EXECUTIVE M. TECH. IN PROCESS ENGINEERING (e-M.Tech.) for Industrial Personnel

A UNIQUE P.G. DEGREE PROGRAMME

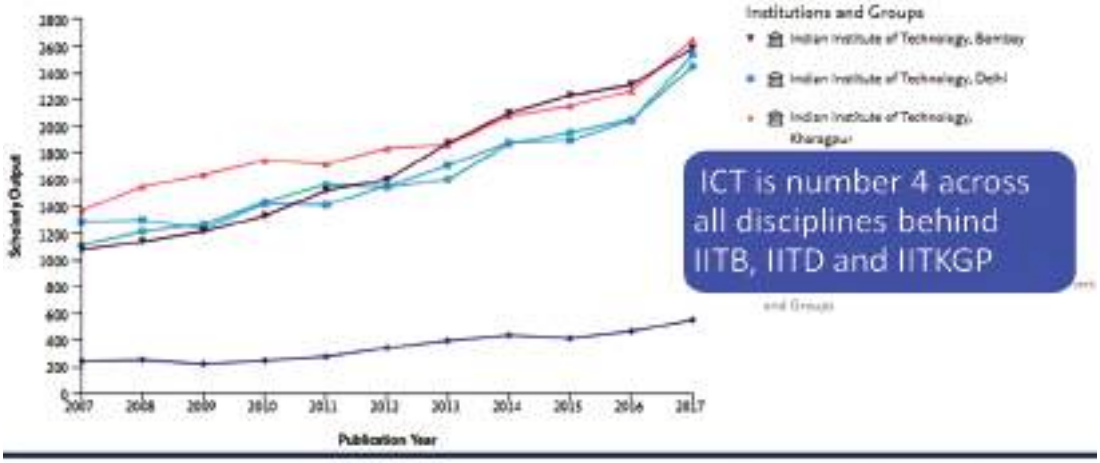
JUNE 2019

PREAMBLE

Institute of Chemical Technology Mumbai is a World Class Deemed University having an elite status and Centre of Excellence like IITs/IISc/IISERs. ICT's track record of 85 years is phenomenal having produced 19 Padma awardees (3 Padma Vibhushan, 8 Padma Bhushan, 8 Padmashri), more than 500 first generation entrepreneurs and brilliant academicians and policy makers. It has been closely working with industry and government right from the inception in the interest of the nation and have active MOUs with many national and international renowned universities/institutes, government labs and industries. Some of the Fortune 500 company owners are alumni of ICT. One of the most remarkable attributes of ICT that its alumni contribute to ~8% of GDP of India. Bestowed with numerous awards and accolades, ICT has created a niche for translational research and technology development and transfer. ICT is not only a Chemical Engineering and Chemical Technology institute, dealing with all sub-sector but also deals with Biological Sciences and Engineering, Materials and Energy Engineering. Being a State owned Deemed University, it is permitted to have off-campuses and Centres of Excellence.

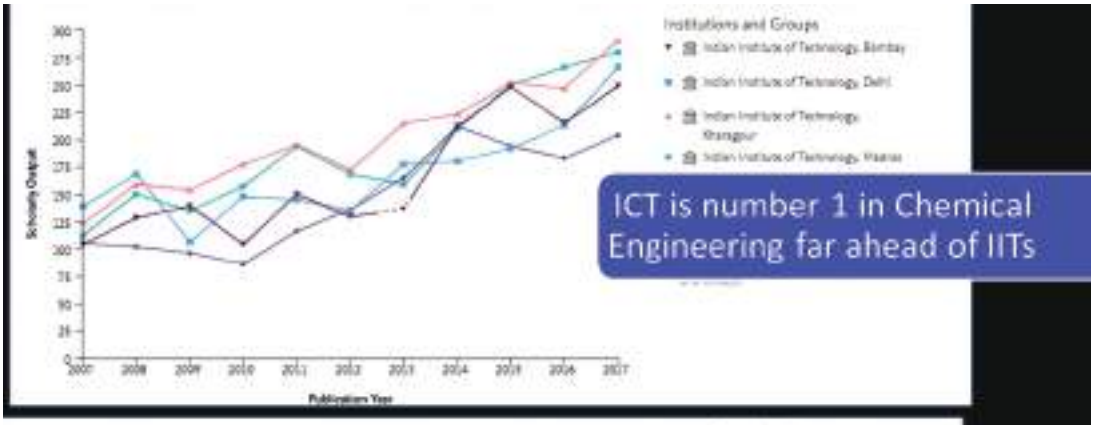
ICT has been ranked very prominently. In NIRF ranking 2019 ICT was 12th in Engineering, 4th in Pharmacy, 15th among Universities and 27th among all institutes in India. In BRiCS 2019 ranking ICT was placed 115. ICT was 6th in the ATAL Innovation ranking and per capita it is the topmost. For the first time ICT will be included in Times Higher Education World Universities Ranking to be released in September 2019. ICT has consistently maintained first position in Chemical Engineering over the years as the international databases show.

Benchmarking across all subject disciplines



Entity	Scholarly Output	Field-Weighted Citation Impact	Collaboration (%)
Indian Institute of Technology, Bombay	18,961	1.14	24.2
Indian Institute of Technology, Delhi	18,243	1.10	21.1
Indian Institute of Technology, Kharagpur	20,640	1.08	19.4
Institute of Chemical Technology	3,824	1.08	13.2
Indian Institute of Technology, Madras	18,044	1.01	22.8

Benchmarking across Chemical Engineering Subject



Entity	Scholarly Output	Field-Weighted Citation Impact	Collaboration (%)
Institute of Chemical Technology	1,599	1.38	16.1
Indian Institute of Technology, Kharagpur	2,298	1.19	15.2
Indian Institute of Technology, Bombay	1,833	1.17	15.4
Indian Institute of Technology, Delhi	1,869	1.15	14.9
Indian Institute of Technology, Madras	2,081	1.01	18.0

TWO MORE CAMPUSES OF ICT OUTSIDE MUMBAI

ICT has added two campuses from 2019-20, Because of the Category I and Deemed to be status, it was possible for ICT to go out of Maharashtra. In view of massive investment in energy, petrochemicals, chemicals, polymers, textiles, minerals, materials, biotechnology and pharmaceutical industries in Odisha, ICT was requested to open a campus in Bhubaneswar. Indian Oil Corporation Ltd took a historic decision to support fully a campus of ICT in Bhubaneswar. This is the first of its kind in India after the Independence where a corporate house has decided to support innovative education and research under its CSR policy to create manpower and job opportunities, entrepreneurs and skill development centres in Eastern India. The nation at large will benefit. The campus is equipped with modern equipment for carrying out high class research and innovation at Centres of Excellence to develop technology and to support Research & Development in industry and Skill Development in Chemical Engineering, Petrochemicals, Textiles, Polymers, Pharmaceuticals, Energy, etc.

EXECUTIVE M. TECH. IN PROCESS ENGINEERING (e-M.Tech.) FOR INDUSTRIAL PERSONNEL

Executive MBA programmes are run working for professionals by various management institutes which typically cater to management of business, finance, and administration. This programme is distinctly different from them. The idea behind launching this programme is to train executives, having at least three Industrial or managerial experience or responsibilities, who could rise to the top to become vice presidents, presidents, managing directors and the like but with training and research in technical field in an industrial set up.

TYPES OF INDUSTRIES WHICH CAN SEND EXECUTIVES FOR THIS PROGRAMME

All processing industries where rate processes of physical, chemical or biological or combinations thereof are involved will benefit by this programs. Typical MBA programs do not cover research and innovation strategies, environmental law, sustainability and research methodologies, technology evaluation and valorrisation based on the experience of the executive in day-to-day life in industry. e-M. Tech. program will cover all these aspects. Practically all industries

are covered. For instance, oil, coal, refinery, coal, petrochemicals, minerals, materials, energy, pharmaceuticals, textiles, polymers, plastics, paints, oleo chemicals, agrochemicals, dyes, fertilizers, surfactants, biochemicals, biotechnology, foods, electronics, etc.
The e-M.Tech. is thus geared at giving training in research, innovation industrial practices, law, sustainability and management to experienced and senior professionals who want to continue to work without losing continuity in the work place but still being a student while pursuing a degree. There is a subtle difference in this program in comparison with other programs. These executives are many times involved in issues related to research, innovation, business expansion, environment, law and human resources, plant operation, design and development, marketing. In many PSUs, it is found that some are transferred to R and D or plant operations, without having any idea of the field resulting into considerable loss of time and resources.

COLLABORATION WITH IIT KHARAGPUR

IIT Kharagpur is the oldest of the IITs and one the most revered institutes of national importance. It has produced a large number distinguished alumni who are spread across the world occupying pivotal positions in academia, industry, government including famous industrialists. From modest start in 1950, IIT Kharagpur has been engaged in a steady process of development with about 18 academic departments, five centres of excellence. the vast tree-laden campus, spreading over 2100 acres has a self contained township of over 15,000 inhabitants. Currently about 550 faculty, 1700 employees and 9000 students on the campus.

Internationally, IIT Kharagpur was ranked 295 in the QS World University Rankings of 2019, 53 in Asia[and 23 among BRICS nations. It was ranked 501–600 in the world by the Times Higher Education World University Rankings of 2019, 55 in the Emerging Economies University Rankings of 2019 and 60 in Asia in 2018. In India, IIT Kharagpur ranked 2nd among government engineering colleges by India Today in 2018, 3rd among engineering colleges by Outlook India in 2017 and The Week in 2017, and fourth among engineering colleges by the National Institutional Ranking Framework (NIRF) in 2019, which also ranked it fifth overall. The architecture department was ranked first among all architecture colleges in India by NIRF in 2018, Rajiv Gandhi School of Intellectual Property Law was ranked fourth among law schools and Vinod Gupta School of Management (VGSoM) was ranked seventh among management schools. VGSoM was also ranked 16 by Business Today's India's best B-schools 2017

IIT Kharagpur has signed an MOU for academic collaboration with ICT allowing ICT to use its Extension Centre in Swosti Park, Bhubaneswar. The collaboration will be in Research and Innovation. The e-M.Tech. programme has another interesting aspect. It is being conducted jointly in collaboration with IIT-Kharagpur from July 2019. The syllabus for the e-M. Tech. Program has been prepared and also approved by the concerned academic bodies of both the institutes. Subjects such as industrial law, sustainability and process safety and hazard management along with research topic will also be covered. The capacity for this joint degree program is 60 in which 30 students will be from open category. The students will be thus able to spend time on ICT Mumbai IOC Bhubaneswar as well as IIT-KGP campus. There will be two guides for the students in certain cases to co-guide for the students, one from each campus. The facilities for research will be shared. Some faculty from other campuses of ICT, depending on their expertise and the candidate's background and the type of industry, will be able to participate in teaching and research for e-M. Tech.

STUDY PATTERN

They will study in the class room on the campus for a short term of 4 weeks during which s/he will undergo course work in two subjects as well as start do literature search and plan for research. The student will continue to carry out the research activities in the parent industry during alternate terms. During the parent industry term (PIT), s/he will continue his research work, home assignments, and other related course work. The student is continuously monitored and participates in class room discussions, home assignments and research project. The e-M. Tech. student is also supposed to mentor one-two students from the Integrated Masters degree students during their industrial internship. The syllabus is prepared in consultation with faculty from ICT and IIT-Kharagpur. The programme is of two years duration.

e-M. TECH. COURSE DELIVERANCE FEATURES

- Two year program comprising of 8 quarters
- Each quarter : 3 months
- On campus classroom teaching: 2 courses during first 4 weeks of quarters 1-6
- Remaining period of quarter in parent organisation when the student performs research work, home assignments and other related course work assignments
- Classes at IIT Kharagpur preferably in the quarter covering the summer vacation of the Institute
- Classes at ICT in remaining quarters where IIT faculty to co-teach with ICT faculty members - weekend contacts / NKN /video recording with weekend contacts.
- Quarter 7 and 8 – project work of 12 credits in each quarter
- Project work - in either of the two Institutes / Parent Industry / Recognized Laboratories / Industry approved by the Institutes
- Project work supervision by at least one faculty member from either Institute
- In Q1-6, continuous evaluation system - class room discussions, class tests/quizzes, home assignments, presentations, group or individual projects and mid semester examination of 70% weightage and end quarter examination of 30% weightage
- Mid quarter examination per quarter – to be conducted within class room session and end term examination at the end of each quarter (in the weekend proceeding the next quarter)
- End of quarter examinations of 2 hour duration for 3 credit subject and 3 hour duration for 4 credit subject
- Appearing and passing in end quarter examination mandatory for completing a quarter
- Minimum credit requirement for degree – 88

RELEVANT ELECTIVES/OPTINAL/MAIN COURSES

Some of the optional/additional courses including are as follows:

- Artificial Intelligence and Machine Learning for Chemical Industry
- Chemical Safety and Risk Management
- Engineering and Law
- Environmental laws
- Ethics and Industrial Practices
- Finance and Profit Management
- Industrial and Labour Laws in India
- Materials Management
- Perspective of Global Industry
- Research Methodology
- Corporate Sustainability
- Environment Protection and Law
- Environmental Science and Sustainability
- Experimental Design
- Green Chemistry and Engineering
- Industrial Management
- Operations Research
- Research and Innovation Methodology
- Sustainability
- Intellectual Property Rights, Valuation and Management

Thesis work, seminar, critical analysis of given topic, electives specific to industry of the candidate.

APPLICATION PROCEDURE FOR e-M. Tech.

All these admissions will be conducted by the Institute of Chemical Technology, Mumbai Campus.

FOR ONLINE ADMISSION FORM VISIT ***http://www.ictmumbai.edu.in***

ELIGIBILITY CRITERIA FOR THE ADMISSION TO e-M. Tech.

1. The candidate should have passed Bachelor's degree in any branch of Engineering or Technology or Masters degree in any branch of Science. Initially only a certain branches of engineering, particularly Chemical Engineering or equivalent degrees, and technology will be considered depending upon the type of industry.

   (a) Eligibility, Admission procedure and Results

   Eligibility

   - Only Industry sponsored candidates with minimum three years of industrial experience
   - B.Tech./BE in Chemical Engineering / Chemical Technology / Polymer Engineering/ Petroleum Engineering / Biotechnology / Food Technology/Environmental Engineering / equivalent of 4 yr B.Tech. / M.Sc. in Chemistry, Physics, Bio-Sciences
   - Minimum 60%, or 6.5 CGPA in a 10 point scale in the qualifying examination. If the CGPA is on a different scale, eligibility shall be calculated corresponding to the equivalence of above.

     The prospective candidate shall have to clear a test and/or an interview by a committee that may be formed from time to time.

2. This course is meant only for recognised industry sponsored candidates.
3. The candidate should be full time industrial/ R and D employee with at least three years experience in a chemical or allied industry as mentioned above..

4. All processing industries where rate processes of physical, chemical or biological or combinations thereof are involved are covered.. Practically all industries are covered. For instance, oil, coal, refinery, coal, petrochemicals, minerals, materials, energy, pharmaceuticals, textiles, polymers, plastics, paints, oleo chemicals, agrochemicals, dyes, fertilizers, surfactants, biochemicals, biotechnology, foods, electronics etc. Kindly note expertise exists in all areas for teaching and research.

5. The industry should undertake the responsibility of releasing the candidate for course work (Theory Classes), experimental work (Laboratory work) or discussions with the concerned research guide from time to time. A proper time table should be prepared by the concerned teacher and his supervisor, which will be approved by the Head of Department/ Centre Director.

6. A bond in this regard should be signed and approved by the Dean (Academic Programmes) or Director of the Concerned Campus in consultation with the Dean. Th e Institute is not responsible for the internal mechanism of the concerned industry for selection of the candidates of this program.

7. This is a two-year full time programme where the student has the privilege of working in his own parent industry on a research problem supervised by two supervisors from ICT Mumbai (from all three campuses) and IIT Kharagpur. One of the ideas is also to mentor, if possible, the interns of the Integrated M. Tech. degree students during their work term in their industry. The research project is decided in the very first month of admission.

The capacity for this joint degree program is 60 in which the general category students it is 30. The students will be thus able to spend time on ICT Mumbai IOC Bhubaneswar as well as IITKGP campus. There will be two guides for the students in certain cases to co-guide for the students, one from each campus. The facilities for research will be shared.

COURSE FEES PRESCRIBED

The institutional fees to be paid by all the admitted candidates are as follows through their industry:

Sr. No.	Type of Fees Nonrefundable Fee for entire course (Rs.)	
1.	Library Deposit	Rs. 5,000/-
2.	Fees (2 years)	Rs. 16,00,000/- (Fees 7.5 Lakh per year + 1 Lakh Accommodation per Year)
	TOTAL	**Rs. 16,05,000/-***

* The total fee to be paid at the time of admission.
* One time Non-refundable in case of admission cancellation.

COURSE STRUCTURE FOR DIFFERENT SPECIALIZATIONS

The following points are considered while developing the course structure

1. The Executive M. Tech. Program will be of 2 years duration having a Quarter system, in all there will be 8 quarters
2. Each Quarter will consist of 12 weeks
3. In Quarters 1 – 6, student will spend 4 weeks in the Institute to complete two courses and 8 weeks on Project work.
4. In Quarters 7 and 8 student will work only on the Project.
5. Project work can be carried out in Institute / Industry / Recognized Laboratories

6. The courses will be of three types: (i) Core courses – four in number, (ii) Elective courses – four in number, (iii) other mandatory courses common to all disciplines, namely, Research Methodology, Seminar, Design of Experiments, Safety, Health and Environment (S. H. E.), and some from the list given above. Core courses would be of 4 credits each and all the other courses will be of 3 credits each.
7. In Quarters 1 – 6, student will complete project work for 4 credits. In quarters 7 and 8 project work will be of 12 credits.

The syllabus structure and template of details of courses for candidates with different background is given below.

Syllabus for Executive M. Tech. Program with Bachelors degree in Chemical Engineering or Equivalent

		Course Code	Course Title	Total Contact Hours Per Quarter			Credits
				Lecture	Tutorial	Practical	
Q1	1		Core 1: Advanced Transport Phenomena	45	15	0	4
	2		Core 2: Advanced Reaction Engineering	45	15	0	4
	3		Project (Part 1)	0	0	60	4
Q2	4		Core 3: Applied Thermodynamics	45	15	0	4
	5		Core 4: Advanced Separation Processes	45	15	0	4
	6		Project (Part 2)	0	0	60	4
Q3	7		Elective 1	30	15	0	3
	8		Research Methodology	30	15	0	3
	9		Project (Part 3)	0	0	60	4
Q4	10		Elective 2	30	15	0	3
	11		Seminar	30	15	0	3
	12		Project (Part 4)	0	0	60	4
Q5	13		Elective 3	30	15	0	3
	14		Design of Experiments	30	15	0	3
	15		Project (Part 5)	0	0	60	4
Q6	16		Elective 4	30	15	0	3
	17		S. H. E.	30	15	0	3
	18		Project (Part 6)	0	0	60	4
Q7	19		Project (Part 7)	0	0	180	12
Q8	20		Project (Part 8)	0	0	180	12
			Total				88

Course title	Core 1: Advanced Transport Phenomena	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites	Bachelors Level Transport Phenomena	
Objectives of the course	To Teach Advanced Concepts in Transport Phenomena	
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 2: Advanced Reaction Engineering	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites	Bachelors Level Chemical Reaction Engineering	
Objectives of the course	To Teach Advanced Concepts in Reaction Engineering	
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 3: Applied Thermodynamics	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites	Bachelors Level Chemical Engineering Thermodynamics	
Objectives of the course	To Teach Applications of Thermodynamics in Process Industries	
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 4: Advanced Separation Processes	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites	Bachelors Level Separation Processes and Unit Operations	
Objectives of the course	To Teach Recent and Modern Separation Processes	
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Syllabus for Executive M. Tech. Program with Master of Science degree in Chemistry or Equivalent

		Course Code	Course Title	Total Contact Hours Per Quarter			Credits
				Lecture	Tutorial	Practical	
Q1	1		Core 1: Organic Synthesis	45	15	0	4
	2		Core 2: Organometallic Chemistry	45	15	0	4
	3		Project (Part 1)	0	0	60	4

Q2	4		Core 3: Physical Chemistry	45	15	0	4
	5		Core 4: Spectroscopic Techniques	45	15	0	4
	6		Project (Part 2)	0	0	60	4
Q3	7		Elective 1	30	15	0	3
	8		Research Methodology	30	15	0	3
	9		Project (Part 3)	0	0	60	4
Q4	10		Elective 2	30	15	0	3
	11		Seminar	30	15	0	3
	12		Project (Part 4)	0	0	60	4
Q5	13		Elective 3	30	15	0	3
	14		Design of Experiments	30	15	0	3
	15		Project (Part 5)	0	0	60	4
Q6	16		Elective 4	30	15	0	3
	17		S. H. E.	30	15	0	3
	18		Project (Part 6)	0	0	60	4
Q7	19		Project (Part 7)	0	0	180	12
Q8	20		Project (Part 8)	0	0	180	12
			Total				88

Course title	Core 1: Organic Synthesis	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 2: Organometallic Chemistry	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 3: Physical Chemistry	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 4: Spectroscopic Techniques	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Syllabus for Executive M. Tech. Program with Master of Science degree in Biology or Equivalent

		Course Code	Course Title	Total Contact Hours Per Quarter			Credits
				Lecture	Tutorial	Practical	
Q1	1		Core 1: Genetic Engineering	45	15	0	4
	2		Core 2: Fermentation Technology	45	15	0	4
	3		Project (Part 1)	0	0	60	4
Q2	4		Core 3: Downstream Processing	45	15	0	4
	5		Core 4: Advanced Techniques in Biological Sciences	45	15	0	4
	6		Project (Part 2)	0	0	60	4
Q3	7		Elective 1	30	15	0	3
	8		Research Methodology	30	15	0	3
	9		Project (Part 3)	0	0	60	4
Q4	10		Elective 2	30	15	0	3
	11		Seminar	30	15	0	3
	12		Project (Part 4)	0	0	60	4

Q5	13		Elective 3	30	15	0	3
	14		Design of Experiments	30	15	0	3
	15		Project (Part 5)	0	0	60	4
Q6	16		Elective 4	30	15	0	3
	17		S. H. E.	30	15	0	3
	18		Project (Part 6)	0	0	60	4
Q7	19		Project (Part 7)	0	0	180	12
Q8	20		Project (Part 8)	0	0	180	12
			Total				88

Course title	Core 1: Genetic Engineering	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 2: Fermentation Technology	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 3: Downstream Processing	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 4: Advanced Techniques in Biological Sciences	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Syllabus for Executive M. Tech. Program with Masters degree in Physics or Equivalent

		Course Code	Course Title	Total Contact Hours Per Quarter			Credits
				Lecture	Tutorial	Practical	
Q1	1		Core 1: Advanced Material Science	45	15	0	4
	2		Core 2: Nano Science and Nano Materials	45	15	0	4
	3		Project (Part 1)	0	0	60	4
Q2	4		Core 3: Material Synthesis	45	15	0	4
	5		Core 4: Advanced Material Characterization Techniques	45	15	0	4
	6		Project (Part 2)	0	0	60	4
Q3	7		Elective 1	30	15	0	3
	8		Research Methodology	30	15	0	3
	9		Project (Part 3)	0	0	60	4
Q4	10		Elective 2	30	15	0	3
	11		Seminar	30	15	0	3
	12		Project (Part 4)	0	0	60	4
Q5	13		Elective 3	30	15	0	3
	14		Design of Experiments	30	15	0	3
	15		Project (Part 5)	0	0	60	4
Q6	16		Elective 4	30	15	0	3
	17		S. H. E.	30	15	0	3
	18		Project (Part 6)	0	0	60	4
Q7	19		Project (Part 7)	0	0	180	12
Q8	20		Project (Part 8)	0	0	180	12
			Total				88

Course title	Core 1: Advanced Material Science	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 2: NanoScience and Nano Materials	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 3: Material Synthesis	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

Course title	Core 4: Advanced Material Characterization Techniques	
Scheme and Credits	45 L: 15 T: 0 P 4 Credits	
Pre-requisites		
Objectives of the course		
Contents of Module 1		12L+4T
Contents of Module 2		12L+4T
Contents of Module 3		12L+4T
Contents of Module 4		9L+3T
Suggested Books		
Suggested Reference Books		

I am sure you have come to know some unique features of e-M. Tech. and solicit your cooperation in making the Executive M. Tech. Program in Process Engineering, a success story, by nominating some of the top class executives from your Organization, who could take up leadership positions in the coming few years. This Brochure has given you an insight in the syllabus and how it will help some of you who are interested in higher education without leaving the job.

We solicit help from the top management in nominating some of their colleagues for this programme. It involves one month training on the campus and next two months in the parent organization and it will be a two-year degree programme. ICT gratefully acknowledges full financial support provided by Indian Oil Corporation for establishing the Bhubaneswar Campus.

For the first time in India a joint M. Tech degree will be given by an IIT and a state funded deemed to be category I university which will augur well for higher education. Both institutes have their brand value and culture of innovation and entrepreneurship. Be part of this great tradition by being student of both.

We look forward to your support.

PROFESSOR (Dr.) G.D. YADAV, *FTWAS, FNA, FASc, FNASc, FNAE, FRSC, FIIChE, FICS, FISTE*
Vice Chancellor and R.T. Mody Distinguished Professor
Tata Chemicals Darbari Seth Distinguished Professor of Leadership and Innovation
J.C. Bose National Fellow
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