

A COMPREHENSIVE NOTE ON

POST-GRADUATE DIPLOMA

IN

CHEMICAL TECHNOLOGY MANAGEMENT

[PGD-CTM]

Revised 2022

Institute of Chemical Technology

Deemed University under Section-3 of UGC Act, 1956

Government of Maharashtra's Elite Status and Centre for Excellence

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1. Preamble

Institute of Chemical Technology (University Under section-3 of UGC act 1956) offers a Post Graduate Diploma in Chemical Technology Management. This part-time course is conducted on 2nd and 4th Saturdays and Sundays.

In 2001, a Certificate Course in Chemical Technology Management was initiated by the erstwhile Mumbai University Institute of Chemical Technology (MUICT) exclusively for its PhD research scholars. This 3-semester course (45 hours or 30 sessions per semester) was conducted during weekends including all Saturdays and Sundays. The objective of this course was to introduce PhD scholars to Business Management topics concerning Chemical Technology. The intention was to inculcate among them entrepreneurship skills, leadership qualities and business abilities required by the Indian Chemical Industry.

This course was offered to five batches; every year 20 students were admitted. The course was well received by the students and more so by the Industry as the students were trained to become technology managers.

ICT offers this course in a revised structure. The scope and content of the earlier course is widened to strengthen University - Industry interaction. The new course is a **Post Graduate “Diploma” in Chemical Technology Management**. In view of the national interest and needs, the course is not just restricted to PhD scholars of ICT. It is offered to other research scholars pursuing PhD anywhere in India. For those working in the Industry after their post-graduation, this is a continuing education program. In 2018, a further revision of the course intensified the program further with two teaching semesters and one semester of project work.

The pertinent details of this course such as its structure, duration, admission criteria, examinations rules and other regulations are presented in this note.

2. Objective

The prime objective of this course is to ensure that PhD scholars are not just restricted to R&D activities in the industry or academic institutes. It is expected that they convert innovations into commercial success. In fact, PhDs have provided leadership in technology management and entrepreneurship in the developed countries. Two excellent examples are Jack Welch of GE and Andy Grove of Intel – interestingly, both were awarded PhD in Chemical Engineering.

Considering the growing emphasis of the Indian industry on technology development, implementation and its business management, and the various initiatives taken by the Government of India, the demand for such trained personnel with strong research background will increase exponentially. Certainly, knowledge and understanding of commercial aspects will accelerate technological growth.

ICT produces ~100 to 150 PhDs annually. The certificate course, which was a huge success, was immensely beneficial for the students and the chemical industry. Even so, enhancement in the scope and content of this course and the number of students seemed desirable.

Objective of Post Graduate “Diploma in Chemical Technology Management” course is the same as before, that is, to give research scholars and personnel, an orientation in business and technology management and to sharpen entrepreneurship skills.

3. Course Content

Based on the comments of the faculty members who were closely associated with the certificate course, the syllabus for the course, viz. "Post-Graduate Diploma in Chemical Technology Management" was devised. A revision was carried out in 2018 and the salient features of this course are listed below:

- The Diploma course extends over a period of 3 semesters
- The first 2 semesters are each of 108 hours duration (6 hours per day) covered over a period of 18 week-ends in each semester
- The third semester is entirely devoted to project-related work (72 hours).

Thus, the entire course is covered in 288 hours.

- In the first two semesters, course participants are examined in 4 or 5 subjects.
- Case studies are an important part of learning. A classroom learning/practicing ratio (L/P) equal to about 70/30 is recommended.
- Lectures are conducted on week-ends (2nd and 4th Saturdays and all Sundays).

Subjects & Methods

The major subjects offered are listed below:

1. Chemical Technology Management
2. Product/Process Design and Development
3. Finance Management
4. Marketing management
5. Environment, safety, IPR and other laws
6. Communication
7. Human Resources Management
8. Project Finance
9. Team and Organization Management

The students are evaluated in part based on the class of assignments and presentations. The case studies / assignments are documented for course assessment and revision. The syllabus and course content given in Appendix A and B. In Appendix C, the Examination regulations are stated.

4. Course Admissions

Minimum qualification for admission is Post-graduate Degree in Chemical Technology (all branches), Engineering, Sciences, Pharmacy, Mathematics and any other equivalent course. All candidates (except sponsored candidates from the industry) must have been registered for PhD degree.

Total admissions every year will be **30 students** as explained below:

- A) Research scholars **from ICT** registered for PhD
in any of the above subjects. **= 10**

- B) Research scholars from Institutes **other than ICT**,
registered for PhD in above subjects **= 10**

- C) Persons working in Industry for not less than 3 years with
minimum qualification of a master's degree (**Sponsored Candidates**) **= 10**

4.1 ICT candidates will have to register for PhD before seeking admission to Diploma in CTM.

4.2 non-ICT candidates should furnish a certificate from their supervisor duly signed by HOD, Principal/Director of the Institute where they are conducting their research work clearly stating permission to join this course.

4.3 The sponsored candidates must have 3 years' experience in chemical industry after post-graduation. They should provide evidence by way of a certificate from the employer.

4.4 The seat allocation for the **20 seats** (A+B) would be as follows:
(% Reservation is as per norms of Maharashtra State):

Reservation	%	Total Seats	ICT		Non-ICT
SC	13	3	2	↔	1
ST	7	1	1	↔	1
Total	20	4	2		2
Open	80	16	8		8
Grand Total	100	20	10		10

4.5 If we do not get ST candidate, the quota will go to SC. If we do not get SC/ST candidates, the quota will go to open category.

4.6 There will not be any reservation for sponsored candidates.

4.7 If the seats for sponsored candidates are not filled completely, these seats will be filled from ICT followed by non- ICT candidates and in that case the reservation policy applies as outlined above. If we do not get **non-ICT** candidate, seats will be filled from ICT. If we do not get ICT **or** non-ICT candidates, the seats will be filled from sponsored candidates and in that case no reservation policy will be applied.

Admission Criteria:

A written test & interview will be applicable to all. There will be equal importance to both the tests (50% for the written test & 50% for the interview). The merit list for all above categories will be displayed.

Course Duration:

The course comprises of **Three Semesters** covered over **two** years. It will be conducted on Saturdays and Sundays.

Commencement:

Check the Institute website for details. The admission procedure may commence from **January 01st, 2021**.

5. Course Fees & Expenses

Fee structure

The total fee for post Graduate Diploma in Chemical Technology Management is divided in three components namely,

- Tuition Fee
- Laboratory / Library Fee
- Development Fee

The fees for students from the industry (sponsored candidates) will be thrice than that for students from academics.

Fee Structure:	Fee per year
Students from academia:	(Rs.) 10,000
• Tuition Fee	5,000
• Development Fee.	Total 15,000 per year

(Total Fee: Rs. 22,500/-)

Industry sponsored:	Fee per year (Rs.)
• Tuition Fee	24,000
• Laboratory / Library Fee	6,000
• Development Fee.	15,000
Total	45,000 per year

(Total Fee: Rs. 67,500/-)

For all examinations, the **Exam Fee is Rs. 1100/- per semester per student** for all students (sponsored or non-sponsored).

The following is the breakup of man power:

- The visiting faculty honorarium proposed is **Rs. 1000/hr.**
The lecture is for 1.5 hrs., so the honorarium will be **Rs. 1500 per lecture.**
The honorarium is also applicable to ICT faculty teaching the course/courses.

- One clerk and one attendant (computer assistant) as per ICT norms.

6. Faculty

All the teachers for the course are qualified and highly accomplished in their respective fields and have practiced the subject in industry. The faculty members associated with the course are as follows:

- Professor (Dr.) Amit P. Pratap is a faculty member from ICT and is the Course Co-Ordinator.
- Dr. P. D. Vaidya and Dr. A. P. Pratap are faculty members from ICT and are the additional Course Co-coordinators.
- Dr. Ravi Mohan was working with Castrol India and was Adjunct Professor in ICT, actively associated with the certificate course and currently is faculty member for the subject of Product Design & Development.
- Mr. K.P. Chaudhari is a practicing Chartered Accountant and teaches Finance.
- Dr. H.S. Joglekar is a manager with Asian paints and teaches Team and Organization Management and communication.
- Mr. Sudhir Shah has a widespread experience in industry for more than 25 years and teaches Team and Organization Management.
- Dr S. Ganeshan has long experience in EPC industry including Toyo Engineering and teaches Technology Management.
- Dr S. A. Nadgouda has a long working experience in safety including at BASF and teaches that subject.
- Mr K. Sahasranaman has a long working experience in the EPC industry including Uhde India and teaches Project Management.
- Dr Rama Iyer has a long experience of teaching various management subjects and teaches Human Resource Management and communication.
- Ms. Alhad Mahajani is an expert in Marketing and teaches the subject.
- Dr. P. G. Kane has experience in chemical industries more than 30 years and teaches Project Management.
- All technology related subjects will be by taught by present ICT faculty should the need arise.

7. Infrastructure

- ICT is a well-established over 85 years old, academic Institute of international repute. It has very good class rooms, conference rooms with PowerPoint facilities.
- ICT has an excellent library facility with over 100 management books and subscribes to International journals on project, product and business management. Apart from this, there are various technical journals in various technology branches including Chemical Engineering. The library is open on public holidays, too.
- Computers are available in large numbers. The internet facilities are provided for further global access via our centralized Information Processing Centre (IPC).
- Existing administrative and accounts department has the capacity to provide similar services to conduct this course and related examinations.
- A steno-/clerk dedicated to this course and keeping all records pertaining to this course will be made available in our office.
- Conducting the course on Saturdays & Sundays is possible with all above facilities.

8. Course Perspective

8.1 Marketing the Course

Financial sustainability and success of the course depends on receiving student support from the chemical industry as well. This could be done through letters to industry, presentations to major R&D houses. Institute has a large well-placed alumni and Alumni Association is active in all respects. The UAA has agreed to support this course in whatever form as it did for the certificate course. The course timing is convenient for outside candidates as well as the research students as the lectures will be conducted on Saturdays and/or Sundays.

8.2. Long Term Vision

A long-term plan for development of the course should be kept in perspective. From that point of view, ICT will develop a department for chemical industry economics and management. This will build a database for the industry and will act as an incubation cell for chemical research conducted at ICT and for development of chemical

technologies through Technology Incubation Centre.

Appendix A

Distribution of Syllabus over the Semesters (3 Sem PGDCTM 2018)

Course Contents	Contact Hours		Marks	CREDITS
	Hrs-L/P	Hrs-Exam		
SEMESTER I				
1. TMT2101 Technology Management	9 / 3	2	50	3
2. TMT2102 Marketing-I	9 / 6	2	50	3
3. TMT2103 Project Management	9 / 6	2	50	3
4. TMT2104 Communication I	6 / 6		50	3
5. TMT2106 TOM*	6 / 9		50	3
6. TMT2108 Finance-I	9 / 3	2	50	3
7. TMT2109 HRM-I @	9 / 3	2	50	3
8. TMT2107 Product D&D I#	12/3	2	50	3

Sub Total	69/39	16	400	24 -----

SEMESTER II				
1. TMT2111 Communication II	6 / 9	-	50	3
2. TMT2112 Marketing-II	9 / 6	2	50	3
3. TMT2110 Technology	9 / 3	2	50	3
4. TMT2113 Product D&D II#	9 / 6	2	50	3
5. TMT2116 Project Finance	9 / 3	2	50	3
6. TMT2114 HRM-II@	9 / 6	2	50	3
7. TMT2117 Finance-II	9 / 3	2	50	3
8. TMT2115 Environment & Safety Laws	9 / 3	2	50	3

Sub Total	69/39	16	400	24

IPR: Intellectual Property Rights –3+3 hrs Guest talks, open to all. No exam (Perhaps as part of PD&D course)				
# Product D&D: Product Design and Development				
* TOM: Team and Organization Management. In sem II it is covered through 2 or 3 sessions guest talks. Open to all. No exam				
@ HRM: Human Resources Management				
<i>Out of 50 marks for each subject, 20 marks are for internal assessment and 30 marks are for the final examination.</i>				
SEMESTER III				
TMP2119 Project			200	12

Additionally, during this semester, 4 guest lectures on related topics to add “wisdom” . These talks will be administratively managed completely by the course students but can be open to all.

The Project work deals with a real life assignment from and in association with ICT, CSIR and industrial laboratories. It may be related to technology development, application etc. and will include preliminary feasibility report/technology marketing report.

- The topics will be decided by faculty members and the students in consultation with the course coordinators. The final list of decided topics will be issued by the course coordinator the start of the semester III.
- The candidate will be supervised by one or two faculty members. In the case of sponsored candidates, one of the supervisors may be from his/her establishment (Industry/Institute/Laboratory) and the other from teaching faculty. Each Supervisor should have maximum about 5 candidates to supervise.
- At the end of the assignment, the candidate shall submit two spirally bound hard copies and one soft copy in the PDF format (CD). There will be an oral examination which will include presentation by the candidate at a notified date.

• *The evaluation will be on following lines:*

Marks for continuous assessment during the semester to be given by the supervisor (s) -----	50
Marks for the report after the assessment by the examiners (Other than the supervisor) -----	100
Marks for the oral examination (Supervisor and one / two External examiners) -----	50
-	200

TOTAL

Credits: 12

Over the semester 54 hours & 200 marks

For the final result “Credit System” will be adopted.

Two teaching semesters will have 24 Credits, and the project semester (III) will have 12 credits; thereby, total credits =60

Appendix B

Detailed Course Content

SEMESTER I

1. Technology Management (TMT 2101) (Lectures: 9 hrs; Case Studies: 3 hrs)

- Chemical Technology
- Technology Evaluation
- Effectiveness in Technology
- Networking in Technology
- Commercialization of technology
- Interfaces between R&D and others
- Pilot Plant & Scale up
- Technology Forecasting
- Customer Focused Technology

BOOKS:

- *Research in Education, Best, John W., New Delhi, 2000, 7th Ed.*
- *Introducing Management, Schermerhorn, John R., New York, 2000*
- *Information Technology for Management, Lucas, Henry C., New Delhi, 2000, 7th Ed.*
- *The Fragrance of Success: Nurturing The Family managed Business, Kelkar Govind, Mumbai, 2002*
- *Chemical Project Economics, V.V. Mahajani and S.M. Mokashi, Macmillan India Ltd., 2005*

2. Marketing-I (TMT 2102) (Lectures: 9 hrs; Case Studies: 6 hrs)

- Principles of Marketing
- Evolution of Marketing, Marketing Concepts, Markets in 21st Century
- Marketing Mix (Controllable / Non-controllable), Marketing plan,
- Industrial Marketing, Consumer Market
- Product, Price & Placement, Pillars of Marketing – Segmentation, Target Markets, Differentiation & Position

- New Product Marketing
- Corporate Strategy for Product Planning
- New Product Decision Product Introduction
- New Product Development & Promotion
- Market Potential for New Products

BOOKS:

- *Marketing Management, Kotler, Philip. New Delhi, 2001, 10th Ed.*
- *Strategic Market Management, Aaker, David A., New York, 1998, 5th Ed.*
- *Marketing Research, Luck, David J., New Delhi, 2001, 7th Ed.*
- *Marketing: A Managerial Introduction, Gandhi, J. C., New Delhi, 2001*
- *Chemical Project Economics, V.V.Mahajani and S.M.Mokashi, Macmillan India Ltd., 2005*

3. Project Management (TMT 2103) (Lectures: 9 hrs; Case Studies: 6 hrs)

- Project identification / evaluation, process selection, site selection
- Elements of Project Management
- Construction of Project networks, PERT / CPM techniques
- Time limited scheduling, Project crashing
- Time & Resource analysis
- Project monitoring. Computers in project scheduling

BOOKS:

- *Chemical Project Economics, V.V.Mahajani and S.M.Mokashi, Macmillan India Ltd 2005*
- *Count your Chickens before they Hatch, Chaudhuri Arindam. Delhi, 2001*
- *Effective Project Management, Wysocki, Robert K., New York, 2002, 2nd Ed.*
- *Project Management, Choudhury, Tata McGraw Hill*
- *Project Management, Vasant Desai, Himalaya*

4. Communication (TMT2104) (Lectures: 6 hrs; Case Studies: 6 hrs)

- Grammar: Forming grammatically correct sentences
- Vocabulary: Roots of words, synonyms and antonyms, choice of words from alternatives, commonly confused words
- Comprehension: Précis writing

- Phonetics & Pronunciation: Use of a dictionary
- Basic process of communication, Types of communication, Channels of Communication, Barriers to communication; Business letters; Technical report writing, Minutes of meetings, Assertiveness, Presentations.

BOOKS:

- *Body Language: A Guide for Professionals*, Lewis, Hedwig, New Delhi, 2000, 2ndEd.
- *Managing Presentations: Communicating with Impact*, Wakhlu, Savita Bhan, New Delhi, 2000
- *Communication Skills for Engineers and Scientists*, Venables J. Warwickshire, 2002, 3rdEd.

5. Team and Organization Management (TMT 2106) (Lectures: 6 hrs; Case

Studies: 9 hrs)

- What is in it for me?
- The attitudes of pro-activity & Accountability
- Positive attitudes
- Self awareness
- Living one's life according to one's values
- Creative thinking
- Creative tools
- Creative problem Solving
- Finding one's life purpose
- Time management
- How to plan and prioritize
- Organizing – People, work, time and Content

BOOKS:

- *Production & Operation Management*, Goel, B.S., Meerut, 2001, 16thEd.
- *Organisations and Development: Strategies, Structures and Processes*, Dale, R., New Delhi, 2000
- *Change Management: Guide to Effective Implementation*, Paton, Robert A., New Delhi, 2000, 2ndEd.
- *Organizational Behavior*, Robbins, S.P., New Delhi, 2000 9thEd.

6. Finance-I (TMT2108) (Lectures: 9 hrs; Case Studies: 3 hrs)

- Basic concepts in Finance Accounting - Assets & Liabilities
- Expenses & Income, Depreciation, Cash–Mercantile Accounting
- Preparation of Receipts/Payment, Balance Sheet, and Income/Expenditure Sheets
- Exposure to Accounting system (Double entry Book-keeping)
- Financial Performance Appraisal using Ratio Analysis, Fund flow Analysis & Cash Flow Analysis
- Valuation of tangible and intangibles-DCF, other methods
- Corporate Taxation – Direct and indirect

BOOKS:

- *Chemical Project Economics*, V.V. Mahajani and S.M.Mokashi, Macmillan India Ltd., 2005
- *Financial Management: Principles and Problems*, Srivastava, R.M., Meerut, 7th Ed., 2000
- *Valuation of Intellectual Property and Intangible Assets*, Smith, G.V., New York, 2000
- *Introduction to Management Accounting*, Homgren, Charles T., New Delhi, 2001

7. Human Resources Management-I (TMT2109) (Lectures: 9 hrs; Case Studies: 3 hrs)

- HRD as a business function. Spectrum of HRD activities
- Organizational structures. Job roles and job descriptions
- Human Resource Planning. Recruitment and selection
- Performance Management
- Remuneration Management

BOOKS:

- *Career Management for Scientists and Engineers*, Borchardt, John K., Oxford, 2000
- *Leveraging Knowledge: Consultancy Capabilities and Needs of CSIR*, Gupta, V.K.
- *Managing Technical People*, Humphrey, Watts S., Delhi, 2001
- *Developing the Leader within You*, Maxwell, J.C., Mumbai, 2001

8. Product Design and Development (TMT2107) (Lectures: 11 hrs; Case Studies: 7 hrs)

- Definition of Chemical Product design as a 4-step process

- Stage-Gate Process
- Customer Needs analysis
- Product specification and benchmarking
- Brainstorming for ideas, sorting of ideas
- Selection of ideas for working
- Risk assessment in Product development
- Definition of result of Product development e.g. through Formulation
- Viability analysis

BOOKS:

- *E.L. Cussler (Univ of Minnesota) & G.D. Muggeridge (Univ of Cambridge)*
CHEMICAL PRODUCT DESIGN, Cambridge Univ. Press
- *Supply Chain Management - Strategy, Planning & Operation, Sunil Chopra*
(Kellogg Graduate School of Management) & Peter Meindl (iz Technologies),
Pearson Education Asia, 2001
- *Commercializing New Technologies, Vijay K. Jolly, (IMD Switzerland)*
Harvard University School Press, 1997
- *Research & Development Management in the Chemical & Pharmaceutical*
Industry, Peter Bamfield (ICI, U.E) Wiley-VCH, 2003
- *Marketing Management, Philip Kotler (North Western University), Prentice Hall of*
India Pvt. Ltd., The Millenium Edition. 2001

SEMESTER II

1. Communication (TMT 2111) (Lectures: 3 hrs; Case Studies: 3 hrs) Group discussions

2. Marketing-II (TMT 2112) (Lectures: 9 hrs; Case Studies: 6

hrs) • Market Demand & Supply

- Market Research
- Demand Forecasting
- Consumer Research / Buyer Behavior
- Advertising / Personal Selling
- Distribution Decision
- Logistic & Supply Chain

BOOKS:

- *Marketing Management, Kotler, Philip., New Delhi, 2001, 10th Ed.*
- *Strategic Market Management, Aaker, David A., New York, 1998, 5th Ed.*
- *Marketing Research, Luck, David J., New Delhi, 2001, 7th Ed.*
- *Marketing: A Managerial Introduction, Gandhi, J. C., New Delhi, 2001*
- *Chemical Project Economics, V.V. Mahajani and S.M. Mokashi, Macmillan India Ltd., 2005*

3. Technology (TMT 2110) (Lectures: 9 hrs; Case Studies: 3 hrs)

- Technology Pricing
- Royalty Payment
- Development of process Scheme
- Technology Transfer
- Technology Absorption / Adoption / up gradation
- Quality through process

BOOKS:

- *Chemical Project Economics, V.V. Mahajani and S.M. Mokashi, Macmillan India Ltd., 2005*
- *Handbook of Financing Energy Projects, Georgia, 2005*

4. Product Design and Development (TMT 2113) (Lectures: 9 hrs; Case Studies: 6 hrs)

- Product commercialization
- Relationship to process design
- Scale-up and economics
- Marketing of new product developments
- Case studies from Univ. of reading

BOOKS:

- *Quality Planning and Analysis: From Product Development Through, Juran, J.M., and Gryna, F.M., New Delhi, 2001 3rd Ed.*
- *Introduction to Materials Management, Tony Arnold, J.R., Delhi, 2001 4th Ed.*
- *Management Systems: Quality, Environment, Health and Safety, Nag, P K., Mumbai, 2002*
- *Production and Operations Management: An Applied Modern Approach, Martinich, Joseph, New York, 1997*

5. Project Finance (TMT 2116) (Lectures: 9 hrs; Case Studies: 3 hrs)

- Project feasibility study (including market, technical and financial analysis)
- Project planning market and technical analysis,
- Project financing, financial projections
- Project cost estimation and budgeting
- Working capital management- estimation & financing

Books:

- *Chemical Project Economics, V.V. Mahajani and S.M.Mokashi, Macmillan India Ltd., 2005*
- *Financial Management: Principles and Problems, Srivastava, R.M., Meerut, 7th Ed., 2000*
- *Valuation of Intellectual Property and Intangible Assets, Smith, G.V., New York, 2000*
- *Introduction to Management Accounting, Homgren, Charles T., New Delhi, 2001*

6. Human Resources Management (TMT 2114) (Lectures: 9 hrs; Case Studies: 6 hrs)

- Competency assessment.
- Training & development.
- Leadership, team working
- Motivation, delegation
- Time management
- Organizational development
- Change management
- Legal aspects of employee relations

BOOKS:

- *Career Management for Scientists and Engineers, Borchardt, John K., Oxford, 2000*
- *Leveraging Knowledge: Consultancy Capabilities and Needs of CSIR, Gupta, V. K.*
- *Managing Technical People, Humphrey, Watts S., Delhi, 2001*
- *Developing the Leader within You, Maxwell, J. C., Mumbai, 2001*

7. Finance-II (TMT 2117) (Lectures: 9 hrs; Case Studies: 3 hrs)

- Cost accounting / pricing

- Sources of finance - Short/long term, domestic/foreign, equity/borrowing/mixed etc.
- Cost of capital and capital-structure planning, capital budgeting
- Investment decision analysis
- Venture capital

BOOKS:

- *Introduction to Management Accounting, Homgren, Charles T., New Delhi*
- *Chemical Project Economics, V.V. Mahajani and S.M. Mokashi, Macmillan India Ltd., 2005*

8. Environment & Safety Laws (TMT 2115) (Lectures: 9 hrs; Case Studies: 3 hrs)

- Safety includes personal, plant and environmental safety.
- Material hazards, process hazards and plant safety - general
- Factories act and rules
- Fire safety, petroleum storage
- Environmental laws – water, air, solid waste
- Environmental impact assessment

BOOKS:

- *Loss Prevention in Process Industries, Lees F.P., Vol. I & II, 1980*

Please note that the books indicated are those available with us at ICT library. As the course progresses, teachers might recommend different books which will be procured in due course of time.

Appendix C

Examination: The Rules and Regulations

1. The minimum passing marks required for any individual subject are 40% of the subject marks (i.e. 20 out of 50). However, for passing the entire semester the candidate must secure 50% of the total marks. In the case of semester III Project, the candidate must secure 50% of the allotted marks (100 out of 200).
2. The result will be declared within three weeks from the end of examination. A supplementary examination will be conducted for the failed candidates within one

month of the declaration of the result.

3. If the candidate has failed in **one or two** subjects, he/she has to undertake the repeat examination **only for those** subjects. In such a situation he/she can attend the classes (courses) for the next semester.
4. If candidate has failed in **three or more** subjects the candidate needs to undertake the examination of that semester in **all the subjects**. The candidate can continue to attend classes of the immediate next semester or can carry out the Project assignment (Semester III).
The candidate will not be allowed to appear for the examination unless he/she has successfully cleared the previous semester examination.
5. In case the candidate has failed to clear the project assignment with more than 50% marks a new assignment will be given.
6. If failure is due to not having aggregate 50%, the candidate can upgrade the marks in that semester by choosing the papers again.
7. Failed candidate has to clear the semester before appearing for the next exam. Student can attend lectures of the next semester after failure in any one semester. Maximum one attempt after the supplementary examination will be permitted to clear the semester. No supplementary examination will be held for that attempt.
8. In case a student backs out mid-course due to failure or any other reason, fees will not be refunded.
9. **The credit system** would be implemented as in the case of other degree courses at ICT.
10. The number of attempts will not be mentioned on the certificate.
11. Even if the candidate is reappearing for one subject the entire fee for Examination (Rs. 1100/- at present; might be revised) will be required to be paid.
