskill.

There are two excellent platforms for Indian Students

- **Skill India Digital** (Free) – Govt.-certified courses in IT, healthcare, banking, etc. Skill India Digital, started by the Ministry of Skill Development and Entrepreneurship, is an easy-to-use platform to help people across India learn new skills, find jobs, and start businesses. It offers free courses on things like computers, digital marketing, and AI, with a simple app that works in many Indian languages and lets you sign up using Aadhaar. You can search for courses, training centers, or jobs easily, track your progress, earn digital certificates, and access study materials like eBooks. It connects people to jobs and apprenticeships, uses AI to suggest the best courses or jobs for you, and has a chatbot to answer questions. It also links with government programs like PMKVY and DigiLocker, works with big names like IBM and Microsoft, and includes a program called SOAR to teach AI skills in schools. Aiming to train 260 million students and help women and minorities, it's a one-stop hub for learning and work, available on www.skillindiadigital.gov.in or the Skill India Digital Hub app, making it simple for anyone to grow and succeed.

  https://www.skillindiadigital.gov.in

- **Infosys Springboard:** Infosys Springboard is a free online learning platform that provides digital skills training. It aims to help people, communities, and businesses be future-ready in the 21st century. Infosys Springboard is a Digital literacy program launched as part of the Infosys ESG Tech for Good charter. It aims to enable students and associated communities from early education to lifelong learners by imparting digital and life skills through curated content & interventions, free of cost. Learners can benefit from the knowledgebase and experience of 4 decades of Infosys as an enterprise. It brings the quality content from our partners and leading universities across the world. Content is aligned with New Education policy 2020. Includes soft skills and vocational skills.

- Infosys Springboard has partnered with Coursera and Udemy for some of the courses to provide free access to a wide range of certifications and specializations, aligning with its goal to empower over 10 million learners by 2025.

    https://infyspringboard.onwingspan.com/web/en/page/home

- **Digital defynd:-** It is a comprehensive online learning platform that aggregates and curates a vast collection of professional programs, courses, and certifications from leading global universities and learning providers, including free and premium options. It serves millions of learners seeking to enhance their skills and achieve career goals across diverse fields like AI, marketing, data science, and leadership, effectively simplifying the search for high-quality online education.

    https://digitaldefynd.com/

- **Alison:-** Alison, established in 2007, is an Irish online education platform renowned for offering a vast array of free online certificate and diploma courses across diverse fields such as IT, business, and health, all accredited by CPD UK for professional development. While the learning content is entirely free, Alison's business model relies on advertising and the sale of optional, verifiable certificates and diplomas, enabling millions of global learners to acquire practical, workplace-relevant skills to enhance their employability.

    https://alison.com/

- **Class Central:-** Class Central is a prominent online course aggregator and review platform, founded in 2011, that indexes and organizes over 250,000 online courses, particularly MOOCs,

from various providers like Coursera and edX, Penn, IIT's and famous universities around the world. It simplifies course discovery through a vast, searchable catalog, community-driven reviews, and highlights of free courses and certificates, while also publishing industry insights via "The Report," ultimately serving as a comprehensive resource for online learners to find and evaluate educational opportunities.

https://www.classcentral.com/

- **Mind Luster:-** Mind Luster, a Berlin-based online educational platform founded in 2021, offers over 300,000 free courses with certificates across diverse fields like programming (Python, C++, JavaScript), graphic design (Photoshop, Illustrator), languages (English, Arabic, Mandarin), business (entrepreneurship, marketing), computer science (MS Excel, ethical hacking), health (medical sciences, bodybuilding), and soft skills (communication, creative writing), requiring no prerequisites like IELTS or TOEFL; learners worldwide can access self-paced courses.

https://www.mindluster.com/

- **Udemy – Learn Anything, Anytime**:- Udemy is one of the world's largest online learning platforms, offering over 250,000 courses in areas ranging from technology, business, and data science to personal development, creative arts, and health. Founded in 2010, it allows learners to study at their own pace, making education flexible and accessible for students, professionals, and lifelong learners. Courses are created by industry experts, providing practical knowledge and real-world skills. With affordable pricing, frequent discounts, and lifetime access to course materials, Udemy has made high-quality learning available to millions globally. Popular courses include programming, AI, cloud computing, digital marketing, photography, and leadership skills.

If you want free courses, simply type the topic in their app or browser and apply the "Free" filter to see all available free courses.

Website:- https://www.udemy.com/

1. Technical Skills

Coding and Programming

- **Infosys Springboard**
  - *Tech Stack:* Python, AI, Cloud, Cybersecurity
  - *Bonus:* Free Infosys-recognized certificates
    https://infyspringboard.onwingspan.com/web/en/login

- Scratch Programming:- Created by MIT for learning programming for kids
  https://scratch.mit.edu/
- **freeCodeCamp** (https://www.freecodecamp.org/):
  - Free coding tutorials and projects for web development, Python, JavaScript, and more.
- **Codecademy** (https://www.codecademy.com/):
  - Free coding lessons for beginners (premium content requires payment).
- **CS50 by Harvard** (https://cs50.harvard.edu/):
  - Free computer science course covering algorithms, data structures, and web development.
- **LeetCode** (https://leetcode.com/):
  - Free coding challenges for interview preparation.
- **HackerRank** (https://www.hackerrank.com/):
  - Free coding practice for algorithms, data structures, and problem-solving.

Data Science and Analytics

- **Kaggle** (https://www.kaggle.com/):
  - Free platform for data science projects, competitions, and tutorials.
- **DataCamp** (https://www.datacamp.com/):
  - Free beginner-level courses for Python, R, and SQL.
- **Google AI** (https://ai.google/education/):
  - Free resources for machine learning and AI.

Cloud Computing

- **AWS Training** (https://aws.amazon.com/training/):

  o Free courses and tutorials for Amazon Web Services.

- **Google Cloud Training** (https://cloud.google.com/training):

  o Free resources for Google Cloud Platform.

2. Digital Marketing

- **Google Digital Garage** (https://learndigital.withgoogle.com/digitalgarage/):

  o Free courses on digital marketing, SEO, and analytics.

- **HubSpot Academy** (https://academy.hubspot.com/):

  o Free courses on inbound marketing, content marketing, and social media.

- **SEMRush Academy** (https://www.semrush.com/academy/):

  o Free courses on SEO, PPC, and content marketing.

3. Design and Creativity

- **Canva Design School** (https://www.canva.com/designschool/):

  o Free tutorials for graphic design and Canva tools.

- **Adobe Creative Cloud Tutorials** (https://helpx.adobe.com/creative-cloud/tutorials-explore.html):

  o Free tutorials for Photoshop, Illustrator, and other Adobe tools.

- **Figma for Beginners** (https://www.figma.com/resources/learn-design/):

  o Free tutorials for UI/UX design using Figma.

4. Language Learning

- **Duolingo** (https://www.duolingo.com/):

  o Free language learning app for Spanish, French, German, and more.

- **BBC Languages** (http://www.bbc.co.uk/languages/):

  o Free resources for learning various languages.

- **Memrise** (https://www.memrise.com/):

  o Free app for learning vocabulary and phrases in multiple languages.

5. Soft Skills

- **Coursera** (https://www.coursera.org/):
    - Free courses on communication, leadership, and teamwork.
- **edX** (https://www.edx.org/):
    - Free courses on soft skills from top universities.
- **MindTools** (https://www.mindtools.com/):
    - Free resources for time management, stress management, and leadership.

6. Entrepreneurship and Business Skills

- **Coursera** (https://www.coursera.org/):
    - Free courses on entrepreneurship, business strategy, and finance.
- **edX** (https://www.edx.org/):
    - Free courses on business and management from top universities.

7. Writing and Content Creation

- **Grammarly** (https://www.grammarly.com/):
    - Free writing assistance tool.
- **Hemingway Editor** (https://hemingwayapp.com/):
    - Free tool for improving writing clarity and style.
- **ProWritingAid** (https://prowritingaid.com/):
    - Free writing analysis tool.

8. Project Management

- **Google Project Management Certificate** (https://grow.google/certificates/project-management/):
    - Free introductory course on project management.
- **Asana Academy** (https://asana.com/guide/resources/asana-academy):
    - Free tutorials for using Asana for project management.

9. Cybersecurity

- **Cybrary** (https://www.cybrary.it/):
    - Free courses on cybersecurity and ethical hacking.

- **Open Security Training** (http://opensecuritytraining.info/):

    o Free resources for learning about cybersecurity.

10. YouTube Channels for Skill Development

- **freeCodeCamp** (https://www.youtube.com/c/Freecodecamp):

    o Free coding tutorials and projects.

- **CrashCourse** (https://www.youtube.com/c/crashcourse):

    o Free videos on a wide range of topics, including computer science, history, and more.

- **The Futur** (https://www.youtube.com/c/TheFuturIsHere):

    o Free tutorials on design, branding, and business.

11. Mobile Apps

- **SoloLearn**:

    o Free coding lessons for Python, Java, C++, and more.

- **Duolingo**:

    o Free language learning app.

- **LinkedIn Learning**:

    o Free trial for skill development courses (requires subscription after trial).

12. Communities and Forums

- **Stack Overflow** (https://stackoverflow.com/):

    o Q&A platform for programming and software development.

- **Reddit Communities**:

    o Subreddits like r/learnprogramming, r/digitalmarketing, and r/design.

- **GitHub** (https://github.com/):

    o Collaborate on open-source projects and showcase your work.

13. Internships and Projects

- **Internshala** (https://internshala.com/):

    o Free platform to find internships in various fields.

- **Google Summer of Code** (https://summerofcode.withgoogle.com/):

- o Open-source coding internships for students.
- **Kaggle** (https://www.kaggle.com/):
  - o Free platform for data science projects and competitions.

Chapter 11
Top 20 YouTube channels in the world for education and skill development

Top 20 YouTube channels in the world for education and skill development. These channels cover a wide range of topics, including **science, technology, business, personal development, and creative skills**, and are ideal for students, professionals, and lifelong learners.

1. Khan Academy

- **Focus**: Math, Science, Economics, and more.
- **Why Watch**: Offers free, high-quality educational videos for all ages.
- **Link**: Khan Academy

2. CrashCourse

- **Focus**: Science, History, Literature, and more.
- **Why Watch**: Engaging and well-researched videos on a variety of subjects.
- **Link**: CrashCourse

3. TED-Ed

- **Focus**: Education, Ideas, and Inspiration.
- **Why Watch**: Animated lessons on a wide range of topics.
- **Link**: TED-Ed

4. Veritasium

- **Focus**: Science and Engineering.
- **Why Watch**: Explains complex scientific concepts in an easy-to-understand way.
- **Link**: Veritasium

5. Vsauce

- **Focus**: Science, Philosophy, and Curiosity.
- **Why Watch**: Thought-provoking videos that explore fascinating questions.
- **Link**: Vsauce

6. SmarterEveryDay

- **Focus**: Science and Engineering.
- **Why Watch**: Explores the science behind everyday phenomena.
- **Link**: SmarterEveryDay

7. Mark Rober

- **Focus**: Engineering and DIY Projects.
- **Why Watch**: Fun and educational videos on engineering and creativity.
- **Link**: Mark Rober

8. Kurzgesagt – In a Nutshell

- **Focus**: Science, Technology, and Philosophy.
- **Why Watch**: Beautifully animated videos explaining complex topics.
- **Link**: Kurzgesagt

9. CGP Grey

- **Focus**: History, Politics, and Technology.
- **Why Watch**: Clear and concise explanations of complex topics.
- **Link**: CGP Grey

10. Numberphile

- **Focus**: Mathematics.
- **Why Watch**: Fun and engaging videos on math concepts and puzzles.
- **Link**: Numberphile

11. Computerphile

- **Focus**: Computer Science and Technology.
- **Why Watch**: Explains computer science concepts and programming.
- **Link**: Computerphile

12. freeCodeCamp

- **Focus**: Coding and Programming.
- **Why Watch**: Free coding tutorials and projects for web development, Python, and more.
- **Link**: freeCodeCamp

13. The School of Life

- **Focus**: Philosophy, Psychology, and Personal Development.
- **Why Watch**: Insightful videos on life, relationships, and self-improvement.
- **Link**: The School of Life

14. GaryVee

- **Focus**: Entrepreneurship and Marketing.
- **Why Watch**: Practical advice on business, marketing, and personal branding.
- **Link**: GaryVee

15. Ali Abdaal

- **Focus**: Productivity and Personal Development.
- **Why Watch**: Tips on productivity, studying, and time management.
- **Link**: Ali Abdaal

16. Thomas Frank

- **Focus**: Productivity and Study Tips.
- **Why Watch**: Practical advice on studying, productivity, and personal development.
- **Link**: Thomas Frank

17. Marques Brownlee (MKBHD)

- **Focus**: Technology and Gadgets.
- **Why Watch**: In-depth reviews and discussions on the latest tech.
- **Link**: MKBHD

18. The Futur

- **Focus**: Design, Business, and Creativity.
- **Why Watch**: Tutorials and advice on design, branding, and business.
- **Link**: The Futur

19. Charisma on Command

- **Focus**: Communication and Personal Development.
- **Why Watch**: Tips on improving communication skills and charisma.
- **Link**: Charisma on Command

20. Better Than Yesterday

- **Focus**: Self-Improvement and Productivity.
- **Why Watch**: Practical advice on improving your life and achieving your goals.
- **Link**: Better Than Yesterday

Chapter 12
Top 10 websites to download books and the top digital libraries

Here's a list of the **top 10 websites to download books** and the **top digital libraries** where you can access a vast collection of free and paid books, academic resources, and research materials.

Top 10 Websites to Download Books

1. Project Gutenberg

- **Focus**: Classic literature and public domain books.
- **Why Use**: Over 60,000 free eBooks, including classics like *Pride and Prejudice* and *Moby-Dick*.
- **Link**: [Project Gutenberg](#)

2. Open Library

- **Focus**: A wide range of books, including fiction, non-fiction, and academic texts.
- **Why Use**: Part of the Internet Archive, it offers millions of free eBooks.
- **Link**: [Open Library](#)

3. Google Books

- **Focus**: Books, magazines, and academic papers.
- **Why Use**: Offers previews and full-text access to millions of books.
- **Link**: [Google Books](#)

4. Library Genesis (LibGen)

- **Focus**: Academic books, textbooks, and research papers.

- **Why Use**: A vast repository of free eBooks, though its legality is debated.
- **Link**: [Library Genesis](#)

6. ManyBooks

- **Focus**: Fiction, non-fiction, and classics.
- **Why Use**: Over 50,000 free eBooks in various formats.
- **Link**: [ManyBooks](#)

7. BookBoon

- **Focus**: Textbooks and business eBooks.
- **Why Use**: Free textbooks and business books for students and professionals.
- **Link**: [BookBoon](#)

8. PDF Drive

- **Focus**: PDF books across all genres.
- **Why Use**: A search engine for free PDF books with millions of titles.
- **Link**: [PDF Drive](#)

9. Internet Archive

- **Focus**: Books, movies, music, and software.
- **Why Use**: A digital library with millions of free books and resources.
- **Link**: [Internet Archive](#)

10. Scribd

- **Focus**: Books, audiobooks, and documents.
- **Why Use**: Offers a free trial with access to millions of books and documents.
- **Link**: [Scribd](#)

Top Digital Libraries

1. National Digital Library of India (NDLI)

- **Focus**: Academic and educational resources.
- **Why Use**: Free access to textbooks, videos, and research papers.
- **Link**: NDLI

2. World Digital Library

- **Focus**: Historical and cultural documents.
- **Why Use**: Free access to rare books, maps, and manuscripts from around the world.
- **Link**: World Digital Library

3. HathiTrust Digital Library

- **Focus**: Academic and research materials.
- **Why Use**: Millions of free books and journals from universities worldwide.
- **Link**: HathiTrust

4. Europeana

- **Focus**: European cultural heritage.
- **Why Use**: Free access to books, art, and historical documents from Europe.
- **Link**: Europeana

5. Digital Public Library of America (DPLA)

- **Focus**: American history and culture.
- **Why Use**: Free access to millions of books, photos, and documents.
- **Link**: DPLA

6. British Library Digital Collections

- **Focus**: Historical and cultural documents.
- **Why Use**: Free access to rare books, maps, and manuscripts from the British Library.

- **Link**: [British Library](#)

7. JSTOR Open Content

- **Focus**: Academic journals and books.
- **Why Use**: Free access to select research papers and books.
- **Link**: [JSTOR](#)

8. PubMed Central

- **Focus**: Biomedical and life sciences journals.
- **Why Use**: Free access to millions of research papers and books.
- **Link**: [PubMed Central](#)

9. Google Scholar

- **Focus**: Academic research and books.
- **Why Use**: Free access to research papers, theses, and books.
- **Link**: [Google Scholar](#)

10. Open Textbook Library

- **Focus**: Textbooks for higher education.
- **Why Use**: Free, peer-reviewed textbooks for students and educators.
- **Link**: [Open Textbook Library](#)

Chapter 13
Scholarships and Financial Aid to Indian Students

Disclaimer: Details provided in this chapter are subject to change. Please refer to the official scholarship websites for the most up-to-date deadlines, eligibility criteria, and application requirements.
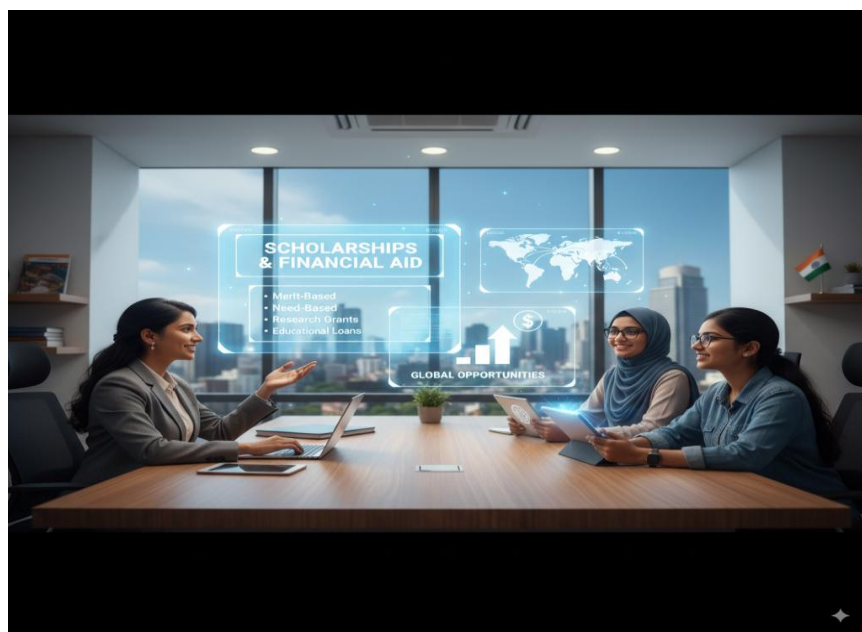
Government Scholarship Portals (India)

National Scholarship Portal (NSP)

The National Scholarship Portal is the central hub for various government scholarships available to Indian students from school level up to PhD. Key schemes include Post-Matric Scholarships for SC/ST students (₹10,000-₹2 lakh/year), Merit-cum-Means Scholarships for Minorities, and Top Class Education Scheme for SC students. All applications must be submitted through the official portal at scholarships.gov.in.

AICTE Scholarships

The All India Council for Technical Education offers several specialized scholarships:

- PRAGATI Scholarship for girls pursuing technical education (₹50,000/year)

- Saksham Scholarship for students with disabilities (₹50,000/year)

- Swanath Scholarship for COVID-affected students (full tuition coverage)
  More details at AICTE official website.

A. For School Students

1. **National Means-cum-Merit Scholarship (NMMSS)**

   o For: Class 9-12 students (family income < ₹1.5 lakh/year)

   o Amount: ₹12,000/year

   o Apply

2. **Pre-Matric Scholarship for Minorities**

   o For: Class 1-10 students from minority communities

   o Amount: ₹1,000-10,700/year

   o Details

B. For College/University Students

3. **Post Matric Scholarship for SC/ST/OBC**

   o Covers: Tuition fees + maintenance allowance

   o Portal

4. **Ishan Uday Scholarship (North-East Students)**

   o For: UG students from NE states

   o Amount: ₹5,400/month

   o Apply

5. **Central Sector Scheme for College/University Students**

   o For: General category (family income < ₹8 lakh/year)

   o Amount: ₹10,000-20,000/year

   o Guidelines

C. For Technical Education

6. **AICTE Pragati Scholarship (Girls in Engineering)**

   - Amount: ₹50,000/year
   - Portal

7. **Prime Minister's Scholarship Scheme (Defense Personnel Wards)**

   - For: Professional courses
   - Amount: ₹2,500-3,000/month
   - Apply

2. Education Loan Schemes

A. Government-Backed Loan Schemes

1. **Vidya Lakshmi Portal**

   - Single-window for education loans from 37 banks
   - Loan amount: Up to ₹1.5 crore
   - Portal

2. **Padho Pardesh (Minority Students Abroad)**

   - Interest subsidy on loans for overseas education
   - Details

3. **Dr. Ambedkar Central Sector Scheme (SC Students Abroad)**

   - Covers: ₹20 lakh loan or ₹10 lakh grant
   - Guidelines

B. PSU Education Loans

4. **SBI Student Loan**

   - Covers: Indian/foreign education
   - Interest: 8.15% onwards
   - Apply

5. **Canara Bank Vidya Jyoti Scheme**

   - Collateral-free loans up to ₹7.5 lakh
   - Details

3. Interest Subsidy Schemes

1. **Central Scheme for Interest Subsidy (CSIS)**
   - Interest-free period during study + 1 year moratorium
   - For: Economically weaker sections
   - Info
2. **Interest Subsidy for Technical Education (ISSE)**
   - For: Girls/SC/ST students in technical courses
   - Guidelines

4. Special Category Support

1. **National Fellowship for SC/ST Students**
   - For: M.Phil/Ph.D scholars
   - Amount: ₹31,000-35,000/month
   - Portal
2. **Begum Hazrat Mahal Scholarship (Minority Girls)**
   - For: Class 9-12 girls
   - Amount: ₹5,000-10,000/year
   - Apply

5. Key Financial Aid Portals

Portal	Purpose	Link
National Scholarship Portal	All govt scholarships	scholarships.gov.in
Vidya Lakshmi	Education loans	vidyalakshmi.co.in
UGC Scholarships	Higher education funding	ugc.ac.in
AICTE Schemes	Technical education support	aicte-india.org

State-Specific Scholarships

Most Indian states operate their own scholarship portals:

1. Maharashtra Scholarships

- **Post Matric Scholarship Scheme**

  For: SC/ST/OBC students

  Benefits: Up to ₹35,000/year

  Apply Here

- **Eklavya Scholarship for Tribal Students**

  For: Class 11 to PG tribal students

  Benefits: ₹50,000/year

  Details Here

2. Karnataka Scholarships

- **Vidya Siri Scholarship**

  For: SC/ST/Minority students

  Benefits: ₹20,000-50,000/year

  Apply Here

- **Medhabruti Scholarship**

  For: Professional course students

  Benefits: ₹10,000-25,000/year

  Portal Link

3. Tamil Nadu Scholarships

- **BC/MBC Scholarship**

  For: Backward Class students

  Benefits: Full tuition coverage

  Apply Here

- **Minority Scholarship**

  For: Muslim/Christian students

  Benefits: ₹5,000-15,000/year

  Portal Link

4. Uttar Pradesh Scholarships

- **UP Post Matric Scholarship**

  For: SC/ST/OBC students

  Benefits: Full tuition + maintenance

  Apply Here

- **Kanya Vidya Dhan Yojana**

  For: Girl students

  Benefits: ₹30,000 one-time

  Details Here

5. West Bengal Scholarships

- **Swami Vivekananda Scholarship**

  For: Minority students

  Benefits: ₹12,000-60,000/year

  Apply Here

- **Kanyashree Prakalpa**

  For: Girl students

  Benefits: ₹25,000-50,000

  Portal Link

6. Gujarat Scholarships

- **Mukhyamantri Yuva Swavlamban Yojana**

  For: Merit-based students

  Benefits: 50% fee waiver

  Apply Here

- **SC/ST Scholarship**

  For: Reserved category students

  Benefits: ₹10,000-35,000/year

  Portal Link

7. Rajasthan Scholarships

- **Social Justice Scholarship**

  For: SC/ST/OBC students

  Benefits: ₹5,000-15,000/year

  Apply Here

- **Indira Gandhi Scholarship**

  For: Single girl child

  Benefits: ₹36,000/year

  Details Here

8. Kerala Scholarships

- **Minority Scholarship**

  For: Muslim/Christian students

  Benefits: ₹10,000-30,000/year

  Apply Here

- **Pratibha Scholarship**

  For: Merit students

  Benefits: ₹25,000 one-time

  Portal Link

9. Andhra Pradesh Scholarships

- **Jagananna Vidya Deevena**

  For: Economically weak students

  Benefits: Full fee reimbursement

  Apply Here

- **Amma Vodi Scheme**

  For: Mothers of students

  Benefits: ₹15,000/year

  Details Here

10. Telangana Scholarships

- **Overseas Scholarship**

  For: SC/ST/BC students

  Benefits: Up to ₹20 lakhs

  Apply Here

- **Aasara Educational Support**

  For: Orphans/Widows

  Benefits: ₹2,000-5,000/month

  Portal Link

International Scholarships

Fully Funded Opportunities

- **Fulbright-Nehru Fellowships** (USA): Covers full tuition, living expenses and airfare for Master's/PhD students (usief.org.in)
- **Chevening Scholarships** (UK): Provides £18,000 plus travel costs for 1-year Master's programs (chevening.org)
- **DAAD Scholarships** (Germany): Supports STEM, Arts and Social Science students with varying benefits (daad.in)

Country-Specific Programs

- **Great Scholarships** by British Council offer ₹10+ lakhs for UK universities (britishcouncil.in)
- **MEXT Scholarships** provide full funding for Japanese universities (studyinjapan.go.jp)

Top Indian Philanthropic Foundations Offering Scholarships

1. Infosys Foundation

- **Scholarships**: Supports meritorious students in engineering, medicine, and science.
- **Special Programs**:
  - **Infosys Merit Scholarships** for top-ranking students.

- o **Infosys Foundation Science Education Fellowship** for STEM educators.

  https://www.infosys.com/infosys-foundation/

2. Wipro Foundation (Azim Premji Philanthropic Initiatives)

- **Scholarships**: Need-based and merit scholarships for underprivileged students.
- **Special Focus**:
  - o **Wipro Earthian Awards** (sustainability projects).
  - o **Education for rural and marginalized communities**.

    https://wiprofoundation.org/

3. K. C. Mahindra Education Trust

- **Scholarships**:
  - o **Nanubhai Education Scholarship** (for rural students).
  - o **Mahindra All India Talent Scholarship** (Class 10 passed students).

    https://www.kcmahindra.org/

4. HDFC Bank Parivartan's Educational Crisis Scholarship Support (ECSS)

- **For**: Students affected by financial crises (e.g., COVID-19, family loss).
- **Coverage**: School to college-level support.

  https://www.hdfcbankecss.com/

5. DLF Foundation Scholarships

- **For**: Underprivileged students in Haryana & NCR.
- **Focus**: Higher education in STEM, medicine, and law.

  https://www.dlffoundation.in/

6. Kotak Education Foundation

- **Scholarships**:
  - o **KEF Higher Education Scholarship** (for economically weak students).
  - o **Vocational training support**.

    https://www.kotakeducation.org/

7. Bajaj Foundation Scholarships

- **For**: Rural and semi-urban students.
- **Special Programs**:
  - **Bajaj Finserv CSR Scholarships** (for technical courses).
    https://www.bajajfinserv.in/csr-education

8. Biocon Foundation (Kiran Mazumdar-Shaw)

- **For**: Medical and biotechnology students.
- **Scholarships**:
  - **Biocon Merit Scholarships** for life sciences students.
    https://www.bioconfoundation.org/

9. JSW Foundation Scholarships

- **For**: SC/ST/OBC students in Karnataka, Maharashtra, and Tamil Nadu.
- **Focus**: Engineering, medicine, and vocational training.
  https://www.jsw.in/foundation

10. Muthoot Finance M. George Foundation

- **Scholarships**:
  - **Muthoot Scholarship for Excellence** (Class 12 to PG students).
    https://www.muthootfinance.com/muthoot-scholarship

11. Hinduja Foundation Scholarships

- **For**: Medical and engineering students.
- **Coverage**: Partial to full tuition support.
  https://www.hindujafoundation.com/

12. Godrej Foundation Scholarships

- **For**: SC/ST students in engineering and medicine.
- **Special Programs**:
  - **Godrej LOUD Campus Scholarships** (for LGBTQ+ students).
    https://www.godrej.com/godrejfoundation

13. RPG Foundation Scholarships

- **For**: Underprivileged students in Maharashtra and West Bengal.

  https://www.rpgfoundation.org/

14. Bharat Petroleum Scholarships (BPCL)

- **For**: Engineering and management students.

  https://www.bharatpetroleum.com/corporate-social-responsibility

15. ICICI Foundation Scholarships

- **For**: Rural students pursuing higher education.

   https://www.icicifoundation.org/

14. **Reliance Foundation Scholarships**: Merit-based awards up to ₹5 lakh/year

    (reliancefoundation.org)

15. **Narotam Sekhsaria Scholarship**: Interest-free loans up to ₹20 lakh for PG studies

    (Education – NS Foundation)

16. **Tata Scholarships**: Full tuition coverage at Cornell University for Indian undergraduates

    (tataeducationtrust.com)

PSU Scholarships

1. Oil & Gas Sector PSUs

a) ONGC Scholarship Scheme

- **For**: SC/ST students pursuing **Engineering, MBBS, MBA, or Geosciences**.
- **Amount**: ₹48,000/year (UG), ₹60,000/year (PG).
- **Deadline**: Usually **October–November**.

  https://ongcscholar.org

b) Oil India Limited (OIL) Scholarship

- **For**: Students from **Northeast India** (Class 10+ to PG).
- **Amount**: Up to **₹30,000/year**.
- **Special**: Also supports **divyang (PwD) students**.

  https://www.oil-india.com

c) GAIL (Gas Authority of India) Scholarship

- **For**: **SC/ST/PwD** students in **Engineering & Management**.
- **Amount**: ₹20,000–₹30,000/year.

  https://gailonline.com

d) HPCL (Hindustan Petroleum) Scholarship

- **For**: **Merit-cum-Means** (Engineering, Medicine, MBA).
- **Amount**: ₹3,000/month (UG), ₹5,000/month (PG).

  https://www.hindustanpetroleum.com/scholarship

2. Power & Energy Sector PSUs

a) NTPC Scholarship Scheme

- **For**: **SC/ST/Divyang** students in **Engineering & ITI courses**.
- **Amount**: ₹20,000–₹30,000/year.

  https://www.ntpc.co.in/careers/scholarship

b) NHPC (National Hydroelectric Power Corp.) Scholarship

- **For**: **SC/ST/PwD** students near NHPC project areas.
- **Amount**: ₹15,000–₹25,000/year.

  https://www.nhpcindia.com

c) Power Grid Corporation of India Scholarship

- **For**: **SC/ST** students in **Electrical/Mechanical Engineering**.
- **Amount**: ₹20,000/year.

  https://www.powergrid.in

3. Mining & Metals Sector PSUs

a) SAIL (Steel Authority of India) Scholarship

- **For**: **SC/ST/PwD** students in **Engineering & Medicine**.
- **Amount**: ₹30,000/year.

  https://www.sail.co.in

b) NALCO (National Aluminium Company) Scholarship

- **For**: **SC/ST/OBC** students in **Odisha & nearby states**.
- **Amount**: ₹24,000/year (UG), ₹30,000/year (PG).

  https://www.nalcoindia.com

c) Hindustan Zinc Scholarship (Vedanta Group)

- **For**: **Girls & SC/ST students** in **Rajasthan**.
- **Amount**: Up to ₹50,000/year.

  https://www.hzlindia.com

4. Transportation & Infrastructure PSUs

a) Indian Railways SC/ST Scholarship

- **For**: Children of **Railway employees (SC/ST)**.
- **Amount**: ₹1,200/month (UG), ₹1,500/month (PG).

  https://indianrailways.gov.in

b) BEL (Bharat Electronics Ltd.) Scholarship

- **For**: **Engineering students** (ECE, EEE, CS).
- **Amount**: ₹50,000/year.

  https://www.bel-india.in

c) BHEL (Bharat Heavy Electricals) Scholarship

- **For**: **SC/ST** students in **Technical & Professional courses**.
- **Amount**: ₹15,000–₹25,000/year.

  https://www.bhel.com

5. Banking & Financial PSUs

a) SBI (State Bank of India) Scholarship

- **For**: **SC/ST/PwD** students in **UG/PG courses**.
- **Amount**: ₹20,000/year.

  https://www.sbi.co.in

b) Bank of Baroda Scholarship

- **For**: **Merit-based & Economically Weaker Section (EWS)**.
- **Amount**: ₹10,000–₹25,000/year.

  https://www.bankofbaroda.in

c) Canara Bank Scholarship

- **For**: **SC/ST/OBC/Minority** students.
- **Amount**: ₹10,000–₹20,000/year.

  https://canarabank.com

University-Specific Financial Aid

1. Premier Institutes (IITs/IIMs/NITs)

A. IITs

- **Financial Aid for B.Tech**
  - Need-based fee waivers (up to 100%)
  - Monthly stipends for living expenses
  - **Example**:
    - *IIT Bombay*: Financial Assistance
    - *IIT Delhi*: Fee remission for family income < ₹5 lakh

B. IIMs

- **Need-Based Scholarships**
  - Up to 100% fee waiver at top IIMs
  - **Examples**:
    - *IIM Ahmedabad*: Need-based aid up to ₹10 lakh
    - *IIM Bangalore*: Merit-cum-Means

C. NITs

- **Institute Free Studentship**
  - Full/partial fee waiver for SC/ST/low-income students

- o **Portal**: [NIT Council](#)

2. Central Universities

A. Delhi University (DU)

- **Scholarships**:
  - o *Vice Chancellor's Fund*: Emergency grants
  - o *DU Merit Scholarship*: ₹5,000/month
  - o [Details](#)

B. Jawaharlal Nehru University (JNU)

- **Financial Support**:
  - o Fee waiver for BPL students
  - o Enhanced fellowships for research scholars
  - o [Portal](#)

C. Banaras Hindu University (BHU)

- **Special Schemes**:
  - o *Pragati Scholarship* for girls
  - o *MCM Scholarship* for merit students [Apply](#)

3. Private Universities with Strong Aid Programs

A. Ashoka University

- **Need-Blind Admissions**
  - o 100% fee waiver possible
  - o Average aid: ₹5-15 lakh/year
  - o [Financial Aid](#)

B. Azim Premji University

- **Income-Based Fee Structure**
  - o Sliding scale fees (₹0-6 lakh/year)
  - o [Scholarships](#)

C. Shiv Nadar University

- **Merit Scholarships**

    o Up to 50% tuition waiver

    o [Aid Portal](#)

4. Specialized Institutions

A. AIIMS

- **Financial Assistance**:

    o Full fee waiver for SC/ST/BPL students

    o [Details](#)

B. NLUs (Law Schools)

- **Scholarships**:

    o *CLAT Merit-cum-Means*: Up to ₹2 lakh

    o *NALSAR Financial Aid*: [Portal](#)

C. IISc Bangalore

- **Research Fellowships**:

    o ₹31,000-35,000/month for Ph.D.

    o [Funding](#)

Special Category Scholarships

1. Scholarships for Women Students

A. L'Oréal India For Young Women in Science

- **Eligibility**: Indian women pursuing STEM (BSc/MSc/PhD)

- **Award**: ₹2.5 lakh (50 scholarships/year)

- **Deadline**: December

- **Apply**: www.loreal.com/en/india/for-young-women-in-science

B. AICTE Pragati Scholarship

- **For**: Girls in Engineering/Technical courses (1st year)
- **Benefits**: ₹50,000/year + mentorship
- **Portal**: www.aicte-pragati-saksham-gov.in

C. Begum Hazrat Mahal National Scholarship

- **For**: Minority community girls (Class 9-12)
- **Amount**: ₹5,000-10,000/year
- **Apply**: maef.nic.in

2. Sports Scholarships

A. TOPS Scheme (Target Olympic Podium)

- **For**: Elite athletes in Olympic disciplines
- **Benefits**:
  - ₹10 lakh/year training grant
  - International exposure trips
- **Portal**: www.sportsauthorityofindia.nic.in/tops

B. Khelo India Scholarship

- **Eligibility**: Age 10-18 years, medalists at national level
- **Amount**: ₹5-10 lakh/year
- **Apply**: kheloindia.gov.in

3. Arts & Humanities Scholarships

A. Inlaks Fine Arts Award

- **For**: Young artists (painting/sculpture/photography)
- **Award**: ₹3 lakh + international residency
- **Deadline**: April
- **Apply**: www.inlaksfoundation.org

B. National Cultural Fellowship (SPIC MACAY)

- **For**: Students preserving traditional arts
- **Stipend**: ₹50,000/year
- **Portal**: www.spicmacay.com

C. Ustad Bismillah Khan Yuva Puraskar

- **For**: Performing artists (age 18-25)
- **Award**: ₹25,000 + national recognition
- **Apply**: www.sangeetnatak.gov.in

4. Disability-Inclusive Scholarships

A. Saksham Scholarship (AICTE)

- **For**: PwD students in technical courses
- **Amount**: ₹50,000/year
- **Apply**: www.aicte-saksham-scholarship.gov.in

B. NCPEDP-Javed Abidi Fellowship

- **For**: Disabled students in higher education
- **Stipend**: ₹3,000/month
- **Portal**: www.ncpedp.org

5. LGBTQ+ Scholarships

A. Godrej LOUD Campus Program

- **For**: LGBTQ+ students in UG/PG
- **Award**: ₹50,000 + mentorship
- **Apply**: www.godrej.com/loud

B. Rainbow Scholarship (Naz Foundation)

- **For**: Queer students in professional courses
- **Amount**: ₹25,000/year
- **Portal**: www.nazindia.org

6. Crowdfunding & Emergency Aid

a) **Milaap**

- o *For:* Education/Medical emergencies
  https://milaap.org

b) **Ketto**

- o *Success Rate:* 70%+ for education
  https://www.ketto.org

Chapter 14
Miscellaneous Resources

Time Management Tools

1. Focus Boosters (Pomodoro & Timers)

- **Focus To-Do** - Combines Pomodoro timer with task management. Syncs across devices.
  focustodo.cn
- **Pomofocus** - Clean, web-based timer with task tracking. No login needed.
  pomofocus.io
- **Marinara Timer** - Customizable intervals (Pomodoro, 52/17, etc.).
  marinaratimer.com

2. Distraction Blockers

- **Forest Chrome Extension** - Grow virtual trees by staying focused.
  forestapp.cc
- **Cold Turkey Blocker** - Strict website/app blocker.
  getcoldturkey.com
- **StayFocusd** - Limits daily time on distracting sites.
  Chrome Web Store

Productivity & Organization

1. Task Management

- **Microsoft To Do** - Simple, cross-platform task app.
  todo.microsoft.com

- **TickTick** - Free tier includes habits, Pomodoro & calendar sync.
  ticktick.com
- **Habitica** - Gamified task manager (RPG-style).
  habitica.com

2. All-in-One Workspaces

- **Notion Free Plan** - Notes, databases & project boards.
  notion.so
- **ClickUp Free Plan** - Tasks, docs, goals & Gantt charts.
  clickup.com
- **Trello Free Plan** - Visual Kanban boards.
  trello.com

3. Note-Taking

- **Obsidian** - Powerful local markdown notes.
  obsidian.md
- **Zoho Notebook** - Lightweight Evernote alternative.
  zoho.com/notebook
- **Google Keep** - Quick capture for checklists & voice notes.
  keep.google.com

Scheduling & Tracking

1. Calendars & Planning

- **Google Calendar** - Robust scheduling with reminders.
  calendar.google.com
- **Clockify** - Unlimited time tracking.
  clockify.me
- **Calendly Free Plan** - Automated meeting scheduling.
  calendly.com

Productivity Techniques

1. Frameworks & Methods

- **Pomodoro Technique** - 25-minute focused work sprints.
  Guide: francescocirillo.com
- **Eisenhower Matrix** - Prioritize by urgency/importance.
  Template: eisenhower.me

2. Free Templates

- **Notion Templates** - notion.vip/templates
- **Google Sheets Templates** - vertex42.com
- **Habit Trackers** - developgoodhabits.com

3. Thomas Frank (YouTube) - Productivity tips(youtube.com/c/ThomasFrank)

Conclusion

The world of education has undergone a profound transformation, and the opportunities for learning are now more abundant than ever. The advent of digital education has broken barriers of affordability, accessibility, and quality, providing students with an unparalleled opportunity to pursue their academic and career goals.

The resources in this book serve as a roadmap to self-driven learning, empowering students across India to acquire knowledge and develop new skills at their own pace. Whether you are a school student looking to strengthen your fundamentals, an engineering student preparing for competitive exams, or a professional seeking to upskill, the wealth of freely available online resources ensures that nothing holds you back.

Education is not merely about passing exams—it is about acquiring knowledge that transforms lives, opening doors to new possibilities, and shaping a brighter future. This book encourages every reader to take charge of their learning journey, utilize these free resources effectively, and share the gift of education with others.

As we embrace this digital revolution, let us remember that learning is a continuous process. The more we explore, the more we grow. So take the first step today—unlock the vast potential of free education, pursue your passions, and embark on a journey of lifelong learning.

The future belongs to those who are willing to learn. Are you ready to seize the opportunity?

Let's begin this journey together!

About the Author

My name is **Udaykumar Reddy Madooru**, and above all, I see myself as a lifelong learner. Education has been my constant companion through both struggles and successes, and it has shaped the person I am today.

I had the privilege of studying at **Rajiv Gandhi University of Knowledge Technologies (RGUKT), Basar**, an institution established to provide excellent opportunities for rural youth. My years at RGUKT were transformative—they exposed me to the power of free, shared knowledge and planted in me the belief that education should never be limited by circumstances. That foundation eventually grew into the inspiration for this book.

After completing my **B.Tech in Civil Engineering**) at **RGUKT Basar**, I went on to pursue an **M.Sc. in Geoinformatics** at Osmania University.

I continued learning through **free and open online resources**, exploring subjects beyond my core discipline. These experiences deepened my conviction that quality education should be accessible to everyone, everywhere.

This book, *Free to Learn: The Ultimate Guide to Free Online Resources for Indian Students*, it is about the opportunities that exist today for every learner, no matter their background. It reflects both my personal journey and my hope that students across India will embrace the wealth of free learning platforms available at their fingertips.

I believe education is more than just exams or degrees. It is about confidence, curiosity, and the freedom to grow. Through this book, I want to share what I discovered, so that you too can explore, dream, and achieve—without being held back by financial or social barriers.

"A Note on My Process: This book was compiled by me, as a fellow learner, not as a formal expert. To manage the vast scope of this project, I used generative AI tools like ChatGPT, Gemini, and Grok etc., as research assistants to help gather, summarize, and structure information. The idea of work and final curation, selection of resources, and editing were done by me to ensure accuracy and relevance for the Indian student.

Unlike a traditional book, this guide is a dynamic resource that I will continuously update. As I discover the best new resources for students, I will integrate them into the book and on the companion website. Be sure to check back for the latest information.

— ***Udaykumar Reddy Madooru***
Assistant Executive Engineer, Government of Telangana

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