i-Max NEP 2020 Platform also Includes
"360-Degree Career Development Centre"

GeM
Government
eMarketplace

GeM Certified OEM

India to the Max! Through YOU!

i-MAX

NEP 2020 for Mechatronics & Robotics Engineering

i-max.org

With NEP 2020 for Mechatronics & Robotics Engineering, You Bring Genuine Innovation, and True Differentaition for Your Institution!

The Finest Delivery of Mechatronics & Robotics Engineering Education: *Right from the Induction, to the Final Placement & Start-Up!*

NEP 2020 for Mechatronics & Robotics Engineering meets every crucial **Qualitative Requirement** of NEP 2020 in letter and spirit - with innovative approaches, and tools. It ensures Recognizing, identifying, and fostering the unique capabilities of each student, and helps them add value to themselves, their families, society and the country.

Indian students come from unique backgrounds. Their requirements are very different. They need India-specific approaches and tools to meet the requirements of NEP 2020.

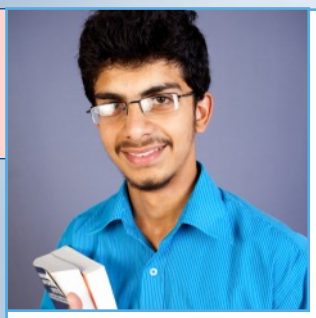
NEP 2020 for Mechatronics & Robotics Engineering is a professional skill-acquisition platform with over hundred unique, innovative tools specifically developed for Indian students.

Executive Summary of Contents:

- **For Induction Programme, and to Generate Interest & Pride in Mechatronics & Robotics Engineering:** Six interactive self-learning modules. *Complete list inside.*
- **For Placement:** Over 30 interactive multimedia modules & tests including AI-based Professional Interview Simulator for Mechatronics & Robotics Engineering. Professional Interview Trainer. Personalised career guidance for Mechatronics & Robotics Engineering. *Complete list inside.*
- **For Improving Learnability:** Over 20 interactive multimedia modules to build Higher Order Thinking (HOT) as per Bloom's Taxonomy. This includes Critical & Creative Thinking for Mechatronics & Robotics Engineering, GATE level competency tests, *Complete list inside.*
- **For Start-Up & Entrepreneurship:** Over 22 modules including Problem Finding & Idea Generation, All Innovations are Not Technical etc. *Complete list inside.*
- **For Graduate Attributes & Sustainable Development:** Over 18 modules including Personal Efficacy, Engineering Judgment etc. *Complete list inside.*

A Smart Mechatronics & Robotics Engineer is Made Right from the First Day of the Engineering Program! Therefore, Differentiate Yourself!

1



Differentiate Yourself: During Admission & the First Year of Mechatronics & Robotics Engineering

Students' experiences during the first year of engineering have a make-or-break impact on their life - sometimes, its effects last decades!

18 Interactive Self-Learning Modules: 1. Why Mechatronics & Robotics Engineering is Inspiring, Futuristic & Rewarding? 2. How to learn Mechatronics & Robotics Engineering with your learning style? 3. What makes an excellent engineer? Engineering Habits of Mind. 4. Smart English through Technology & Science, 5. Disposition for Asking Questions, 6. Learning Engineering from the the Human Body, 7. Learning Engineering by Looking Around You, 10 Goal Setter,… **And More.**

2

Differentiate Yourself: During Second & Third Year of Mechatronics & Robotics Engineering

The way the students make meaning out of the core subjects in these four mid-semesters determines their feeling of self-worth and their future as competent engineering professionals.

22 Interactive Self-Learning Modules: 1. Critical & Creative Thinking for Mechatronics & Robotics Engineering, 2. Viva-Voce Simulator for subjects of each semester, 3. The careers you can build (including start-ups) with your personality & Mechatronics & Robotics Engineering, 4. Crucial Principles of Engineering, 5. Misconceptions about Engineering, 6. Problem finding and evaluating, 7. Engineering Leadership, 8. Problem Solving Aptitude,… **And More.**

3

Differentiate Yourself: During Final Year of Mechatronics Robotics Engineering, for Employability/ Higher Education

The confidence that students develop about their engineering programme's true value is central to their commitment to higher education and quality employment.

24 Interactive Self-Learning Modules: 1. GATE Level Competency Tests for Mechatronics & Robotics Engineering, 2. Mechatronics & Robotics Engineering Professional Interview Simulator, 3. Professional Interview Questions & Insights, 4. Trouble-shooting Aptitude Tests, 5. Situational Judgment Tests, 6. Lateral Thinking tests, 7. Dependability & Efficiency Tests, 7. Logical Reasoning Tests, 8. Numerical reasoning Tests, 9. Critical Dissection Tests, 10. Diagrammatic Thinking Tests, …**And More.**

4 Differentiate Yourself: Help Students Form Start-ups & Enter Sustainable Entrepreneurship

Our engineering students are not getting original ideas like their counterparts in other countries. Why is it so? Why can't (don't) they notice India-specific problems to solve?

16 Interactive Self-Learning Modules: 1. Patriotism, Self Respect & Start-up, 2. Problem Finding, and Evaluating, 3. Self-Confidence for Starting-Up, 4. Disposition for Innovation Tests, 5. Disposition for Start-Up Tests, 6. All Innovations are Not Technical, 7. Appropriate Technology, 8. Lean Start-up, 9. Learning from Mistakes, 10. How to Get Original Ideas, 11. The Art of the Start, 12. Reverse Engineering, … **And More.**

5 Differentiate Yourself: Help Students Become Societal Role-Models & Responsible Citizens

Each year, engineering education can inject two million role models and responsible citizens into our society. It can inspire other youth & shape smart opinions for a bright future.

16 Interactive Self-Learning Modules: 1. Applied Graduate Attributes: Socio-technical factors of success, 2. Building, Evaluating, and Maintaining own performance, 3. Differentiating oneself in the chosen profession, 4. Personal Efficacy & Intrapreneurship, 5. Effective, & Successful professional career, 6. Environment & Sustainability, 7. Engineering Judgment, 8. Engineer & Society, 9. Lifelong Learning, … **And More.**

AI-based Professional Interview Simulator for Mechatronics & Robotics Engineering

64 Topics, Over 7900 Video Questions from Mechatronics & Robotics Engineering

Students must select 3 focus areas for each interview/viva-voce attempt.

Focus 1 and Focus 2: Electronics System (product) design, Embedded System Design, Embedded Processors, Microprocessor & Microcontroller, Sensors & Interfaces, Control System Components, Control System Engineering & Design, Digital Signal Processing, Power Electronics, Artificial Intelligence and Machine Learning, Image Processing, Object Oriented Modelling & Design, Automated Manufacturing, Production Optimization Techniques, Electro Mechanical Energy conversion, MEMS and Nanotechnology, Quality Assurance & Reliability, Advanced Production Technology, CAD/CAM and CIM, Machine Tools, Cutting Tools, SPMs, Industrial Automation & Robotics, Plant Engineering, Manufacturing – Machining, Manufacturing – Joining, Manufacturing – Casting & Forming, Manufacturing: Moulding, Internal Combustion Engines, Industrial Engineering, Automobile Engineering, Design of Machine Elements, Hydraulics & Pneumatics, Metallurgy & Heat Treatment, Metrology & Measurements, Industrial Tribology, Strength of Materials, etc.

Focus 3: Reliability Engineering, Project Management, Engineering Habits of Mind, Critical Thinking, 21st Century Skills, Product Design Methodology, Energy Conservation, Operations Research, Production Management, Engineering Economics, Engineering Ethics, Ergonomics & Human Factors, Safety, Responsibility & Rights, Industrial Relations, Office/Factory Management, Engineering Marketing, Behavioural Science, Finance for Engineers, Quality Assurance, World Class Manufacturing.

Critical Thinking & Creative Thinking for Mechatronics & Robotics Engineering

This unique module provides interactive, hands-on experience with over 300 contemporary, practical examples, over 1000 contextual questions, Module-wise exercises etc.

This Module has TEN Sections:

1. **How to exploit the full potential of Mechatronics & Robotics Engineering?**
2. **The need to think critically in Mechatronics & Robotics Engineering.**
3. **The need to think Creatively in Mechatronics & Robotics Engineering.**
4. **The need to apply Critical & Creative Thinking together.**
5. **Pre-requisites for applying Critical Thinking on self & others.**
6. **Applying Critical Thinking for solving problems.**
7. **Pre-requisites for applying Creative Thinking on self & others.**
8. **Applying Creative Thinking for solving problems.**
9. **Blending Critical Thinking & Creative Thinking with System Thinking for Mechatronics & Robotics Engineering.**
10. **Developing Meta-Cognitive Skills/Behaviours for problem Identification & mastery in Mechatronics & Robotics Engineering.**

Personalised Reports, Outputs, & Uploads

As i-Max has a holistic approach to build value in each Mechatronics & Robotics Engineering student, it generates multiple contextual reports, that include suggestions, and recommendations. These include:

Personal Recommendations for Mechatronics & Robotics Engineering Career & Higher Education. Most students know about a few choices of employment with Mechatronics & Robotics Engineering. This module offers over hundred career choices based on his/her personality - first choice, second choice, core careers, and the careers they should never opt for.

Personal Recommendations: What is the best way for You to Learn Mechatronics & Robotics Engineering? Most students try to imitate the learning style of their friends. Such approaches prevent students from reaching their best potential. i-Max psychometric tests ensures students realise their learning styles for their branch, and find balance between learning and playing.

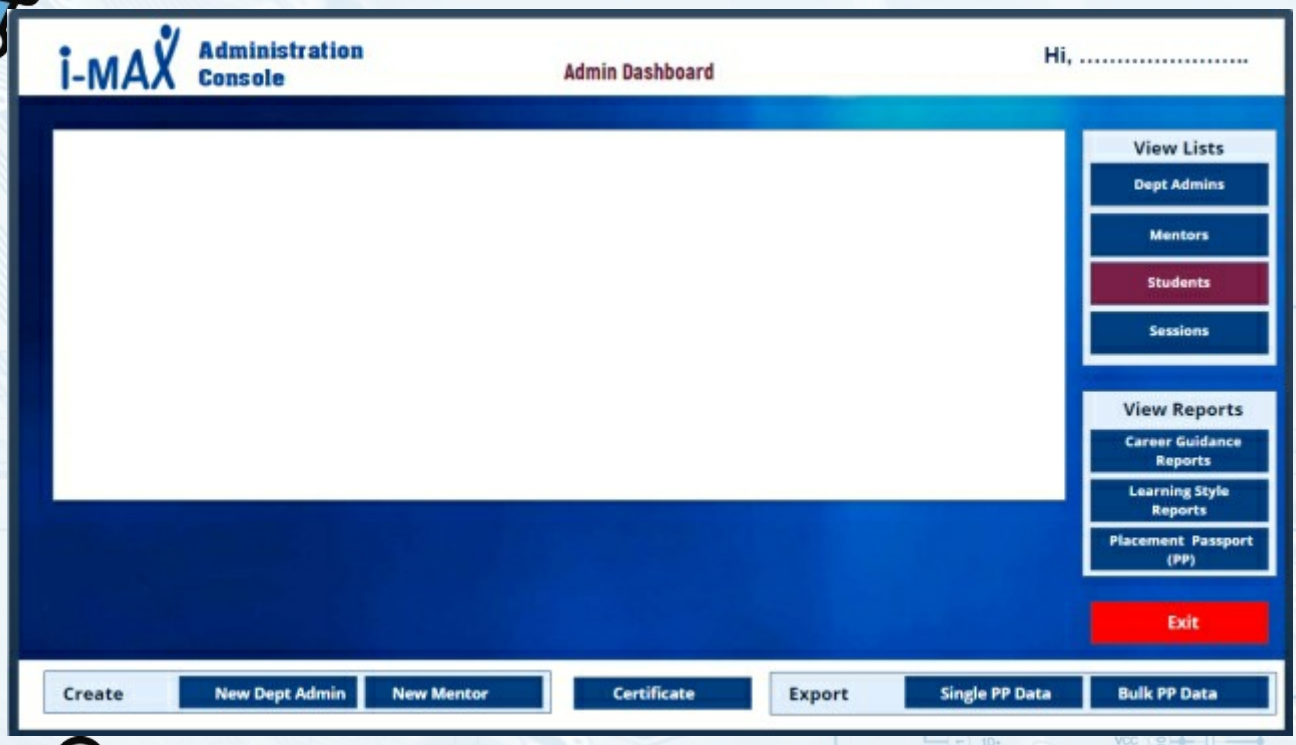
Interview Report & Suggestions / Recommendations - for Each Interview: With world's first and only AI-based Interview Simulator for Mechatronics & Robotics Engineering, students can attempt any number of realistic interview before the real interview or their technical viva-voce examinations.

Personal Feedback on Critical Thinking and Extempore Speaking using the Communication Simulator: i-Max has world's first and only extempore speaking (critical thinking) simulator. It has the rare feature of capturing the communication short comings and link them to the lessons.

Personal Placement Passport for Mechatronics & Robotics Engineering: Institutions can make students responsible for their own eligibility for campus placements and the Placement Passport can be shared with the campus recruiting companies. This makes the onus of skill building on students, and make them responsible for their own future.

Institutional Dashboard: Can be Used for NAAC/NIRF Accreditation

All critical activities on i-max will be monitored, and captured for various purposes. As an effective tool for placement or for accreditation by multiple agencies.



Benefits, that You Won't Find Elsewhere!

As i-Max is founded on advanced learning theories and the latest technologies with the future in mind, it offers stunning benefits.

The cognitive learning experience that online or real classrooms can't provide - wherever your institution is located**:** i-Max modules can't be replicated online and are not affordable to conduct In classrooms.

Real value for money. Financial savings for many years: i-Max is available with No recurring costs irrespective of the number of students, number of attempts & the number of branches of engineering.

Higher placements & happy, proud alumni network: i-Max dissimilates the kind of knowledge that is not practically available for professional colleges.

Raising the quality & reputation bar: i-Max is based on latest learning theories & frameworks. Usage of this increases the quality of not only the students but also the faculty.

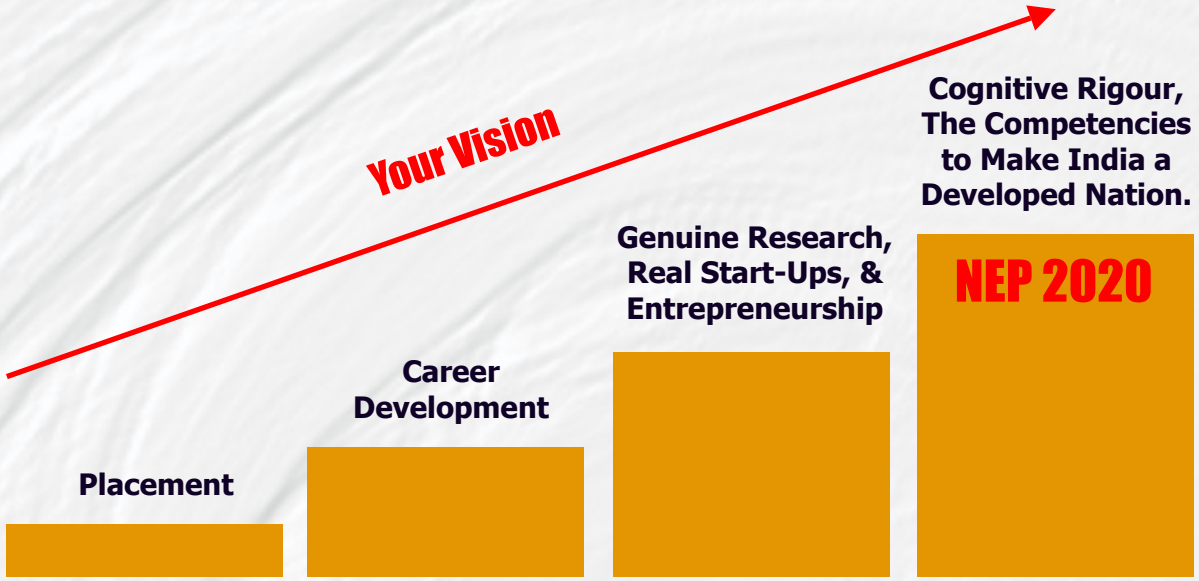
Students feel the accountability & undertakes the onus of learning: Students realise the need of active preparations using many other sources. They engage more in learning.

Teachers' efforts become more visible, & understood. Teachers command more respect: i-Max activities are archived, and comments & feedbacks are accounted.

Teachers can plan activities better and execute the plans: As the participation & engagement of the students improve, classes become more productive and efficient.

Use the Freedom of NEP 2020 to Expand Your Institution's Vision!

Anyone can construct buildings, add air-conditioning, buy computers, & sign MOUs with foreign universities. But it takes **Genuine Vision** to help students construct "**Mental Infrastructure**" - ie, the **Cognitive Rigour** & **Competencies** to face an uncertain future! **With i-Max, You Can Implement Your Higher Visions! And, That is the Differentiation!**



i-Max: For All Branches of Engineering, Technology & Management!

NEP 2020 is NOT about "tabulating the same data in new, & creative ways". NEP 2020 demands adopting new **Qualitative Approaches** that guarantee **Higher Order Thinking (HOT) in students** - that makes Indian students valuable. i-Max NEP 2020 Platform is **the only solution to achieve that**. i-Max is available for:

1	Mechanical Engineering	15	Petroleum Engineering
2	Production Engineering	16	Petrochemical Engineering
3	Civil Engineering	17	Chemical Engineering
4	Architecture & Planning	18	Polymer Technology
5	Electrical Engineering	19	Plastics Engineering
6	Electronics Engineering	20	Electronics & Telecommunication
7	Instrumentation & Control Systems	21	Textile Technology
8	Computer Engineering	22	Textile Production Engineering
9	Information Technology	23	Environmental Engineering
10	Electrical & Electronics	24	Industrial Engineering
11	Mining Engineering	25	Artificial Intelligence
12	Metallurgical & Materials Engineering	26	Google, Apple, Meta Innovation Careers
13	Mechatronics & Robotics Engineering	27	Big-4 Consultancy Careers
14	Bio-Medical Engineering	28	Management (MBA)

I-Max: Learning Theories & Frameworks Deployed

Malcolm Baldrige Criteria for Educational Excellence, William Perry's Scheme for Cognitive Development, Bloom's Taxonomy (All Three domains), Webb's Depth of Knowledge, *Prashnopanishad*, Cognitive Constructivism, Experiential Learning, Project-based Learning, Content-based Instruction, Situated Cognition,... **And More.**

NEP 2020 for Mechatronics & Robotics Engineering

i-max.org

i-MAX

India to the Max! Through YOU!

Espoir Technologies Private Limited,
Near C-DAC Innovation Centre, Panchavati, Pashan, Pune 411 008 Maharashtra, India
Contact: +91 96736 70033 / i-max@i-max.org