Engineering Branch and College Selection Guide - 2020

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“

Arise, Awake and Stop Not till the Goal is Reached.

— Swami Vivekanand

Risk

> **"** Risk comes from not knowing what you are doing.

What is your class 12 Results?

Opens door for admission in College

To write entrance exams
like TS EAMCET, JEE etc

Future of Engineering???

New national programs designed to transform India for next generation of growth & development
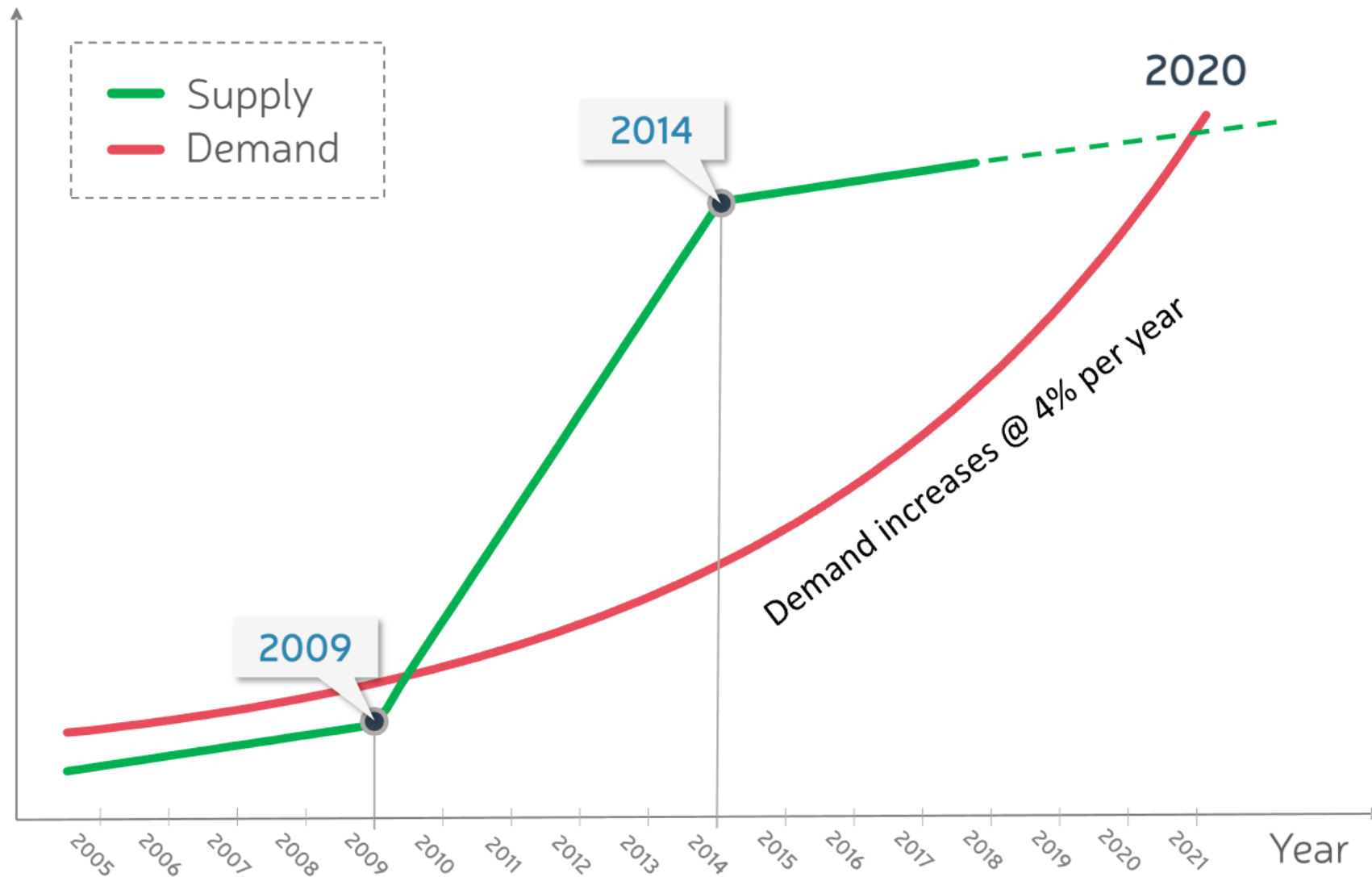
How to Select Branch ?

Where find lies Your Interest?

✓ Excites the curiosity

✓ Based on your skills & Strengths

Real Interest ?
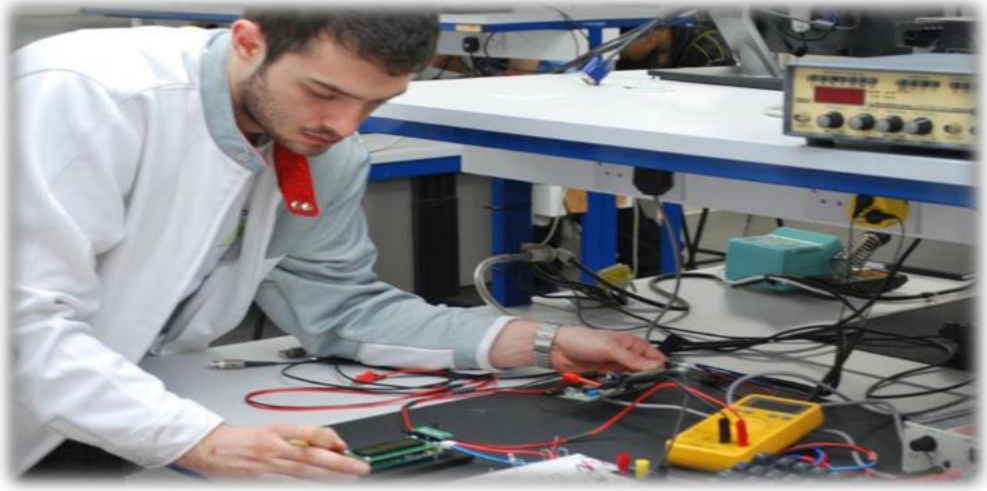
Look Behind the Scene

What is Branch?

▶ *Area, Domain or Type of work* where you will **work for entire life.**

= Goal, Destination, Career

Branch

= *Path* to achieve Goal

College

Types of Branch

Branches

40+

Colleges

130+
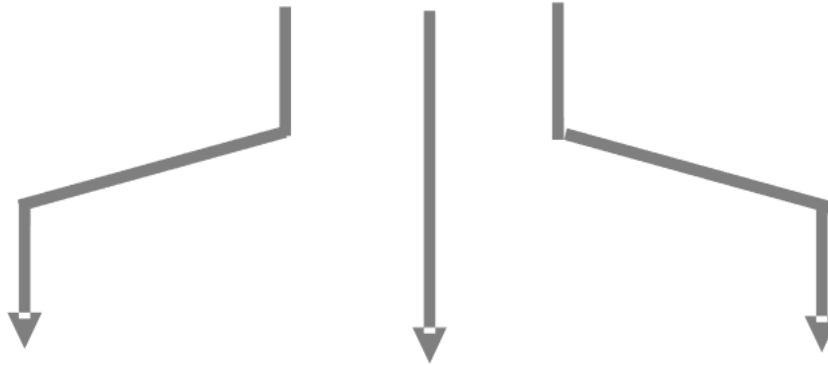
Basic (Core) Branches

Branches in Emerging Areas

Other Branches

Basic Branches

▶ Used or applicable in *most of the industries*

▶ Wide spectrum of *jobs*, *job areas*, *location* & *business scope*

Aeronautical	Civil	Computer	Electrical	EC	Mechanical	IT
√ propulsion systems, √ Flight mechanics √ guidance and control systems, √ aerodynamics √ robotics	√ Transportation √ Buildings √ Water Resources √ Geotech √ Environmental	√ Software √ Website √ ERP √ Mobile Apps √ IoT	√ Electrification √ Power Supply √ Electric Machines √ Power • Generation • Transmission • Distribution	√ Hardware √ Communication √ Automation √ Software	√ Machines √ Production √ Physical Conversion	√ installation √ development √ implementation of computer systems √ and applications

Civil Engineering

- *Civil engineering is the oldest branch in the history of human kind. It is related to civilization*

- *It deals with the planning, design, construction of buildings, highways, bridges, dams, airports, etc.*

- *Civil engineer gets job in the public sector from municipal corporation to central governments, and in the private sector from individual builders to international companies.*

- *Specialization can be done in many areas like Structural, Construction, Water Resources, Architectural, Environmental, Geotech, Transportation, etc.*

- ***Who should select Civil Engineering?***

  - Students who are rough & tough by nature, can work in any season and ready for physical work on site.

  - If a student is looking for government job or planning to start construction business.

  - Good command on mathematics and drawing are expected

Electrical & Electronic Engineering

- *Electrical engineering surrounds us everywhere in modern society.*
- *The electrical engineer supplies us with the ability to harness electricity which has transformed our lives. It gives us light, heat, entertainment, communication systems and comfort.*
- *Electrical engineers create and design products and information systems using scientific principles combined with natural curiosity, problem-solving and innovation.*
- *It covers a wide range of careers including Power Generation and Transmission, Control Systems, Communications, Robotics, Electronics and Nanotechnology, just to name a few.*
- *Electrical engineers work on anything from small pocket devices to large aircraft electrical systems.*
- ***Who Should Select Electrical Engineering?***
  - If you are interested in electrical systems, electronics devices and related technologies.
  - If you are inspired and motivated by technology and by the physical sciences or if you have a curious and analytical mind that enjoys the study and application of science, technology and mathematics.
  - If you are willing to embark in the serious study and practice of those subjects.

Mechanical Engineering
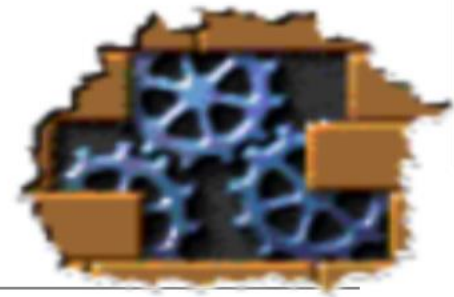
▶ *Mechanical engineering is one of the largest, broadest and oldest engineering discipline, that's why it is also known as Mother of all engineering disciplines.*

▶ *Mechanical engineers design and manufacture an enormous range of products from washing machines, copying machine to complex items like turbines, racing cars, planes and even faster rockets and yes, they even create robots. In a word, mechanical engineers creates - almost anything.*

▶ *Almost every industry you can think, depends on mechanical engineering to thrive. That's why there is such a huge global demand for mechanical engineers.*

▶ **Who should select Mechanical Engineering?**

■ If you enjoy creating practical solutions to problems and like turning your ideas into reality,

■ The student who is inventive, good interest in basic math and science, can work according to environment i.e. team work, multitasks at a time, love to work with man and machines, etc.

■ Those who have family business or planning to start should give preference to mechanical engineering.

Electronics & Communication Engineering
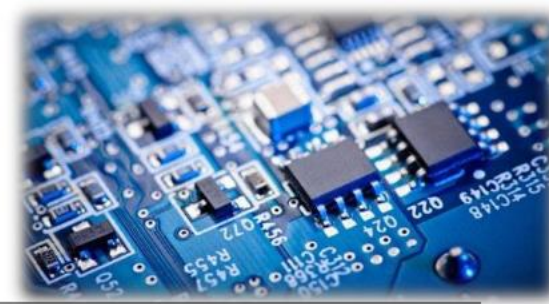
▶ *ECE broadly deals with systems related to acquiring, communicating, manipulating and analyzing information.*

▶ *ECE covers wide range of systems from sensor to satellites, calculators to computers, robots to radars,mobile phones to medical electronics, automation to electronics in automobiles, etc.*

▶ *ECE has played a major role in technology revolution that we see today and has highly influenced all domains of engineering and our day-to-day life.*

▶ *Study in ECE covers both hardware (system/circuit) and software (programming) skills hence varieties of job profiles are available that covers office job as well as field job.*

▶ *In addition to core ECE, job opportunities are also available in fields related to IT, ICT, Instrumentation, Bio-medical, etc.*

▶ ***Who should select Electronics & Communication Engineering?***

   ▪ Students who are interested to work with latest technology and MNC kind of work environment.

   ▪ Students who do not mind migrating to metro cities for higher salary and fast career growth.

   ▪ Students who are interested to go abroad for higher studies or job.

Compute Science and Engineering

Computer Science is the study of the theory, design, implementation, and performance of computer software **and** computer systems, **including the study of** computer-based devices

►**Skills Gained:**

- Deep knowledge of algorithms and data structures, and coding skills in languages like C, Java Python and open source technologies.
- Analytical approach to create the code for automatic complex process and solve problems.
- Design, implement, and evaluate computer-based systems, services and applications employing the methods of software engineering as an instrument to ensure quality.

►**Job Opportunities:**

- Software Developer
- Computer Software Engineer
- Software Analyst
- programmer
- Database Administrator
- Systems Architect

Information Technology

Information Technology is the study of processing, transmitting, administering and storing of information and databases. Information Technology build communication networks, safeguard data, information and help to troubleshoot problems with computers or mobile devices

►**Skills Gained:**

- Complete projects using relevant information technologies.
- Develop/maintain/test business support and IT systems.
- Project management skills including documentation and presentations for completion of project with varying complexities/durations.
- Identify priorities, manage multiple projects and meet deadlines.
- Designing and building systems that will meet the needs of consumers today and in the future.

►**Job Opportunities:**

- IT Consultant
- Cloud Architect
- Mobile Specialist

- Web Developer
- Vendor Manager
- System Administrator

Computer Science and Information Technology

Computer Science and Information Technology provides a *realistic balance* between *theoretical understanding of computation* and how to *build the secure databases and systems*

►**Skills Gained:**

- Deep knowledge of algorithms and data structures, and coding skills in languages like C, Java Python and open source technologies.
- Analytical approach to create the code for automatic complex process and solve problems.
- Design, implement, and evaluate computer-based systems, services and applications employing the methods of software engineering as an instrument to ensure quality.
- Designed and build systems ranging from a small business needing a new technology tool, to managing the many and varied IT resources in a big business.

►**Job Opportunities:**

- Computer Systems Analyst
- Cloud Architect
- Security Architect
- Information Technology Consultant
- Web Developer
- Mobile Application Developer

Aeronautical Engineering

- Aeronautical engineering deals with science involved in building aircrafts and spacecrafts.

- It is a specialization of Mechanical Engineering which deals only with flying vehicles

- This branch deals with thermodynamic, fluid dynamics, propulsion, control engineering and material engineering of working with flying vehicles.

- *Who should select Computer Engineering?*

  - Strong sense of responsibility and Ability to work speedily with accuracy - since aircrafts have to be serviced in a short time

  - Ability to work as members of a team

  - Students who are interested to work in Airlines, Air Force, Corporate Research Companies, Defence Ministry, Helicopter Companies, Aviation Companies, NASA and many others.

Branches in Emerging Areas

►Design for **specific type of work** based on **demand**

►More **scope** for jobs, job areas, location & business scope in **changing industry demands**

►Emerging markets are **increasingly recognized** as being **incubators of innovation**

Computer Science and Engineering (Artificial Intelligence & Machine Learning)

Artificial Intelligence and Data Science are two complementary areas of *Intelligent Systems*, with data science focusing on *statistical techniques* and *artificial intelligence* on algorithmic techniques

►**Skills Gained:**

- Create Expert Systems − The systems which exhibit intelligent behaviour, learn, demonstrate, explain, and advice its users.
- Implement Human Intelligence in Machines − Creating systems that understand, think, learn, and behave like humans Knowledge of computer science concepts in automation and specialist skills in artificial intelligence.
- Data science provides meaningful information based on large amounts of complex data or big data.
- Extract insights from data and report the results in data-analytic contexts.

►**Job Opportunities:**

- Business Analyst
- Data Analyst
- Intelligence Analyst
- Data Manager
- Information Security Analyst
- Risk Analyst

Computer Science and Engineering (Data Science)

Data science is a method for **transforming business data** into assets that help organizations **improve revenue**, **reduce costs**, seize business opportunities, improve customer experience, and more.

►**Skills Gained:**

- Help organizations to respond faster
- Business analytics can assist entrepreneurs and company executives in making timely decisions based on market trends.
- Enable more accurate diagnosis through better analysis of images.

►**Job Opportunities:**

- Data Scientist
- Data Engineer
- Data Architect

- Business Analytics Specialist
- Data and AI Consultant
- Data Visualization Developer

Computer Science and Engineering (Cyber Security)

Cyber Security combines work in *computer science* and *mathematics with a security-driven* focus, essential to find creative, effective solutions to issues of *security and information assurance* as internet has brought the threat of c*yber-terrorism*, attacks on *critical installations* and the *misuse of social media*

▶**Skills Gained:**

- Build skills related to cyber threat intelligence, digital forensics and risk management technology environment.
- In-depth knowledge of penetration testing, cyber forensics, malware reverse engineering and software vulnerability.
- The socio-ethical and legal aspects of cyber Security.
- Analyse and Identify new and existing cyber-attacks and determine methods to mitigate them.

▶**Job Opportunities:**

- Security Programmer/Analyst
- Penetration and Vulnerability Tester
- Forensic Investigator

- Security Consultant
- Malware Analyzer
- Information Security Manager

Computer Science and Engineering (Internet of Things)

Internet of Things, or "IoT" for short, is about extending the *power of the internet* **beyond** *computers and smartphones* **to a whole range of other** *things, processes, and environments*

►**Skills Gained:**

- Understand internet of Things and its hardware and software components
- Interface I/O devices, sensors & communication modules
- Remotely monitor data and control devices.

►**Job Opportunities:**

- IoT software developer
- IoT product manager
- IoT solution Architect

- Cloud Architect
- IoT research developer
- FP&A IoT service manager

Computer Science and Engineering (Block Chain)

Blockchain **is a decentralized, distributed, and oftentimes public, digital ledger consisting of** *records* **called** *blocks* **that is used to** *record transactions* **across many computers, so that any involved block** *cannot be altered* **retroactively, without the alteration of all subsequent blocks**

►Skills Gained:

- Develop block chain based solutions and write smart contract using Hyperledger Fabric and Ethereum frameworks.
- Build and deploy block chain application for on premise and cloud based architecture.
- Integrate ideas from various domains and implement them using block chain technology in different perspectives.

►Job Opportunities:

- Blockchain Project Managers
- Blockchain Developers
- Blockchain Quality Engineer
- Blockchain Legal Consultant
- Blockchain Web Designer
- Blockchain Engineer

Computer Science and Engineering (Robotics)

Robotics has to do with the *creation and building of robots*, as well as computer programming. It is interdisciplinary, using mechanical, electrical and other kinds of engineering. Some robots look *like humans*, but most just look *like machines*.

► **Skills Gained:**

- Perform kinematic and dynamic analyses with simulation.
- Design control laws for a robot.
- Integrate mechanical and electrical hardware for a real prototype of robotic device.
- Select a robotic system for given application.

► **Job Opportunities:**

- Mechanical Engineers
- Aerospace Engineering and Operations Technicians
- Electro-mechanical Technicians

- Computer Programmers
- Computer and Information Research Scientists
- Robot Troubleshooter

Computer Science and Engineering (Quantum Computing)
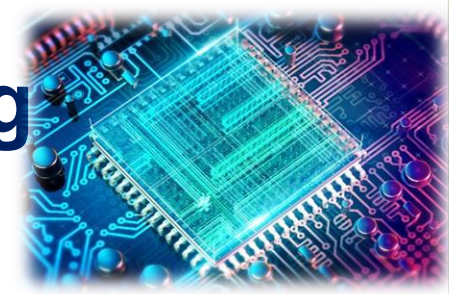
Quantum computing is an area of *computing* focused on developing *computer* technology based on the principles of *quantum* theory, which explains the behavior of energy and material on the atomic and subatomic levels
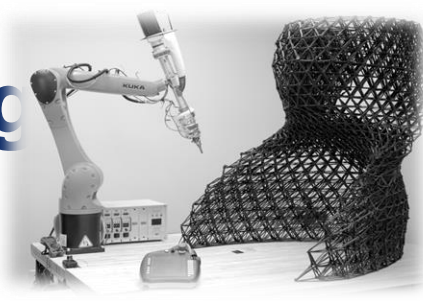
▶ **Skills Gained:**

- Explain the working of a Quantum Computing program, its architecture and program model
- Develop quantum logic gate circuits
- Develop quantum algorithm
- Program quantum algorithm on major toolkits.

▶ **Job Opportunities:**

- Quantum Physicist R&D Engineer
- Security Architect
- Quantum Solution Scientist
- Quantum Computer Architects
- Quantum Algorithms Researchers
- Quantum Software Developers

Computer Science and Engineering (3D Printing and Design)

3D printing is a way of *creating three dimensional* (3D) solid objects. 3D printing is done by *building* up the object layer by layer. Usually, 3D printers *use plastic*, because it is easier to use and cheaper

►**Skills Gained:**

- Develop CAD models for 3D printing.
- Import and Export CAD data and generate .stl file.
- Select a specific material for the given application.
- Select a 3D printing process for an application.
- Produce a product using 3D Printing or Additive Manufacturing (AM).

►**Job Opportunities:**

- 3D Printed Electronics
- 3D computer-aided designer
- Mechanical Engineer
- Service Technician
- Applications Engineer
- 3D Printing Specialist

Computer Science and Engineering (Virtual Reality)

Virtual reality is an *artificial environment* that is created with *software and presented* to the user in such a way that the *user suspends belief and accepts* it as a real environment.

►**Skills Gained:**

- Understand geometric modelling and Virtual environment.
- Study about Virtual Hardware and Software
- Develop Virtual Reality applications.

►**Job Opportunities:**

- Virtual Reality Designer
- Computer Programmers
- Web Developer

- Cloud Architect
- Information Technology Consultant
- Mobile Application Developer

Other Branches

►Fancy or attractive names

► Available in few colleges

►If you have family business related to this branch then only it is advisable to choose it

►If you have enough information about the branch and ready to relocate anywhere in the country then only choose it.

Automobile Engineering

Mechanical Engineer ✓ →

Automobile Engineer ✗ →
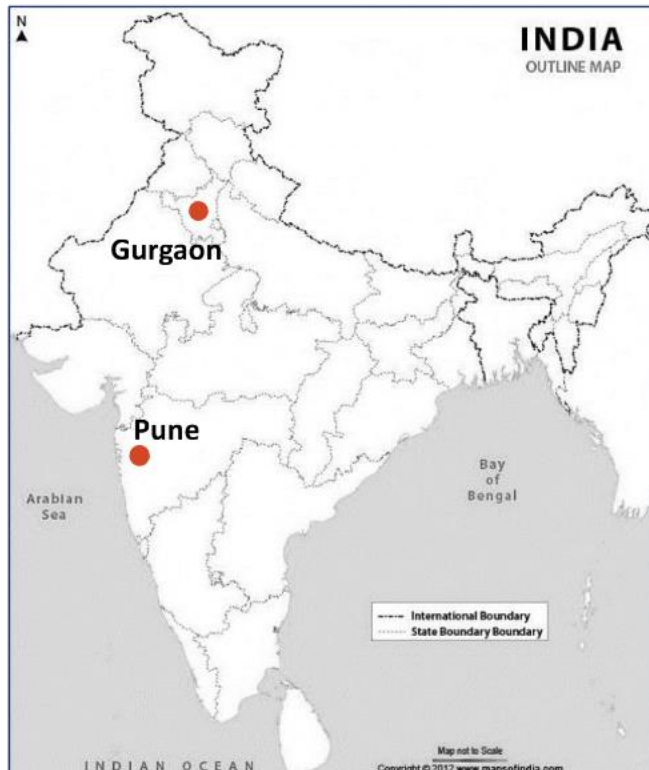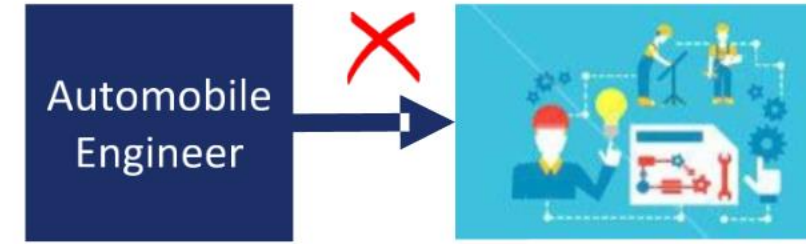
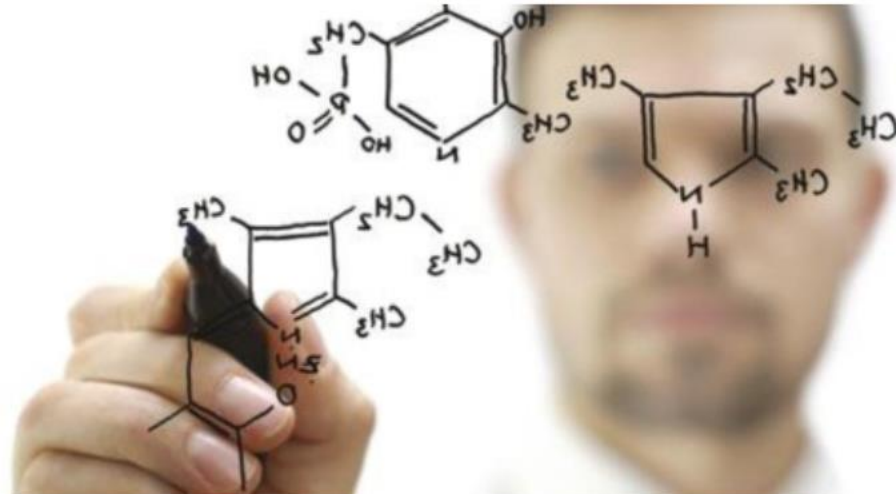**Demand is very limited.**

Chemical Engineering

▶ *Tough competition* from B.Sc. (Chemistry)

▶ Job location in metro cities

▶ Should be very careful in *work environment*

Few More Branches

▶**Instrumentation and Control (IC)**

  ■ Works for industries with automated process, such as bio-medical or manufacturing

▶**Mechatronics**

  ■ Difficult branch compared to other branches
  ■ Combination of Mechanics & Electronics

▶**Production, Industrial**

  ■ Areas of Mechanical Engineering

▶**Bio-Technology**

  ■ Better to do Chemical Engineering and the Ph.D

▶**Environmental**

  ■ Part of Civil Engineering, better to go for Civil Engineering

Branch Selection Matrix

Tick your preferences & consider the branch with higher ticks

Branch ➜ Parameter ⬇	Aero	Mech.	CSE Allied Courses	EEE	ECE	Civil
Job Type	Field Job (60%) Office Job (40%)	Field Job (80%) Office Job (20%)	Office Job	Field Job (70%) Office Job (30%)	Field Job (40%) Office Job (60%)	Field Job
Nature of Job	Hard (Physical Work)	Hard (Physical Work)	Soft (No Physical Work)	Medium to Hard	Soft to Medium	Hard (Physical Work)
Government Jobs	Medium Scope	Low Scope	Very Low Scope	Huge Scope	Low Scope	Huge Scope
Private Sector Jobs	Huge	Huge	Highest	Medium	High	Limited
Campus Placement	High	High	Highest	Low to Medium	Huge	Low
Salary Growth	Medium	Medium	Very Fast	Medium	Fast	Medium
Business with Low Capital	Moderate Scope	Moderate Scope	Huge Scope	Moderate Scope	Moderate Scope	Huge Scope
Job Locations	Local to Global	Local to Global	Local to Global	Local to Metro	Metro to Global	Local to Metro

How to Select College?

Branch v/s College

If you *like a college*, then pursue *any branch available* in that college

If your *focus is on branch*, then pursue in *any college* where it is available

Most Important Parameters to choose college

College profile

Affordability ₹

College Selection Criteria

Autonomous / Non-Autonomous (Affiliated) Institutes

▶ *Drawbacks of the university affiliating system:*

- As large numbers of colleges are affiliated to the Universities it becomes very difficult to manage the quality standards.

- Curriculum is common with many other affiliated institutes and is regulated by a University throughout entire state and exams are conducted by the affiliated University.

- The colleges have a subsidiary character with no function as catalyst in education for social change and progress.

- Teachers have hardly any role in generating knowledge and absolutely no recognition in research undertakings.

- Students have limited options with hardly any provision for individual's aptitudes and aspirations.

- Changes in curriculum and syllabi are very slow in the affiliating system due to difficulty of bringing together large number of people involved in the process.

Autonomous / Non-Autonomous (Affiliated) Institutes

▶ *Salient Features In Autonomous Institutes*

- Academic independence gives freedom to revise the syllabus with time and follow a schedule which is more suitable for the set curriculum.

- Exams are conducted by the institute itself and are in accordance with what is being taught during the session.

- Relative grading system where the highest mark obtained by a student decides the marks the others get. So in case of a difficult paper, a low percentage score would not necessarily mean a low GPA.

- Students can pick subjects of their choice rather than being forced to rote learning what they do not wish to.

- Degrees finally awarded by the affiliated University which generally carries a lot of reputation.

- Have higher status compared to their counter-parts, obviously indicates a superiority and prestige.

- Being equipped with the right kind of infrastructure attracts higher degree of campus placements

2. Faculty

▶Faculties are the soul, heart & brain of the college

- Number of Faculties w.r.t. Intake (Faculty – Student Ratio)
- Stability of Faculties
- **Experience** of faculties in **field** and **academics**
- Industrial Exposure & Consultancy

3. Campus Environment

▶ Disciplined and Academic

▶ Student Monitoring System

▶ Daily Reporting to Parents

4. Infrastructure

▶Building is not main infrastructure of the college,

- Equipment in Laboratories
- Machine Tools in Workshop
- Books & Resources in Library
- Class Rooms
- Student Store & Cafeteria

▶*Easy access to resources is real infrastructure !!!*

5. Result

▶University Results is direct reflection of

- Faculty Quality
- Teaching Standard
- Academic Environment

▶Compare result with reference based on how many joined and completed their degree with in stipulated period

NIRF India Ranking of Institutions

The *Ranking system* is considered to *promote excellence* in *education* in commutative environment.

The *National Institutional Ranking Framework* (NIRF) was *approved* by the *MHRD* and *launched* by *Honourable Minister* of Human Resource Development on *29th September 2015*.

This framework outlines a methodology to rank institutions across the country.

The parameters broadly cover "*Teaching, Learning and Resources*," "*Research and Professional Practices*," "*Graduation Outcomes*," "*Outreach and Inclusivity*," and "*Perception*".

Why NIRF?

- **Formulating the National Policy on Education.**
- **Improving quality of the educational institution throughout the country.**
- **Encouraging international cooperation in the field of education.**

- **Help the students and parents to identify the good institutions in the country**

- **Ensure the high quality education**

- **Provide international exposure to Indian Institutions**

- **Ending era of ranking of Indian Educational Institutions by Private Agencies alone.**

NIRF 2020 India Ranking – Telangana (Top 200 Institutions)

Public Funded Institutions

S. No	College Name	2019	2020
1	Indian Institute of Technology, Hyderabad	8	8
2	National Institute of Technology, Warangal	26	19
3	International Institute of Information Technology, Hyderabad	39	43
4	Jawaharlal Nehru Technological University, Hyderabad	45	57
5	College of Engineering, Osmania University, Hyderabad	83	88

NIRF 2020 India Ranking – Telangana (Top 200 Institutions)

Private Funded Institutions

S. No	College Name	2019	2020
1	Chaitanya Bharathi Institute of Technology	100	124
2	VNR Vignana Jyothi Institute of Engineering and Technology	109	127
3	CVR College Of Engineering	132	141
4	Vardhaman College of Engineering	152	143
5	SR Engineering College	No	160
6	Institute of Aeronautical Engineering (IARE)	139	170
7	Goka Raju Ranga Raju Institute of Engineering & Technology	179	172
8	Anurag Group of Institutions	169	180
9	Vasavi College of Engineering	170	187
10	BVRIT Hyderabad	147	199

7. Placement

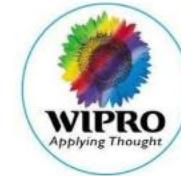*Placement is the result of previously listed parameters.*

Always remember,
Placement is a side product of
Quality Education.

7. Placement Type

Education based

Minimum 60% in
SSC, 10+2, B.Tech.(No Backlog),
Good English & Communication Skill

Starting 30,000+

Skill based

Only Skill matters
1st Class in B.E. is enough

Starting 10,000+

# 7. Placement

▶*Now a day, Companies arrange common placement*

▶They choose any one college as campus drive venue

▶Students from good colleges are invited for the drive

▶Students of good colleges get equal opportunities

▶Most important thing is that *Placement is branch specific.*

- Higher Placement: Computer, EC, Mechanical
- Lower Placement: Civil, Electrical

8. Intake

▶ Quality of Education degrades in overcrowded campus

▶ Quality and Quantity never goes together, specially in education

▶ Intake has direct effect on campus environment, teaching, result & placement
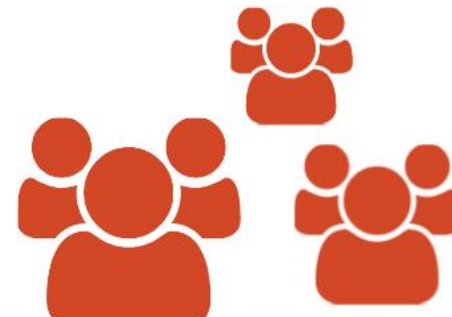
9. College Timing

▶College timing should be optimized not stretched

▶It should give sufficient time for
- career development
- other activity of interest

10. Affordability

CBIT

- Started in 1979
- Fee Details: ₹ 1,34,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **124**

VNRVJIT

- Started in 1995
- Fee Details: ₹ 1,13,275
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **127**

IARE

- Started in 2000
- Fee Details: ₹ 90,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **170**

CVR

- Started in 1999
- Fee Details: ₹ 1,15,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **141**

Vardhaman

- Started in 1999
- Fee Details: ₹ 1,25,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **143**

10. Affordability

GRIET

- Started in 1997
- Fee Details: ₹ 1,22,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **172**

Vasavi

- Started in 1981
- Fee Details: ₹ 1,30,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **187**

IARE

- Started in 2000
- Fee Details: ₹ 90,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **170**

MLRIT

- Started in 2005
- Fee Details: ₹ 96,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank Band: **251-300**

BVRIT NARSAPUR

- Started in 1997
- Fee Details: ₹ 1,20,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **No**

10. Affordability

Sreenidhi
- Started in 1997
- Fee Details: ₹ 1,30,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank Band: **201-250**

MREC
- Started in 2002
- Fee Details: ₹ 1,03,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank Band: **201-250**

IARE
- Started in 2000
- Fee Details: ₹ 90,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank: **170**

CMR CET
- Started in 2002
- Fee Details: ₹ 1,15,000
- NAAC, NBA, UGC Autonomous
- NIRF Rank Band: **251-300**

MVSR
- Started in 1981
- Fee Details: ₹ 1,09,250
- NAAC, NBA, UGC Autonomous
- NIRF Rank Band: **251-300**

10. Affordability

IARE is ranked **170** in Engineering category as per **National Institutional Ranking Framework (NIRF) - 2020**, Ministry of Human Resource Development (MHRD), Govt. of India.

*Quality does not reflect on **High Tuition FEES …** It reflects on **Quality of Teaching***

***IARE** have been achieving **International Quality Education** with dedicated faculty, passionate students and moderate tuition fees.*
Experience more at IARE !!!

How to collect information?

Information Type		From
Faculties, Fee, Placement, Transportation, College Timing	→	college website
Results of University Exam	→	University and college website
Infrastructure, Campus environment, Quality of faculties & teaching, etc.	→	Current Students of the College

To Do for College Selection

- **Sort list** 3 to 4 colleges that match your criteria

- **Personally visit** those colleges

- **Meet** professors, students. **Observe** environment

Currently studying students are real testimony

☺

Respect what you get

☹

Don't regret for others

Counselling Center

Dr. J Suresh Goud

Associate Professor

Institute of Aeronautical Engineering

Dundigal, Hyderabad-500043

Telangana

Mobile: 9966239198

Time: 9:00 AM to 6:00PM

Mr. B. Raju

Assistant Professor

Institute of Aeronautical Engineering

Dundigal, Hyderabad-500043

Telangana

Mobile: 9866398700

VISION
without action is
DAYDREAM

ACTION
without vision is
NIGHTMARE

Thank you