सीनेट की तृतीय बैठक का कार्यवृत्त

MINUTES OF THE 3RD MEETING OF THE SENATE

20.6.2002

भारतीय प्रौद्योगिकी संस्थान रूड़की

रूड़की - 247 667 (भारत)

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

ROORKEE-247 667 (INDIA)

भारतीय प्रौद्योगिकी संस्थान रुड़की
(पूर्व रुड़की विश्वविद्यालय)
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Lt Col A K Srivastava (Retd)
Registrar

No.MS/494(ii)/Senate/IITR(6/2002)
Dated 5th July ,2002

All Members of the Senate
Indian Institute of Technology, Roorkee

Subject: **Minutes of the 3rd Meeting of the Senate held on 20.6.2002 at 11.00 A.M. in the Senate Hall**

Dear Sir,

Enclosed herewith please find a copy of the Minutes of the 3rd meeting of the Senate held on 20.6.2002 at 11.00 A.M. in the Senate Hall, for your kind perusal. Your comments, if any, on the minutes, may please be sent within 15 days.

Yours faithfully,

(A.K.Srivastava)
Lt. (Col.) Retd.
Registrar &
Secretary,Senate

Encl: as above

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Minutes of the 3rd Meeting of the Senate held on 20.06.2002 at 11.00 A.M. in the Senate Hall

The following were present:

1.	Prof. Prem Vrat, Director	Chairman
2.	Prof. K.G. Ranga Raju	
3.	Prof. S.Y.Kulkarni	
4.	Prof. (Mrs) Ritu Barthwal	
5.	Prof. G.S.Randhawa	
6.	Prof. S.D. Bhattacharya	
7.	Prof. A.K.Jain	
8.	Prof. G.Bhattacharjee	
9.	Prof. R.N.Goel	
10.	Prof. Ravi Bhushan	
11.	Prof. A.N.Garg	
12.	Prof. Kamaluddin	
13.	Prof. Anil Kumar	
14.	Prof. (Mrs) Mala Nath	
15.	Prof. P.C. Jain	
16.	Prof. S.K. Kaushik	
17.	Prof. A.K.Mathur	
18.	Prof. M.K.Mittal	
19.	Prof. H.C. Mehndiratta	
20.	Prof. G.L.Asawa	
21.	Prof. Arvind Kumar	
22.	Prof. G.Ramasamy	
23.	Prof. A.K.Jain	
24.	Prof. N.M. Bhandari	
25.	Prof. R.M. Vasan	
26.	Prof. S.S. Jain	
27.	Prof. Deepak Kashyap	
28.	Prof. (Mrs) Renu Bhargava	
29.	Prof. S.K.Thakkar	
30.	Prof. S.Basu	
31.	Prof. V.H Joshi	
32.	Prof. S.K. Upadhyay	
33.	Prof. B. Prakash	
34.	Prof. H.K. Verma	
35.	Prof. A.K.Pant	
36.	Prof..M.K.Vasantha	
37.	Prof. H.O. Gupta	
38.	Prof. Vinod Kumar	
39.	Prof. R.P. Agarwal	
40.	Prof. R. Mitra	
41.	Prof. D.K.Mehra	

42. Prof. A.K.Sarje
43. Prof. S.K.Verma
44. Prof. (Mrs.) Kum Kum Garg
45. Prof. S.N. Sinha
46. Prof. D.K. Srivastava
47. Prof. Ranvir Singh
48. Prof. Dinesh Chand Singhal
49. Prof. Sabiruddin
50. Prof. Pashupati Jha
51. Prof. Asha Kapoor
52. Prof. (Mrs) Renu Rastogi
53. Prof. N.J. Rao
54. Prof. M.C.Bansal
55. Prof. J.S.Upadhyay
56. Prof. Arun Verma
57. Prof. H.G.Sharma
58. Prof. A.P.Gupta
59. Prof. U.S.Gupta
60. Prof. G.S.Srivastava
61. Prof. S.P.Sharma
62. Prof. T.R.Gulati
63. Prof. (Mrs) Rama Bhargava
64. Prof. R.C.Mittal
65. Prof. J.S. Saini
66. Prof. H.S.Shan
67. Prof. V.K.Goel
68. Prof. P.S.Mishra
69. Prof. R.D. Agarwal
70. Prof. S. Ray
71. Prof. V.K. Tewari
72. Prof. Ishwar Singh
72. Prof. A.K.Jain
73. Prof. Ravindra Nath
74. Prof. Rajesh Srivastava
75. Prof. G.S.Singh
76. Prof. Vir Singh
77. Prof. Devadutta Das
78. Prof. S.K.Tripathi
79. Prof. G.C.Mishra
80. Prof. Ram Pal Singh
81. Prof. Kuldip Singh
82. Prof. Ashwani K.Chaudhry
83. Prof. M.P.Jain
84. Prof. S.R.Bhatt, Delhi University, Delhi
85. Prof. K.L.Chopra, New Delhi
86. Mr. Arun Kumar, Head, AHEC

87. Dr. R.P.Singh, Head, Bioscience & Biotechnology
88. Mr. Yogendra Singh, Librarian
89. Dr. V.P.Singh
90. Dr. Rashmi Gaur
91. Dr. Vijaya Agarwal
92. Dr. Ajai Gairola
93. Lt.Col. (Retd.) A.K.Srivastava, Registrar Secretary

The Chairman (Director) welcomed the members to the 3rd meeting of the Senate and he extended a warm welcome to the external member Prof. S.R.Bhatt, Delhi University, Delhi and Prof. K.L.Chopra, New Delhi and expressed his gratitude for their guidance and contribution in the proceedings of the meetings. The Chairman also welcomed all new Deans who have attended the meeting first time as Dean.

The Senate recorded the apologies received from the following members for not attending the meeting:-

1. Prof. Najamuddin, Department of Architecture and Planning.
2. Prof. Surendra Kumar, Department of Chemical Engineering.
3. Prof. S.P. Nigam, Deptt. of Mechanical & Industrial Engineering.
4. Prof. Gopal Chauhan, W.R.D.T.C.
5. Prof. Padam Kumar, Department of Electronics & Computer Engineering.
6. Prof. H. Sinvhal, Department of Earth Sciences
7. Prof. S.C.Solanki, Department of Mechanical & Industrial Engineering
8. Prof. A.K.Singh, Department of Paper Technology, Saharanpur Campus

3.1.0 To confirm the minutes of the 2nd meeting of the Senate held on 13.3.2002

The minutes of the 2nd meeting of the Senate held on 13.3.2002 were confirmed.

3.2.0 To receive a report on the actions taken to implement the decisions taken by the Senate in its 2nd meeting held on 13.3.2002

Noted with the following clarifications:

Item No. 3.18 : The recommendations of the BOS of the Mathematics Department be read as recommendations of the BOS of MCA Programme.

3.3.0 ITEMS FOR CONSIDERATION:

3.3.1 Considered the draft Ordinance No.3 for the Post Graduate programme as prepared by Prof. I.M.Mishra Committee and recommended by the Board of Post Graduate Studies & Research:

At the outset, Prof. A.K.Awasthi, Dean PGS&R stated that with a view to adopt the IIT system in all matters , as applicable in other IITs and to rectify the difficulties being faced due to non availability of clear cut provision in the Ordinances/ Regulations for PG. Programmes, the draft Ordinances for Post Graduate Programmes were framed by Prof. I.M. Mishra's Committee. He further, briefed the house about some salient features of the Draft Ordinance.

After protracted discussion, the Senate RESOLVED that the Ordinance as given in **Appendix- 'A'** be approved subject to incorporation of the corrections given by the members of the Senate who may send their suggestions with regard to the discrepancies, inconsistencies, additions, deletions etc. to the Dean P.G.S & R immediately. Dean PGS&R may incorporate the suggestions, considered appropriate and modify the Ordinance, which may be placed in the meeting of the Board of Governors for consideration.

3.3.2 Considered the draft Ordinance No.4 for the Undergraduate programme as drafted by Prof. S.Ray Committee and recommended by the Board of Undergraduate Studies

At the outset, Prof. S.C. Jain, Dean U.G.S. stated that the draft Ordinance for Under Graduate Programmes were framed by Prof. S. Ray's Committee. He further briefed the house about some salient features of the draft Ordinance. Several members pointed out a few discrepancies, inconsistencies etc.

After protracted discussion, the Senate RESOLVED that the Ordinance as given in **Appendix – 'B'** be approved subject to incorporation of the suggestions/ corrections given by the members of the Senate who may send their suggestions with regard to the discrepancies, inconsistencies, additions, deletions etc. to the Dean, U.G.S. immediately. Dean, U.G.S. may incorporate the suggestions,

considered appropriate and modify the Ordinance, which may be placed in the meeting of the Board of Governors for consideration.

3.3.3 Considered the recommendations of the Board of PG Studies & Research (24.5.2002) regarding the structure/ scheme for 4 semester (24 months) M.Tech. programme in Engineering & Technology, M.Arch., MURP & M.Tech. (Solid State Electronic Materials) to be implemented from the session 2002-2003

Prof. A.K.Awasthi, Dean PGS&R stated that the structure/ scheme for 4 semester M.Tech. programmes in Engineering & Technology, M.Arch., MURP & M.Tech. (Solid State Electronic Materials) were framed and deliberated and passed by the BPGS&R on 24.5.2002. He further briefed the house about some salient features, specifically the higher weightatge to Project (Dissertation) work of the structure/ scheme.

After protracted discussion, the Senate RESOLVED that the component of Dissertation in Semester III in M.Arch & MURP be also graded as Satisfactory (S Grade) or Unsatisfactory (U Grade) as recommended for M.Tech. degree programmes.

Further **RESOLVELD** that the structure/scheme of PG Programmes as given in **Appendix – 'C'** be approved subject to incorporation of the suggestions given by the members of the Senate who may send their suggestions/ corrections with regard to the discrepancies, additions, deletions etc. to the Dean P.G.S & R immediately. Dean PGS&R may incorporate the suggestions considered appropriate and modify the structure/ scheme, which may be placed in the meeting of the Board of Governors for consideration.

3.3.4 Considered the revised teaching schemes and new syllabi of subjects for Postgraduate courses, duration of which has been increased from 3 semesters to 4 semesters from the session 2002-3003 as per directions from MHRD.

Prof. A.K.Awasthi, Dean PGS&R briefed the house about the salient features of the new teaching scheme for P.G. Programmes in Engineering, Architecture and Technology and the new syllabi. After protracted discussion the Senate RESOLVED that the revised teaching schemes and new syllabi of subjects for Postgraduate courses, duration of which has been increased from 3

semesters to 4 semesters from the session 2002-2003, as given in agenda note, be approved with the following provisions:

(a) Not more than the 40% to 50% weightage be given for the final examination, normally.

(b) Wheightage for the other assessment e.g. Tests, sessionals etc. be indicated to students at the beginning of the Semester by the respective Faculty Members.

Further, RESOLVED that the structure/ scheme of teaching and syllabi for M.Tech. (I.T.) degree course be also finalised and Senate empowers Chairman, Senate to approve it on the recommendations Dean PGS& R and Coordinataor of ER&DCI.

3.3.5 Considered admission to Ph.D. programmes any time during the session:

After some discussion the Senate RESOLVED that as considered and recommended by Board of PGS & R, in its meeting held on May 24, 2002, the admission to Ph.D. programmes at any time during the session, be approved to give opportunity to candidates with high accomplishments. Such admissions shall be approved by the Director on the recommendations of DRC and DPGS&R. Such students may be considered for Institute Fellowship provided he/she is higher in merit than the minimum level of merit upto which fellowship granted in the concerned semester.

3.3.6 Considered the University Diploma/ Institute Diploma (Equivalent to M.Sc. degree) in Pulp & Paper also as a qualification for admission to M.Tech. (Pulp & Paper) course:

RESOLVED that as considered and recommended by the Board PGS& R, the University/ Institute Diploma (equivalent to M.Sc. degree) for admission in M.Tech. (Pulp & Paper) be approved with the following provisions:

A. Candidates must have a valid GATE score in the related area. GATE score is not required for sponsored candidate.

B. Candidates must have a minimum of two years of service experience in registered Pulp & Paper industry/ Research organization.

C. Candidates will be required to fulfill the eligibility and all other conditions required for admission to M.Tech. programmes.

The Senate **FURTHER RESOLVED** that a committee comprising of the following to suggest the equivalence of similar Diplomas from other Institutions with our M.Sc. Degree (post- B.Sc. 2 years).

1. Prof. Arvind Kumar, Civil Engineering Department - Convenor
2. Prof. U.C.Chaube, W.R.D.T.C.
3. Prof. D.K.Srivastava, Department of Hydrology.

3.3.7 Considered the modifications in the contents of Post Graduate course MI-571: Quality Management:

RESOLVED that as considered and recommended by the Board of Post Graduate Studies & Research, the modifications in the contents of Post Graduate course MI-571: Quality Management as given in **Appendix – 'D'**, be approved.

3.3.8 Considered the recommendations of the Board of Post Graduate Studies & Research regarding the change in the syllabus and the title of the course EQ-523 for M.Tech. (Soil Dynamics) course in Earthquake Engineering Department

RESOLVED that as considered and recommended by the Board of Post Graduate Studies & Research, in its meeting held on 24.5.2002, the change in the syllabus and the title of the course EQ-523 for M.Tech. (Soil Dynamics) course in Earthquake Engineering Department as given **Appenddix – 'E'** , be approved.

3.3.9 To consider renaming the Department of Biosciences & Biotechnology as Department of Biotechnology

RESOLVED that as considered and recommended by the Board of Post Graduate Studies & Research, in its meeting held on 24.5.2002, renaming the Department of Bioscieces & Technology as **Department of Biotechnology**, be approved and the matter be placed before the Board of Governors.

3.3.10 Considered the syllabus for Institute Elective "IMI-01: Total Quality Management" proposed by Departmental Faculty Board of Mech. & Ind. Engg. Department

RESOLVED that as considered and recommended by the Departmental Faculty Board and Board of Under Graduate Studies, the syllabus for Institute Elective "IMI-01 : Total Quality Management" as given in **Appendix – 'F'** be approved.

3.3.11 Considered the panel of Experts to act as Nominees of the Senate for Faculty Selection of Alternate Hydro Energy Centre (AHEC)

RESOLVED that the panel of experts to act as Nominees of the Senate for Faculty Selection of Alternate Hydro Energy Centre(AHEC) be approved as given in **Appendix – 'G'** and authorised to Chairman to short list names of outstanding persons only.

3.3.12 Considered the recommendations of the MoU Review Standing Committee for signing the MoU between KTH Sweden and IIT Roorkee:

RESOLVED that as recommended by the MoU Review Standing Committee in its meeting held on 22.5.2002, the MoU between KTH Sweden and IIT Roorkee as given in **Appendix – 'H'** be approved and the matter be placed before the Board of Governors .

3.3.13 Considered the recommendations of the MoU Review Standing Committee constituted for waiving off of the Institute fee from the students of Foreign Technical Institutes visiting under MoU on reciprocal basis

RESOLVED that as recommended by the MoU Review Standing Committee, waiving off of the Institute fee from the students of Foreign Technical Institutes, visiting under MoU on reciprocal basis, be approved and the matter be placed before the Board of Governors.

3.3.14 Considered the recommendations of the MoU Review Standing Committee for the collaboration between University of Waterloo, Canada ad IIT Roorkee:

RESOLVED that as recommended by the MoU Review Standing Committee in its meeting held on 22.5.2002, the collaboration between University of Waterloo, Canada and IIT Roorkee as given in **Appendix – 'I'**, be approved and the matter be placed before the Board of Governors.

3.3.15 Considered the recommendations of Board of Sponsored Research & Industrial Consultancy (BSRIC) meeting held on 10th May 2002 regarding the revision of Industrial Consultancy rules as covered under Chapter –43 "Consultation & Testing work."

Prof. H.K.Verma, Dean SRIC briefed the house regarding the revision of Industrial Consultancy rules and clarified the points raised on the floor by certain members. After deliberation and making some minor additions, deletions, corrections in certain clause, the Senate **RESOLVED** that the revised Industrial Consultancy rules, which were earlier covered under Chapter – 43 "Consultation & Testing Work" and given in **Appendix – 'J'** , be approved and the matter be placed before the Board of Governors.

3.3.16 Considered the recommendations of Board for Sponsored Research & Industrial Consutlancy (BSRIC) meeting held on 10th May 2002, regarding the rules for generating & utilization of PROFESSIONAL DEVELOPMENT FUND (PDFF) at this Institute:

After some discussion and making some minor additions and corrections in the P.D.F., the Senate **RESOLVED** that the rules for generation & utilization of PROFESSIONAL DEVELOPMENT FUND (P.D.F.) at this Institute as given in **Appendix – 'K',** be approved and the matter be placed before the Board of Governors.

3.3.17 Considered the modified Calendar (second version) for the Autumn Semester of the Session 2002-2003 (from July 04, 2002 to January 03, 2003).

RESOLVED that the modified Calendar (second version) for the Autumn Semester of the Session 2002-2003 (from July 04, 2002 to January 03, 2002) as given in **Appendix – 'L'**, be approved.

3.3.18 Considered recommendations of the MoU Review Standing Committee for signing the MoU between IIT Roorkee and ARBA MINCH WATER TECHNOLOGY INSTITUTE, ARBA MINCH, ETHIPOIA

RESOLVED that as recommended by the MoU Review Standing Committee, the MoU between IIT Roorkee and ARBA MINCH WATER TECHNOLOGY INSTITUTE, ARBA MINCH, ETHIOPIA be not entered into.

3.3.19 Considered the panel of experts to act as Nominees of the Senate for faculty selection for WRDTC and Humanities and Social Sciences:

RESOLVED that the panel of experts to act as Nominees of the Senate for faculty selections of WRDTC and Humanities and Social Sciences, in proper format, be placed before the next meeting of the Senate.

3.3.20 Considered the charges of Transcript

RESOLVED that in accordance with the decision taken in the last meeting of the Senate held on 13.3.2002, the charges of transcript as recommended by the Dean, UGS and Dean, PGS&R be approved as under:

I.	(a) Each Transcript prior to 1980 entry (If desired to be prepared by the office)	Rs. 500/- Per copy (first copy) Additional copies Rs. 50/- per copy
	(b) Each Transcript prior to 1980 entry (Provided by the student)	Rs. 50/- per copy
II.	(a) Transcript from 1981 tp 2000 entry (If desired to be prepared by the office)	Rs. 100/- per copy (first copy) Additional copies Rs. 50/- per copy
	(b) Transcript from 1981 to 2000 entry (Provided by the student)	Rs. 50/- per copy
III.	Transcript 2001 onwards	Rs. 25/- per copy (minimum charges will be Rs.100/-)

The above charges exclude postage charges.

3.4.0 REPORTING ITEMS:

3.4.1 Reported that the Director has approved local and additional fees to be charged from the students admitted during the session 2002-2003 at the same rates as were applicable during the previous session i.e. 2001-2002:

Noted.

3.4.2 Reported that the Director has approved the Viva-Voce examinations reports for the award of Ph.D. degree in respect of the following Research Scholars:

Sl. No.	Name of the Candidate	Department	Title of the Thesis
1.	Rajjni Mangla (Ms)	Chemistry	Development of Chemical Sensors for the Determination of Some Toxic Metals.
2.	Arvind Kumar Jain	Chemistry	Photophysics and Photocatalytic Behaviour of Q-CdS-TiO in the Presence of Certain Aromatics.
3.	Shipla Khurana (Ms)	Chemistry	Studies on Ox0, Dioxo-and Oxperoxovanandium (V) Complexes of Polydentate Ligands.
4.	Monika Johar (Ms)	Chemistry	Synthesis and Biological Evaluation of Some N and S Containing Heterocyclic Compounds.
5.	Rajan Dev Gupta	Civil Engg.	Remote Sensing and GIS Based Decision Support System for District Level Planning.
6.	Sasanka Shekhar Mandal	Civil Engg.	Some Aspects in Numerical Simulation of Wind Flow Around Bluff Bodies.
7.	Shantanu Bhowmic	Mech. & Ind. Engg.	Characteristics of Adhesive Joining of High Density Polyethylene and Polypropylene to Steel.
8.	Ahmad Al-kurdi	Mathematics	Efficient Solution of Linear Spares Systems
9.	Shagoofta Rasool Shah (Ms)	W.R.D.T.C.	Study of Scour Around Permeable Spurs
10.	Mohammad Abdullah	W.R.D.T.C.	Experimental Study on Charactgeristics of Braided Streams.
11.	Yogendera Kumar	Physics	A Study of the Incluence of Schottky Barrier Enhancement on GaAs Field Effect Transistors.

3.4.3. Reported the incorporation of comments/ suggestions etc. made by the Senate members in the document "Ordinances & Regulations for the Ph.D. Programme" as approved by the Chairman.

Noted.

3.4.4 Reported that the Director has approved a correction in the recording of the minutes of the Senate meeting held on 13.3.2002 (Item No. 2.3.5).

Noted.

The meeting ended with a vote of thanks to the Chair.

Appendix 'A'
Item No. 3.3.1

INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE
ORDINANCES FOR POST GRADUATE PROGRAMMES

Preamble:

Postgraduate education at the Indian Institute of Technology, Roorkee, is aimed at inculcating in a student a deep sense of understanding of the fundamental principles, concepts and practices in the specialized areas of sciences, engineering, technology and management. The Institute has inherited a strong legacy of postgraduate education from its predecessor, the erstwhile University of Roorkee, which was amongst the earliest institutions in the country to introduce postgraduate programmes in engineering and technology. The various academic programmes have been so designed as to sharpen the intellect of a student, equip him with the power of incisiveness, and help him acquire the habit of enquiry and reason. The curriculum has been carefully formulated and is intended to motivate a student to delve into unknowns and prepare him to undertake research and developmental activities in his chosen discipline. IIT Roorkee is the only Institution in the country having specialized Postgraduate and Doctoral programmes in Earthquake Engg., Water Resources Engineering & Management, Hydrology, Welding Engineering, Alternate Hydro Energy and Pulp & Paper Technology.

Postgraduate education demands the right kind of ambience, a good infrastructure, an acclaimed and dedicated faculty, and considerable flexibility in the course structure. IIT Roorkee is the Institute, which provides the above ingredients in abundance. Its PG programmes are well crafted and continually updated to keep pace with the scientific, technological and societal changes taking place in the global arena. Every course has been assigned certain number of credits depending upon the workload it involves. The performance of the student is continuously evaluated to motivate him to improve his performance throughout the duration of programme and a letter grade is awarded on the completion of the course. The Course structure has enough flexibility and allows a student to progress at an optimum pace, commensurate with his intellectual quotient and convenience. When a student has earned certain minimum number of credits stipulated for the programme, with a specified minimum cumulative grade point average, he becomes eligible for the award of degree. The programmes have inherent core strengths of the Departments / Academic Centres and have specialized compulsory and elective courses, besides core courses on modeling and simulation and mathematics. This provides enough flexibility to the students to broaden their knowledge base.

The Ordinances as embodied here are for specifying the provisions required for the purpose of smooth functioning of the postgraduate programmes of the Institute.

ORDINANCES FOR THE PG PROGRAMMES

Short title & Commencement

1. (i) These Ordinances shall be called the Ordinances for the Postgraduate Programmes of the Indian Institute of Technology, Roorkee.

(ii) These ordinances shall come into force with effect from such date as the Senate/Board may appoint in this behalf.

Definitions

2. Unless the context requires otherwise,

(i) "Applicant" shall mean an individual who applies for admission to any Postgraduate (PG) programme of the Institute;

(ii) "Board" shall mean the Board of Governors of the Institute;

(iii) "CEED" shall mean Common Entrance Examination in Design;

(iv) "Casual Student" shall mean a student, who is registered for a Degree in a recognized Institution/University in India or abroad and is officially sponsored by his parent Institution to avail laboratory and other academic facilities or for attending a formal set of courses at the Institute;

(v) "CGPA" shall mean the cumulative grade point average of a student;

(vi) "Council" shall mean the council of the Indian Institutes of Technology;

(vii) "Coordination Committee" shall mean the committee of the faculty members involved in a course;

(viii) "Course" shall mean a curricular component identified by a designated code number and a title;

(ix) "Course Coordinator" shall mean a faculty member who shall have full responsibility for the course, coordinating the work of other faculty member(s) involved in that course, including examinations and the award of grades;

(x) "DPGS&R" and "Dean PGS&R" shall mean the Dean, Postgraduate Studies and Research;

(xi) "DRC/CRC" shall mean the Postgraduate and Research Committee of the Department/Academic Centre;

(xii) "Degree" shall mean the Master's degree viz. M.Tech., M.Sc., M.C.A., M. Phil, M.Arch., M.U.R.P., M.B.A. and such other degrees of the Institute as may be approved by the Board;

(xiii) "Diploma" shall mean the Postgraduate Diploma in such areas as may be approved by the Board;

(xiv) "Educational Institution" shall mean those institutions, which offer Bachelor's and/or higher degrees in Science, Engineering, and Technology;

(xv) "Faculty Advisor" shall mean a teacher nominated by the Department/Academic Centre to advise a student on the courses

to be taken by him and other matters related to the academic programme;

(xvi) "Full-time student" shall mean a student registered for a PG Degree / diploma devoting full time for completing the academic requirements;

(xvii) "GATE" shall mean Graduate Aptitude Test conducted by the Government of India;

(xviii) "Grade Moderation Committee" shall mean the committee appointed by the department/academic centre to moderate grades awarded by the course coordinators in different courses in a semester, at a given level of a curriculum;

(xix) "Institute" shall mean the Indian Institute of Technology, Roorkee;

(xx) "Minimum Registration Period" shall mean the minimum period for which a candidate must be registered for the postgraduate degree or diploma;

(xxi) "Part-time Student" shall mean a student registered for a PG Degree/diploma, devoting a part of his time towards the completion of the PG programme and a part of his time towards the discharge of his official obligations;

(xxii) "PG" shall mean postgraduate;

(xxiii) "BPGS&R" or "Board for PGS&R" or PG Board" shall mean the Board for Post Graduate Studies and Research Programmes of the Institute;

(xxvi) "Scheme of Teaching and Examination" shall mean the scheme of teaching and examination for a PG programme approved by the Senate;

(xxv) "SGPA" shall mean the semester grade point average;

(xxvi) "SC/ST" shall mean the scheduled castes and scheduled tribes as notified by the Government of India from time to time;

(xxvii) "Sponsored Candidate/Student" shall mean a full-time PG student receiving full financial support from the Sponsoring Organization;

(xxviii) "Supervisor" shall mean a member of the academic staff of the Institute and / or from outside the Institute approved by the Department/ Academic Centre to supervise the student for the designated academic activity;

Note: 'He' & 'His' imply 'he'/'she' and 'his'/'her', respectively.

Ordinances

3. (1) The Institute shall offer such PG programmes and of such minimum duration as the Board may approve on the recommendation of the Senate, either on its own or on the initiative of a Department/Academic Centre, and/or on the direction of the Board/Council/Government of India;

Provided that the PG Board shall recommend all such programmes;

Provided further that an interdisciplinary programme may be proposed by a Department/Academic Centre or by a committee appointed by the Director for the consideration of the BPGS&R, the Senate, and the Board;

(2) The procedure for starting a new programme, temporarily suspending a programme, or phasing out a programme shall be such as may be laid down in the regulations;

(3) The minimum entry qualifications for admission to PG programmes shall be such as may be laid down in the Regulations;

(4) A PG student shall be required to earn a minimum number of credits through various curricular components like theory/laboratory courses, Project, Seminar and Dissertation, etc. at the Institute or at such other Institutions as have been approved by the Institute. The Dissertation, Project and other similarly designated academic activities shall have to be undertaken under the guidance of a Supervisor(s);

Provided that a PG student may be permitted by the DRC/CRC to carry out in full or a part of his Dissertation outside the Institute. In such cases, an additional supervisor from the outside Organization/Institute, if considered necessary, may be appointed by the DRC/CRC on the recommendation of the Supervisor from the Institute;

(5) A PG student shall be required to complete all the requirements for the award of the PG degree/diploma within such period as may be specified in the Regulations;

(6) The date of initial registration for the PG programme shall normally be the date on which the student formally registers for the first time. This date shall be construed as the date of joining the programme for all intents and purposes;

(7) Normally, a student shall be required to attend every lecture, tutorial and practical class. However, for late registration, sickness or other such exigencies, absence to a certain extent may be allowed as provided for in the regulations.

(8) In the case of change of status from full-time to part-time, the time spent as full-time student shall be counted as such towards minimum registration period requirement;

(9) A PG student may be granted such scholarship/studentship/ assistantship/ stipend, etc. and awarded such medals as may be specified in the regulations in accordance with the directions of the Government of India and/or the decision of the Council/Board from time to time.

(10) The procedure for the admission of a student to a PG programme shall be such as may be specified in the regulations;

(11) The procedure for the withdrawal from a postgraduate programme, rejoining the programme, the award of grades and the SGPA/CGPA, the examination and all such matters as may be connected with the running of a PG programme shall be such as may be specified in the regulations;

(12) The award of the PG Degree/diploma to an eligible candidate shall be made in accordance with the procedure laid down in the regulations;

(13) A student admitted to the PG programme shall abide by the "Standing Orders for Students" issued by the Institute from time to time. These Standing Orders shall deal with the discipline of the students in the Bhawans/Hostels, Departments/Academic Centres, the Institute premises and outside. The Standing Orders may also deal with such other matters as are considered necessary for co-curricular and extra-curricular activities and the general conduct of students. These Standing Orders shall be approved by the Director on the recommendation of the Dean of Student's Welfare;

(14) Notwithstanding anything contained in the above Ordinances, no regulations shall be made in contravention of the decision of the Board/Council and/or the direction of the Government of India, in regard to the duration of the PG programme, the amount and number of scholarships/assistantship, the number of studentships and the procedure thereof. The regulations for the PG programme shall be framed by the BPGS&R, which shall be considered and approved by the Senate;

INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE
ORDINANCES FOR UNDERGRADUATE PROGRAMMES

Preamble

Indian Institute of Technology, Roorkee, inherits the legacy of excellence in Undergraduate teaching of the erstwhile University of Roorkee as is evident from the reputation enjoyed by its illustrious alumni and their engineering feats like Aswan to Bhakra-Nangal dam, which stand testimony of their capabilities and excellence. At IIT Roorkee, aim of the education at undergraduate level is to build upon the knowledge gained by a student in school and transform him into an engineer/technologist of future. This is done by imparting knowledge through classroom instruction, laboratory courses, industrial training and other modes of learning. After completing the curriculum, the student acquires an adequate knowledge base in his chosen discipline, which can easily be employed for the solution of real life problems and developed further through higher education, for reaching the frontiers of knowledge in his/her area of specialization.

The undergraduate education at the Institute has both academic and extracurricular components, which have been designed for an integrated development of professionals possessing not only academic excellence but also, discipline, morality, and ethics. After completing the undergraduate programme, many of the students join organizations where teamwork is the predominant mode of functioning. Ethics and discipline are of paramount importance in such situations.

In these days of rapid evolution of knowledge, the academic programmes require provision for continuous updating of the content to incorporate new developments in a particular area. The curriculum is, therefore, broadly defined to make it possible for the teacher to update it continuously by including the latest developments. In addition, the Institute undertakes periodic review of the curriculum to prune the dead wood and incorporate new ingredients, which might have become necessary in the changed context. Exchange of knowledge and methodology across the disciplines is important in furthering its frontiers. In keeping with this spirit, the undergraduate curriculum encourages students to learn across different disciplines. In the undergraduate programme in engineering, apart from the inputs from social sciences and management, biotechnology has been introduced recently, since many novel ideas from this area are being borrowed in engineering.

The curriculum at the undergraduate level has been so structured that it offers enough flexibility to the students to tailor his/her learning to individual inclinations and the desired career objectives. Every course has been assigned certain number of credits depending on the workload it involves. The students are continuously evaluated during the conduct of a course and are awarded a letter grade on the basis of his performance. The academic year is divided into semesters and, in each semester, the students have to register in a branch of study for a number of courses. When a student earns a minimum number of credits specified for a given curriculum, he becomes eligible for the award of the degree.

The ordinances as embodied here are for specifying the provisions required for the purpose of smooth functioning of undergraduate academic programmes.

ORDINANCES FOR THE UG PROGRAMMES

Short title & Commencement	1	(i)	These ordinances shall be called the Ordinances for the Undergraduate Programme of the Indian Institute of Technology, Roorkee
		(ii)	These ordinances shall come into force with effect from such date as the Senate/Board may appoint in this behalf.
Definitions	2		Unless the context requires otherwise,
		(i)	"**Applicant**" shall mean an individual who applies for admission to any Undergraduate (UG) programme of the Institute.
		(ii)	"**Board**" shall mean the Board of Governors of the Institute.
		(iii)	"**BUGS**" shall mean the Board for Undergraduate studies of the Institute.
		(iv)	"**Casual Student**" shall mean a student who is registered for a degree in a recognized Institution/ University in India or abroad and is officially sponsored by his parent institute to avail laboratory and other academic facilities or for attending a formal set of courses at the Institute.
		(v)	"**CGPA**" shall mean the cumulative grade point average of a student.
		(vi)	"**Coordination Committee**" shall mean the committee of the faculty members involved in a course.
		(vii)	"**Council**" shall mean the council of the Indian Institutes of Technology.
		(viii)	"**Course**" shall mean a curricular component identified by a designated code number and a title.
		(ix)	"**Course Coordinator**" shall mean a faculty member who shall have full responsibility for the course, coordinating the work of other faculty member(s) involved in that course, including examinations and the award of grades.

(x) "**Degree**" shall mean the Bachelor's degree viz. B.Tech., and such other degrees of the Institute as may be approved by the Board.

(xi) "**Direct Admission Student**" shall mean the students who are admitted directly from abroad and not through JEE, and registered for undergraduate programme for full-time study leading to Bachelor's degree.

(xii) "**DUGC**" shall mean the Department Undergraduate Committee of the Department/ Academic Centre.

(xiii) "**DUGS**" and "**Dean UGS**" shall mean the Dean, Undergraduate Studies.

(xiv) "**Faculty Advisor**" shall mean a teacher nominated by the Department / Academic Centre to advise a student on the courses to be taken by him and other matters related to the academic programme.

(xv) "**Grade Moderation Committee**" shall mean the committee appointed by the department/academic centre to moderate grades awarded by the course coordinators in different courses in a semester at a given level of a curriculum.

(xvi) "**Institute**" shall mean the Indian Institute of Technology, Roorkee.

(xvii) "**JEE**" shall mean the Joint Entrance Examination for admission to IITs.

(xviii) "**Student**" shall mean a student admitted through JEE and registered for an undergraduate programme for full-time study leading to Bachelor's degree.

(xix) "**Scheme of Teaching and Examination**" shall mean the scheme of teaching and examination for a branch of study as approved by the Senate.

(xx) "**SC/ST**" shall mean the scheduled castes and scheduled tribes as notified by the Government of India from time to time.

(xxi) "**SGPA**" shall mean the semester grade point average.

(xxii) "**UG**" shall mean Undergraduate.

Note: 'He' & 'His' imply 'he'/ 'she' and 'his'/ 'her', respectively

Ordinances

3 (1) The Institute shall offer such UG programmes and of such minimum duration as the Board may approve on the recommendation of the Senate either on its own or on the initiative of a Department/Academic Centre, and/or on the direction of the Board/Council/Government of India.

Provided that the UG Board shall recommend all such programmes.

Provided further that an interdisciplinary programme may be proposed by a Department/Academic Centre or by a committee appointed by the Director for the consideration of the BUGS, the senate and the Board.

(2) The procedure for starting a new programme, temporarily suspending a programme, or phasing out a programme shall be such as may be laid down in the regulations.

(3) The minimum entry qualifications for admission to UG programmes shall be such as may be laid down in the Regulations.

(4) A UG student shall be required to earn a minimum number of credits through various academic courses of a curriculum as provided for in the regulations.

(5) A UG student shall be required to complete all the requirements for the award of the Bachelor's degree within such period as may be specified in the Regulations, including those credits earned at such other institutions as have been recognized by the Institute for this purpose.

(6) The date of initial registration for the UG programme shall normally be the date on which the student formally registers for the first time. This date shall be construed as the date of joining the programmes for all intents and purposes.

(7) Normally, a student shall be required to attend every

lecture, tutorial and practical class. However, for late registration, sickness or other such exigencies, absence to a certain extent may be allowed as provided for in the regulations.

(8) An undergraduate student may be granted such scholarship /studentship /assistantship/stipend, etc. and awarded such medals as may be specified in the regulations in accordance with the directions of the Government of India and/or the decision of the Council/ Board from time to time.

(9) The procedure for the admission of a student or a direct admission student to an undergraduate programme shall be such as may be specified in the regulations; the casual students may be allowed access to academic programmes in the manner provided under the regulations.

(10) In case all the reserved seats for SC/ST category are not filled even with relaxed admission norms, the students in this category, who satisfy some minimum norms specified for this purpose, may be offered admission to one year preparatory programme. On successful completion, these students may be offered direct admission against the unfilled quota of seats as provided for in the regulations.

(11) The procedure for the withdrawal from an undergraduate programme, rejoining the programme, the award of grades and the SGPA/CGPA, the examination and all such matters as may be connected with the running of a UG programme shall be such as may be specified in the regulations.

(12) The award of the UG degree to an eligible candidate shall be made in accordance with the procedure laid down in the regulations.

(13) A student admitted to the UG programme shall abide by the "Standing Orders for Students" issued by the Institute from time to time. These standing orders shall deal with the discipline of the students in the Bhawans/Hostels, Departments/Academic Centres, the Institute premises and outside. The standing orders may also deal with such other matters as are considered necessary for co-curricular and extra-curricular activities and the general conduct of the students. These standing orders shall be approved by the

Director on the recommendation of the Dean of Student's Welfare.

(14) Notwithstanding anything contained in the above Ordinances, no regulations shall be made in contravention of the decision of the Board/Council and/or the direction of the Government of India, in regard to the duration of the UG programme, the amount and number of scholarship/assistantships and the number of studentships and the procedure thereof. The regulations for the UG programme shall be framed by the BUGS, which shall be considered and approved by the Senate.

Appendix – 'C'
Item No. 3.3.3

Structure/Scheme of PG Programmes in respect of M.Tech. in Engg.& Tehnology, M.Arch./MURP, M.Tech.(SSEM) & P.G. Diploma.

(1) The duration of one and half year M.Tech/M.Arch., M.U.R.P. programme shall be increased from 18 months to 24 months (4 Semesters) duration to strengthen project work (dissertation) as per policy guidelines issued by MHRD, Government of India, with effect from the session 2002-03.
(2) The Maximum duration for award of Full-Time and Part-Time M.Tech./M.Arch./M.U.R.P. degree shall be 6 and 10 semesters, respectively.
(3) The minimum duration of Part time programme is 3 years.
(4) HS-501 : Technical Communication course for all postgraduate degree programmes in Engineering, Architecture & Planning and Sciences shall be optional with 2 credit weightage. This shall be run entirely by the Department of Humanities and Social Sciences. The course shall be scheduled in the Time Table so as not to disturb the normal working of the other Departments. The credits shall be included in the requirement of total credits in the concerned programme. This course shall be run in both Autumn and Spring Semesters of each academic session. The Faculty Advisor of the students shall advise the students weak in communication to opt for this course.
(5) The maximum duration for completion of M.Tech./ M.Arch./ M.U.R.P. degree for full-time and part – time students shall be 6 semesters and 10 semesters, respectively.

(A) M.Tech. Programmes :

The structure of 4 Semesters M.Tech. programmes shall be as follows :

Semester I	**:**	**Total Credit 20-25**
Semester II	**:**	**Total credits 20-25**

(a) Institute core courses except HS 501 Technical Communication shall be the same as in the existing system.
(b) HS:501 : Technical communication shall be optional and shall be of 2 credits to be run in Autumn or Spring Semesters of each academic session.
(c) Departmental core course shall be of 4 credits. The Department may have 1 to 3 alternative courses.
(d) Minor specialisation (courses) : 4-8 credits.
(e) Major specialization (courses) : 20-28 credits.
(f) Project of 4-8 credits may be offered either in II or III semester of the M.Tech. Programme.

The sum total credits for I and II semester together shall be 44 to 48 credits.

Semester III : Total credits 20-24

(a) Seminar (write up, presentation for evaluation) : 4 credits
(b) Project : 4-8 credits, if not included in II Semester.
(c) Course Unit to be decided by the Department for each programme: 0-4 credits (optional for the Department) .
(d) Dissertation : The credits for dissertation in Semester III & IV taken together shall be between 32 and 40.
(e) The topic of dissertation shall be decided in the 2nd semester.
(f) `The portion of dissertation work of 8-16 credits, carried out in III semester, shall be examined at the end of III Semester and the evaluation shall be recorded as Satisfactory or Unsatisfactory with Grades 'S' or 'U', respectively.
(g) If the dissertation of a student is graded unsatisfactory (U), he/she shall cease to get scholarship/assistantship in the IV Semester.
(h) For the calculation of SGPA and CGPA of III Semester, only the credits of Seminar, Project (if not offered in II Semester), one course unit (if approved by the Deptt./Centre) and Technical Communication (if not opted in I or II Semester) shall be taken into account.

Semester IV : Total Credits 20-24

(a) Dissertation : The credits for Dissertation in Semester III & IV taken together shall be between 32-40 Credits.
(b) Dissertation work done in the III and IV Semester shall be submitted in the form of a Write up, which shall be presented for evaluation as a whole at the time of final Viva-Voce Examination at the end of IV Semester.
(c) If a student gets unsatisfactory (U) grade in Dissertation in the III Semester, he/she shall not be awarded the final Grade higher than B Plus in the Dissertation as a whole at the end of IV Semester.
(d) The Dissertation Viva-Voce Board shall consist of the following :

(i)	Head of the Deptt. or his nominee	Chairman
(ii)	One nominee of DRC	Member
(iii)	Supervisor(s)	Member
(iv)	External Examiner	Member

(e) The distribution of weightage for the Dissertation amongst the Examiners shall be as follows :

(i)	Supervisor(s)	:	25%
(ii)	External Examiner	:	25%
(iii)	Viva-Voce Board together	:	50%

The above weightage shall be summed up and converted out of 100 marks. The grades will be awarded on the basis of absolute marks system given below :

A Plus	> 91
A	82-90
B Plus	73-81
B	64-72
C Plus	55-63
C	46-54
D	40-45

(f) Total credits for Semester III and IV put together shall be between 44 to 48.

(g) Normal vacations should be utilised for completion of requirements of the PG programmes.

(h) A minimum of total course credits to be earned by a student for the award of the M.Tech. degree shall be 88 with the minimum CGPA requirement of 5.5 as passed by the Senate vide item 2.3.36 on 13th March 2002.

(i) With the above decisions, the proposed credit requirement vis-à-vis the Existing Credit requirement for various course contents for M.Tech. programme is presented in the Table later.

(j) In the PG degree programme, a student who discontinues at the end of 3rd semester with acceptable performance (CGPA ≥5.5) may resume the work (dissertation).

B. **M. Arch. & MURP Programmes :**

The P.G. degree Programmes of the Department of Architecture and Planning should conform to the above broad framework for M.Tech. programme with credits of 20-25 for I & II Semesters each, 20-24 for III Semester and 20-24 Credits for IV Semester, respectively. A minimum total of 88 credits for all the four semesters taken together with minimum CGPA requirement of 5.5 be earned by a student for the award of M.Arch/M.U.R.P. degree. In the III Semester a course unit of 4 credits may be offered. This is, however, optional for the Department. The dissertation of 8-16 credits shall be evaluated at the end of III Semester and shall be graded as satisfactory (S grade)/ Unsatisfactory (U grade) similar to M.Tech. programmes.

C. P.G. Diploma :

(1) P.G. Diploma of two Semester (one year duration) presently run in the WRDTC, Hydrology and Earthquake Engineering Departments may be continued as at present with the following broad framework.

(i) Credit requirements for each of the two semester be 20-25.
(ii) Project of 4-8 Credits shall be completed by the end of Semester II.
(iii) The total Credit requirement for the award of Diploma shall be 44-48.

(2) New P.G. Diploma programmes, specially the industry oriented programmes, may be proposed for and considered later.

TABLE : COMPARISON OF CREDIT REQUIREMENTS IN THE EXISTING AND PROPOSED M.TECH. DEGREE COURSES

	Course Component	Existing Credit Require-ments	Proposed Credit Require-ments	Remarks
1.	Course on Technical Communication	Non-credit	2*	Should be run by the Deptt. of Humanities & Social Sciences as optional course in both the Semesters of a session.
2.	Advanced Course on Mathematics	4-8	4-8	No change
3.	Course on modelling, simulation and Computer Applications	4-8	4-8	No change in the Institute Core.
4.	Departmental Core Courses	4-8	4	No change in the Credits. However 1-3 alternative courses may be run.
5.	Courses in Major Area of Specialization	16-24	20-28	Increase of 4 credits.
6.	Courses in Minor Area of Specialization	8-12	4-8	In order to increase the credits of Major specialization courses the Minor specialization credits have been reduced by 4.
7.	Project	2-4	4-8	May be offered in II or III Semester
8.	Term Paper		Nil	Dropped
9.	Seminar	2	4	To be offered in III Semester. The students will have to submit a written Seminar Report.
10.	Dissertation	17-22	32-40	Topics to be given to the students at the end of II Semester. Evaluation to be done for 8-16 credits in III Semester with letter grade 'S' or 'U' for satisfactory or unsatisfactory progress. SGPA and CGPA after III Semester will be calculated by excluding the overall credits of Dissertation. Grading for the dissertation will be done in the IV semester for all the credits (32-40).

* The optional course on Technical Communication of 2 credits shall be offered so as not to disturb other courses and the normal time-table. The Faculty Advisor shall advise such students as are weak in communication to opt for this course.

File Name C:\Suresh\Appendix-A

Appendix 'D'
Item No. 3.3.7

Course No. & Title	:	MI-571		QUALITY MANAGEMENT
Semester	:	Autumn		
Contact Hours	:	L	T	P
		3	1	0
Credits	:	4		

Objective of the Course

To expose the students to various concepts and philosophies of quality management and to develop their skill for implementing the various phases of total quality management.

Syllabus

Fundamentals

Evolution of Quality: Inspection, Quality Control, Quality Assurance and Total Quality Management, Customer-Orientation: Internal & External Customer Concept, Quality Philosophies of Deming, Juran, Crosby, Ishikawa, Taguchi, TQM in manufacturing and services. Tools and improvement cycle (PDCA). Life cycle approach to quality costs-Prevention, Appraisal and Failure costs.

Techniques of Quality Engineering

Seven QC Tools; Quality Planning; Implementation and Inspection; quality information feed back, Corrective actions; Taguchi's philosophy and robust product & process design, QFD, 5S, SQC; Review on variables, attributes quantities and their measurements etc; Theory of control charts; Brief review on X, R, P, C charts; Different adaptation of control charts, viz. Group control chart, control charts with variable subgroup sizes, moving average and moving range charts, acceptance control charts, charts for trended universe average, CUSUM charts, Acceptance Sampling, Process Capability Analysis.

System Approach and Quality System Establishment

ISO-9000 pre-requisites, different quality systems and their structure, quality policies and objectives, management responsibility; documentation – and methodology of implementation, Quality audits and assessment.

Achieving Total Commitment to Quality

Participative approach and team work, training and motivation; Quality circles, their characteristics, objectives and organisation structure; Quality circle implementation structures and techniques; communicating quality commitment to vendors and customers, Bench marking, Impact on Society, TQM Practices

Pre-requisites : Nil

Suggested Lecture Distribution

Topic	No. of Lectures
1. Fundamentals of Quality Management	8
2. Techniques of Quality Engineering	18
3. System Approach and Quality System Establishment	6
8. Achieving Total Commitment to Quality	10
Total	42

List of Recommended Books

1.	Implementing Quality Through ISO – 9000	Peter Jockson & David Ashtom	Viva Book Pvt. Ltd. New Delhi
2.	Statistical Quality Control	Grant and Leavenworth	McGraw Hill
3.	Taguchi Techniques for Quality Engineering	Phillips J. Ross	
4.	Quality Planning & Analysis	Juran J.M. & Gryna, Jr., F.M.	T.M.H., New Delhi
5.	Total Quality Management	Besterfield, D.C. and Besterfield C (1999).	Pearson Education Asia (Low priced Edn)
6.	Quality is Free,	Phillips B. Crossby(1979)	McGraw Hill New York

Appendix 'E'
Item No. 3.3.8

Course No. & Title	:EQ-523 Soil Dynamics		
Semester	:Autumn Semester		
Contact Hours	:L	T	P
	:3	1	0
Credits	:4		

Course Objective: The emphasis of this course is on the theoretical and practical aspects of establishing the strength characteristics of soil by laboratory tests and field exploration.

Course Content

Strength Characteristics of Soils: Static and dynamic strength characteristics of soils, pore pressures, liquefaction of cohesionless soils and sensitive clays, dynamic, effect of strain levels on the dynamic soil properties. 9

Stress conditions in the field and in the corresponding laboratory test using the triaxial, direct shear, simple shear, vane shear and torsional vibration apparatus, rotation of principal planes, effect of size and boundary conditions of sample and grain size distribution of material of sample on strength characteristics of soil. 5

Estimation of dynamic soil properties at a desired strain level. 2

Plate load tests, block vibration tests, evaluation of damping and elastic coefficients, effects of strain levels and confining pressures, large scale shear tests, block shear tests, their advantages and limitations. 5

Seismic exploration test by hammer, blast and cross hole methods, identification of waves, instruments for records. 3

Active, at rest and passive displacement dependent earth pressures, critical angle of wall friction, its choice; Terzonghi's passive wedge theory, numerical methods for obtaining earth pressure distribution behind wall back, earth pressure measurements, effect of arching on measurements; effect of saturation and submergence of back fill on earth pressure; I.S. Code of practice for determination of earth pressures; axisymmetric earth pressure; retaining walls with dynamic loading; earth pressures on well foundations. 6

Stability analysis, friction circle method, effective and total stress methods of analysis; factor of safety, yield acceleration; damage potential, displacement analysis by Newmark and by Seed Goodman methods; effect of saturated and submerged conditions, FEM analysis of slope stability, Provisions of I.S. Code of practice for earth and rockfill dams. 5

Dynamic compaction of soils, factors affecting compaction; field methods of compaction: sand piles, stone columns, grouting, vibroflotation, dropping weights, blasting. 5

Reinforced earth: Concept of reinforced earth; types of reinforcements; applications of reinforced earth under static and dynamic loads; determination of properties of reinforcements; material properties of composite material of reinforced earth; reinforced earth drains and other applications of reinforced earth 5

Total 45

Prerequisites : Nil

Suggested reading:

1. Prakash, S., Soil Dynamics, Mc Graw Hill Book Co., New York
2. S. Okamoto, Introduction to Earthquake Engineering, John Wiley & Sons, New York
3. Van Impe, W.F., Text Book on Soil Improvement Technique and Their Evolution, A.A. Balkema Publication, U.S.A.
4. Seed, H.B., Martin, P.P. and Lysmer, J. (1975), The Generation and Dissipation of Pore-Water Pressure During Liquefaction, Report No. EERC-75-26, U.S.A.
5. Ingold, T.S., Reinforced Earth, Thomas Telford Ltd., London.

No. & Title: IMI-01 : Total Quality Management

Semester : Spring

Contact Hours	:	L	T	P
		3	1	0

Credits : 4

Objective

To encourage all students to read and learn the broad array of tools, techniques and the philosophies concerning the application of the Total Quality Management (TQM) approach to manufacturing and service industries. TQM is a constantly developing area, and so students must be able to continue their research and learning process after the completion of this course.

Syllabus

Fundamentals

Evolution of Quality: Inspection, Quality Control, Quality Assurance and Total Quality Management, Customer-Orientation: Internal & External Customer Concept, Quality Philosophies of Deming, Juran, Crosby, Ishikawa, Taguchi. TQM is manufacturing and services. Tools and improvement cycle (PDCA), Life cycle approach to quality costs-Prevention; Appraisal and Failure costs. Various TQM models. Relationship between quality and environment.

Human Resources Management

Organizational, Communicational and Team requirements. Attitude, value system and behavioral patterns. Use of teams in process management. Group dynamics, Quality circles, high performance and self-directed teams. Empowerment, Human resource polices in TQM.

Tools and Techniques

Seven QC tools (Histogram, Check sheets, Ishikawa diagrams, Pareto, Scatter diagrams, Control charts), Applications of these tools, Quality Function Deployment, Statistical process Control, Process capability, JIT and Elimination of waste, Total Productive Maintenance, House keeping and 5-S. Taguchi's concept of quality loss function.

Systems and Procedures

Importance, Standardization (National and International) Quality System, Quality Manuals, Quality Information Systems and documentation, Auditing, Basics of ISO-9000 and ISO 14000: Relevance and misconceptions.

Implementation

Quality strategy and policy, Motivation and leadership theories, Continuous vs breakthrough improvements. Management of change, Quality award models and role of self-assessment, Benchmarking, Impact on society – Environment implication, Implementation barriers, TQM practices.

Pre- requisite : Nill

Suggested Lecture Distribution

Topics	No. of Lectures
Fundamentals	9
Human Resources Management	6
Tools and Techniques	10
Systems and Procedures	8
Implementation	9
Total	**42**

References

1. Besterfield, D.C. and Besterfield C (1999), Total Quality Management, Pearson Education Asia, (Low priced Edn).
2. Mohanty R.P. and Lakhe R.R (2000), Handbook of Total Quality Management, Jaico Publishers.
3. Berk, J. and Berk, S. (1993). Total Quality Management: Implementing continuos Improvement. New york: Sterling Publishing.
4. Logothetis, N. (1992) Managing for Total Quality. New York: Prentice Hall.
5. Phillips B. Crossby (1979), Quality is Fee, NY: Mc Graw Hill.
6. Bossert, J.L. (1994), Quality Function Deployment –A Practitioner's Approch, NY: Marcel Dekker
7. Taguchi, G.A. Elsayed, and T. Hsiang (1989), Quality Engineering in Production Systems, NY: Mc Graw Hill.

PANEL FOR NOMINEE OF SENATE

Sl. No.	Name , Designation and Postal Address	Telephone and Fax No. E-mail address	Qualification Scientific/ Engineer	Broad Area of Specialisation	Additional Information if any	Specialisation
1.	Prof. D.P.Agarwal Director Indian Institute of Information Technology & Management MITS Campus, Gwalior 474 005	Tel: 0751-460312, 460315 FAX: 0751- 460313 e-mail: **dpa@iiitm.ac.in**	Ph.D.	• Turbo machinery • Fluid Mechanics • Energy Conservation • Power Plant		Mech.
2.	Dr. Ravindra Arora Professor Deptt. of Elect. Engg. Indian Institute of Technology Kanpur Kanpur 208016	Tel: (O) 0512-597665 (R) 598611, 590339 Fax: 0512-590 063 E-mail: **rarora@iitk.ac.in**	Ph.D.	• Hydro Voltage Engg. • Power Systems • Irrigation System • Power Cables • Lightening Protection		Elect.
3.	Dr. R. Balasubramanian Professor Centre for Energy Studies Indian Institute of Technology Delhi, Delhi	E-mail:rbmanian@ces.iitd.ernet.in	Ph.D.	• Power System Planning • Operation • Energy System Modelling and Management		Elect.
4.	Shri P.L.Diwan Chairman cum Managing Director, Water & Power Consultancy Service Ltd. 5th Floor Kailash, 26 KG Marg New Delhi 110 001	Tel:011-331 3881, 331 3502(O) 718 4691, 715 1250 Fax:011-331 4924 E-mail:wapcos@del2.vsnl.net.in				Civil
5.	Dr. G.K.Dubey Professor Deptt. of Electrical Engg. Indian Institute of Technology Kanpur Kanpur 208 016	Tel:0512 - 597165(O) 598365, 591 022(R) Fax:0512 - 590 063 E-mail:gdubey@iitk.ac.in (DOB:17.11.1939)	B.E. M.Tech. Ph.D.	• Power Electronics • Electrical Devices • Active Power Filters • Control System		Elect.

6.	Dr. S.Kumaraswamy Professor Deptt. of Mech. Engg. IIT Madras, Chennai – 600 036	Tel: (O)044-445 8510 E-mail: kmars@iitm.ac.in	Ph.D.	• Fluid Mechanics, Pumps & Hydro Turbine, Design Analysis and Testing Instruments		Mech.
7.	Dr. R.C.Maheshwari Professor Centre for Rural Development & Technology Indian Institute of Technology Delhi Delhi	E-mail: rcm@rdet.iitd.ernet.in	Ph.D.	• Biomass Conservation • Bioenergy • Rural Energy and Environment System		Renew.
8.	Dr. S.Mohan Professor Deptt. of Civil Engg. IIT Madras Chennai 600 036	Tel: (O) 044-4458 296 (R) 044-230 0739, 4459296 Fax: 044-235 0509 E-mail:mohan@civil.iitm.ernet.in	M.E Ph.D.	• Water Resources		Civil
9.	Brig. K.K.Naithani Add. Surveyor General, Northern Zone Office, Survey Complex Dakshin Marg, Sector 32A Chanmdigarh 160 047	Tel: 0172-606916, 603119 (R)	BE, ME	• Map reading, surveys, remote sensing, digitisation		Civil
10.	Prof. B.V.Rao Deptt. of Civil Engg. Indian Institute of Technology Powai, Bombay 400 076	Tel: (022) 576 7311 (O) 5768311, 5720413 (R) Fax: (022) 5723480, 5767302 E-mail: cebvria@civil.iitb.ac.in	BE, MSc, PhD	• Water resources system Engg., Hydrometry, Hydraulic Instrumentation, Hydrology		Civil

GENERAL AGREEMENT ON COOPERATION

Between

KUNGL TEKNISKA HOGSKOLAN, S-100 44 STOCKHOLM, SWEDEN

And

INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE, 247 667 (U.A.), INDIA

I. Preamble

In furtherance of their mutual interest in the fields of education and research, Kungl Tekniska Hogskolan (KTH) and IITR, hereby agree as follows:

II. Objectives and scope

Both parties shall encourage co-operation between research groups, researchers and Institute staff and their exchange visits for teaching and research. In this context, the conditions for the exchange shall be established by specific agreements between the respective schools/ departments. The research reports/ thesis will be freely available to both institutes.

1. The aim of the present agreement is to define the framework for common measures to be taken by KTH and IITR in order to promote the exchange of persons, activities and experience in relevant fields of higher education and research.
2. KTH and IITR shall cooperate in fields of education and research to be agreed upon between their schools and/or departments subject to the provisions of this Agreement. Within the fields to be mutually designated, both Institutes agree to the following general forms of cooperation.
3. Participating students under this agreement will be enrolled as non-degree students at the Host Institute. Credits will be transferred to the Home Institute with a transcript of results provided to the Home

Institute as soon as possible after the completion of studies of the respective student.

III. Implementation of Programme

The exchange of students under this agreement will be conducted in accordance with the following principles:

- Both Institutes agree to waive tuition charges for incoming students;
- Selection of exchange students will be made by mutual agreement and by following the appropriate steps as required by each of the Institutes. The students must have completed a minimum period of academic studies at the Home Institute as stipulated in its regulations;
- The final admission of students is always at the discretion of the Host Institute;
- Each academic year, each Institute may send a mutually agreed number of students under this agreement.

IV. Financial Terms

1. There is no direct financial obligation on either Institute unless specifically agreed to.
2. The students will be responsible for covering the travel costs to the host country and living costs during the stay, including accommodation, books, equipment, consumables, health insurance, student union fee and other expenses arising out of the exchange. Efforts will be made to subsidise these costs and to provide support from various funding agencies.
3. The Host Institute will render assistance to the incoming students in finding appropriate accommodation;
4. Students participating under the terms of this exchange will be entitled to participate in any introductory program that may customarily be arranged for foreign students;

5. Each Institute will offer the incoming exchange students at least one intensive language course free of charge, if possible/ if required;
6. Exchanges including training periods and/ or writing degree thesis must be agreed upon in advance on a case-by-case basis.

Students participating under this agreement shall be subjected to the rules and regulations of the Host Institute. They will also have the rights and privileges enjoyed by other students at the Host Institute.

V. Programme Coordinators

Each Institute will nominate its own representative within each field of cooperation, and such representative will be responsible for all measures to be undertaken under this agreement. The representatives will provide advisory and other academic services to students participating under this Agreement.

VI. Duration

This agreement shall come into effect on the day of approval by both Institutes with duration of five years. Either Institute may terminate this agreement provided that written notice of the intent is given at least six months prior to termination. Commitments already in progress shall be fulfilled.

VII. Amendment(s)

Amendments or changes to this agreement shall be made in writing and signed by the duly authorized representatives of the two Institutes.

VIII. IPR

Rights regarding publications, patents, royalty, ownership of software/ design/ product developed, etc. shall be decided by the two parties by mutual consent.

About Royal Institute of Technology (KTH), Sweden

The Royal Institute of Technology (Kungliga Tekniska Högskolan), KTH, is responsible for one-third of Sweden's capacity for engineering studies and technical research at post-secondary level. This university has over 11,000 undergraduate students, 1,500 active postgraduate students and a staff of 3,100 people. KTH conducts top-notch education and research of a broad spectrum from natural science to all branches of technology, including architecture, industrial economics, urban planning, work science and environmental technology. Apart from research performed at the departments, a large number of competence centres are housed here at KTH and we contribute to another three national ones. Strategic research foundations are also funding other research programmes or graduate schools. Studies at KTH can lead to a number of degrees Architect, Master or Bachelor of Science, or Doctor/ licentiate in either science or philosophy. Continuing education is also an important part of the activities.

KTH was **founded in 1827** and is the largest of Sweden's universities of technology. Since 1917 KTH has been housed in central Stockholm in beautiful buildings which today have historical monument status, and associated colleges etc. are also found in various places in the Stockholm surroundings Haninge, Kista, Södertälje.

At Electrum in Kista, the main Swedish resource centre of information technology, KTH co-operates with Stockholm University, other research centres, and with industry. Extensive co-education schemes are carried out with a number of regional university colleges, where many of the MSc engineering students may complete their first two years before going to KTH in Stockholm.

KTH is an international institution with established research and educational exchanges all over the world, especially in Europe, the USA, Australia and Southeast Asia. Cooperation schemes with the Baltic states and Russia are on the increase. It is KTH's ambition to play an even stronger role in the EU research programmes than today. Various joint efforts with the Swedish International Development Agency and other development bodies abroad are also part of our international programme.

Competence centres

- KTH has responsibility for nine of the 28 Nutek national competence centres, and is a partner of another two of these.

Finances

- Annual turnover 2,609 million SEK (1SEK~ Rs5).

International Cooperation

KTH is an international institution with established research and educational exchanges all over the world, especially in Europe and the USA.

KTH is active in the EU educational programmes Erasmus/Socrates, Tempus, Leonardo and EU/Canada EU/USA. KTH is also extensively involved in EU research programmes.

The Swedish International Development/exchange programmes

KTH encourages the internationalisation of educational programmes and the number of student exchanges is continuously increasing.

The most developed area at KTH within undergraduate cooperation is student exchange. During this academic year some 1,300 foreign students study at KTH either in exchange programmes or in other programmes oriented towards foreign students. Similarly, about 500 students of KTH participate in the exchange programmes and spend at least one term abroad. But we have set our goal much higher than this! By the year 2004 our aim is that 50% of the graduating student body from KTH should have spent a minimum of one semester abroad.

In order to meet the goal set for exchanges, KTH is constantly seeking for new means of cooperation. Erasmus/Socrates is well established and has run over a period of many years here at KTH. We now have approximately 200 Erasmus agreements with European institutions. KTH has also a large number of bilateral agreements with universities all over the world.

Appendix 'I'
Item No. 3.3.14

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

UNIVERSITY OF WATERLOO, CANADA

AND THE

INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE, INDIA

Preamble

In accordance with the desire to promote higher education for mutual benefit and to promote cooperation in the areas of mutual interest, the University of Waterloo, Canada and the Indian Institute of Technology, Roorkee, India propose the following agreement.

1. Objective:

The University of Waterloo and the Indian Institute of Technology, Roorkee have engaged in areas of common interest and shall develop projects for

1.1 Academic development including academic programmes and student training.

1.2 Research project preferably of a collaborative nature involving scholars from University of Waterloo and Indian Institute of Technology Roorkee.

1.3 Exchange of scholars for such appropriate periods of time.

1.4 Development and exchange of publications, data and other teaching materials.

2. Activity Agreements:

It is further agreed between the University of Waterloo and the Indian Institute of Technology, Roorkee as follows:

2.1 The procedures will be adopted for carrying out each activity and will be referenced as statements entitled Activity Agreements.

2.2 The parties shall promote development of their respective staff through exchange of personnel, either unilateral or bilateral, between their institutions for periods of time and under terms of reference which will be established for each exchange.

2.3 This memorandum of understanding will become effective from the date it is signed by both the parties. The activities for exchange and program development shall be discussed and agreed upon before the commencement of the specific program.

2.4 This memorandum of understanding shall not be construed as creating any legally binding financial relationship or other commitments between the parties. It will be construed as a statement of intent to foster genuine and mutually beneficial academic collaboration and shall not prejudice the right of the Indian Institute of Technology, Roorkee from establishing similar relationships with universities/ Institutes other that the University of Waterloo, nor prevent the University of Waterloo from entering into similar relationships with universities/ Institutes other than the Indian Institute of Technology, Roorkee.

2.5 Unless amended in writing, this Agreement, at the University of Waterloo, will apply to the Faculty of Environmental Studies and to the Faculty of Engineering. Faculties and activities other than those described above may be added under this Memorandum of Understanding if and when deemed appropriate; it may be also necessary to appoint additional co-ordinators.

3. Duration:

This memorandum of understanding will be effective for a period of 5 years from the date of signing of the Agreement. Renewal and/ or amendment of the Agreement will be decided by the consent in writing of both the University of Waterloo and the Indian Institute of Technology, Roorkee.

4. Coordinators:

The University of Waterloo and the Indian Institute of Technology, Roorkee will appoint one coordinator each for coordinating the interaction between the two Institutions.

5. Financial:

Both the University of Waterloo and the Indian Institute of Technology, Roorkee understands that any financial agreements must be negotiated separately.

6. Termination of the Agreement:

Either party may terminate this Agreement on written notification. Such notification must be given at least six months in advance from the effective date of termination.

UNIVERSITYOF WATERLOO CANADA	**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE – 247 667 INDIA**
President:	**Director:**
Date:	**Date:**
Vice-President University Research	**Dean Academic Programmes**
Date	**Date**

Brief About University of Waterloo, Canada

The University of Waterloo, Canada was founded in 1957. In just over 40 years, Waterloo has become one of Canada's leading comprehensive universities, with strong teaching and research programs in engineering, applied health sciences, arts, environmental studies, mathematics, and science. For nine years in a row, it has ranked best overall, most innovative, and best source of leaders of tomorrow in Maclean's magazine's national reputational survey.

Waterloo has the largest co-op program in the world, with more than 10,000 students enrolled in co-op programs and 2,800 active co-op employers. Waterloo co-op students earn $105 million annually. In 1999-2000, Waterloo attracted over $75 million in research funding from public and private sources.

The salient features of University of Waterloo are as follows:

Enrolment: Undergraduate 20,080 (17,413 full-time) , graduate 2,042 (1,643 full-time)

Faculty: 1,426 (720 full-time) represented by the faculty association

Staff: 2,027 represented by the staff association or the Canadian Union of Public Employees

Alumni: 104,000 in 120 countries

Campus: 400 hectares (1,000 acres); 120 hectares (300 acres) developed; 41 buildings

Motto: *Concordia cum veritate* (In harmony with truth)

History: Founded July 1957; first building 1958; computing centre opened 1962; legislature passes UW Act 1972; Davis Centre 1987

Address:
University of Waterloo
Waterloo, Ontario, Canada N2L 3G1
www.uwaterloo.ca

Existing	As recommended by the Senate
CHAPTER 43 **CONSULTATION AND TESTING WORK** (Approved vide Syndicate Minutes 257.6.1 dated 28.9.1998)	**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE** **RULES FOR INDUSTRIAL CONSULTANCY**
(A) 43.1. DEFINITIONS:	**1. DEFINITIONS:**
43.1 (a) Department : All teaching departments and independent centres will be covered by the word 'department' for the purpose of this chapter.	**1.(a) Department :** All *academic* departments and *academic* centres will be covered by the word 'department' for the purpose of *these rules*.
43.2(b) Departmental Consultancy Projects: A project referred to the Head of the Department may be taken up as a Departmental Consultancy Project. Further, a project referred to an individual faculty member may also be taken up as Departmental Consultancy Project at the request of the that faculty member. Normally, large Consultancy Projects involving multi disciplinary/ inter departmental inputs or requiring use of large facilities, likewise projects which were expected to run for a long period may be considered by a department to be taken up as Departmental Consultancy Projects. A Departmental Consultancy Project will have at least three investigators. However, for centres / departments with special character different from normal teaching departments the respective centre / departments may define the scope of Departmental Consultancy Projects, in accordance with their needs, subject to the approval of the Syndicate.	**1.(b) Departmental Consultancy Projects:** A project referred to the Head of the Department may be taken up as a Departmental Consultancy Project. Further, a project referred to an individual faculty member may also be taken up as Departmental Consultancy Project at the request of the that faculty member. Normally, Consultancy Projects involving multi disciplinary/ inter departmental inputs or requiring use of large facilities, likewise projects which were expected to run for a long period may be considered by a department to be taken up as Departmental Consultancy Projects. A Departmental Consultancy Project will have at least three investigators. However, for centres / departments with special character different from normal teaching departments the respective Centres/ departments may define the scope of departmental Consultancy Projects, in accordance with their needs, subject to the approval of the *Board of Governors*.

43.1(c) Individual Consultancy Projects: All Consultancy Projects which are not Departmental Consultancy projects will be treated as Individual Consultancy Projects. **Note :**A Human Resources Development Project may be classified as a Consultancy Project. **43.1 (d) University Development Fund: (hereinafter referred to as U.D.F.)** This will be a fund of the University. A part of the University share fom the Consultancy / testing fee savings, kept in the Roorkee University Endowment Fund (R.U.E.F.) will be transferred to the University Development Fund (UDF) every year. **4.3.1 (e) Departmental Development Fund : (hereinafter referred to as D.D.F.)** This will be departmental fund. The objective of this fund is to provide additional grant to the department for its developmental activities as well as for funding its other activities for which adequate funds are not available from other sources. This fund can also be used for activities like providing seed money for holding conferences/ workshops and seminars etc. This account will be operated by the Head of the concerned department according to a budget made by the Departmental Administrative Committee (DAC) or by a committee approved by DRIL for centres, and, as per norms for operating such accounts. **43.1 (f) Professional Development Fund: (hereinafter referred to as P.D.F.)** The University will have a Professional	**1.(c) Individual Consultancy Projects:** All Consultancy Projects which are not Departmental Consultancy projects will be treated as Individual Consultancy Projects. A Human Resources Development Project may be classified as a Consultancy Project. **1.(d) Institute Development Fund: (hereinafter referred to as I.D.F.)** (i) A part of the Institutional Overhead Charges received for sponsored research and a part of the Institute share from Industrial Consultancy project will be credited to a separate fund to be called as SRIC fund and to be operated by Dean SRIC as per budget approved by the Budget Committee of the Institute . (ii) A part of the SRIC fund will be transferred every year to Institute Development fund, which will form the corpus of the Institute. **1.(e) Departmental Development Fund : (hereinafter referred to as D.D.F.)** This will be a departmental fund. The objective of this fund is to provide additional grant to the department for its developmental activities as well as for funding its other activities for which adequate funds are not available from other sources. This fund can also be used for activities like providing seed money for holding conferences/ workshops and seminars etc. This account will be operated by the Head of the concerned department according to a budget made by the *Professorial*

Development fund. The objective of this fund is to help individuals in their professionals development. The amount due to an individuals from Consultancy which is more than the prescribed limit in a particular year will be deposited in this account. An individual can request for expenditure from the Professional Development Fund, subject to the limit corresponding to his/her contribution to the P.D.F. The amount deposited in this account can be used for any of the following purposes (a) payment of membership charges of professional bodies, societies (b) subscriptions of journals (c) purchase of books and stationery, (d) inland and foreign travel for attending seminar/ conferences etc. including payment of registration fee (e) TA/DA for making exploratory visits for Consultancy work. For any other expenditure approval of the DRIL will be necessary. Such expenditure in the opinion of the DRIL should be conductive to career/ professional development of the individual.	*Committee of the Department.*
43.1 (g) Type I Consultancy Projects:	**1.(f) Professional Development Fund: (hereinafter referred to as P.D.F.)**
Consultancy Projects without use of University laboratory facilities, and site visits, will be classified as Type I Consultancy Projects.	*There will be a Professional Development Fund for individual academic staff,. the objective of which will be to help individuals in their professional development . A part of the Institute share from Consultancy Projects will be transferred to the P.D.F. of the concerned academic staff and utilized by them as per norms.*
43.1 (h) Type II Consultancy Projects:	**1.(g) Type - I Consultancy Projects:**
Consultancy Projects involving use of University laboratory facilities. Such projects will cover field testing, and field measurements, calibration of equipment/ instruments and testing of material / equipment in laboratory / field will be classified as Type II Consultancy Projects.	Consultancy Projects without the use of laboratory facilities *of the Institute*, will be classified as Type-I Consultancy Projects.
	1.(h) Type-II Consultancy Projects:
	Consultancy Projects involving use of laboratory facilities *of the Institute will be classified as Type-II Consultancy Projects*. Such projects will cover field testing, and field measurements, calibration of equipment/ instruments and testing of material / equipment in laboratory and development work using laboratory facilities
Note: (1) For Departmental Consultancy Projects, the Principal Investigator will be decided by the Head of the Department in consultation with the members of the HOD panel of the concerned Department.	Note : (I) For Departmental Consultancy Projects, the Principal Investigator will be decided by the Head of the Department in consultation with the *Professorial Committee of the Department.*

(2) Each Consultancy project will be classified either as Type I or Type II and will not be bifurcated. In case of multi-disciplinary/ inter departmental projects, a single project can be divided into subprojects of the same type on mutually agreed terms, by the consenting department.	(ii) Each Consultancy project will be classified either as Type I or Type II and will not be bifurcated. In case of multi-disciplinary/ inter departmental projects, a single project can be divided into subprojects on mutually agreed terms, by the consenting departments.
43.1 (i) University Employees Categories: All employees of the University are classified into the following categories: Academic Staff : Teachers and Scientists Technical Staff : Employees who are technical / workshop staff Other Staff : Employees who are neither academic nor technical staff	(iii) In addition, to academic & technical staff, the PI may distribute upto *Rs.5000/- or 2% of total amount of honorarium being distributed,* whichever is less, as remuneration to other staff of the department for miscellaneous assistance rendered in the execution of the project.
(B) GENERAL CONDITIONS	**2. GENERAL CONDITIONS**
43.2(a) Individuals or Departments may take up Consultancy work only after taking approval of the DRIL through the Head of the concerned Department. The report of Departmental Consultancy Projects will be signed by the Head of the Department and the report of the individual Consultancy project will be signed by the Principal Investigator. In emergent cases where only advice at Roorkee is involved or, where testing of materials/ products in the Laboratory is concerned, the work may be accepted with the approval of the Head under intimation to DRIL. However, normally the report may be given only when the Consultancy has been duly approved.	**2(a)** Individuals or Departments may take up Consultancy work only after taking approval of the *Dean SRIC* through the Head of the concerned Department. The report of Departmental Consultancy Projects will be signed by the Head of the Department and the report of the individual Consultancy project will be signed by the Principal Investigator. In emergent cases where only advice at Roorkee is involved or, where testing of materials/ products in the Laboratory is concerned, the work may be accepted with the approval of the Head of the department under intimation to *Dean SRIC*. However, normally the report may be given only when the Consultancy Project has been duly approved.

43.2(b) All fees in connection with consultation/ testing work should be received in the name of the Registrar. The Syndicate may permit individual departments to receive and disburse Consultancy funds, if it is considered necessary in the interest of the work /University.	**2(b)** All fees in connection with *Consultancy Projects* should be received in the name of the *IIT, Roorkee.* The *Board of Governors (BOG)* may permit individual departments to receive and disburse Consultancy funds, if it is considered necessary in the interest of the work / Institute.
43.2(c) For projects involving only site visits for consultation work and/ or personal discussion, fees may be charged on per day basis at mutually acceptable rate subject to minimum of Rs.2500/- per man-day, including the days spent on travel.	**2(c)** For projects involving only site visits for consultation work and/ or personal discussion, fees may be charged on per day basis at mutually acceptable rate subject to minimum of Rs.2500/- per man-day for academic staff, including the days spent on travel.
43.2(d) For technical and other staff, making only site visits outside the scope of an on going Consultancy project, fees may be charged on per day basis at minimum of Rs.200/- per man-day.	**2(d)** For technical and other *non-academic* staff, making only site visits outside the scope of an on going Consultancy project, fees may be charged on per day basis at minimum of Rs.200/- per man-day.
43.2(e) The PI may, with the prior permission of Dean SRIC avail the services of persons not in the University service as Investigators, provided that HOD certifies that the services are of a nature for which the expertise is not available in department/ University.	**2(e)** The PI may, with the prior permission of *Dean SRIC* avail the services of persons not in the Institute service as *Consultants*, provided that the PI certifies that the services are of a nature for which the expertise is not available in department/ Institute.
43.2(f) No Consultancy project form any agency can be taken up for an amount less than Rs.2500/-. This will, however, not apply for cases where rates have been fixed by the department / University. This limit may be reviewed every three years.	**2(f)** No Consultancy project from any agency can be taken up for an amount less than Rs.2500/-. This will, however, not apply for cases where rates have been fixed by the department / *Institute*. This limit may be reviewed every three years.
43.2(g) Duty leave will be admissible for individual Consultancy work for 7 working days in a session with in the over all limits of the duty leave. For absence beyond 7 days for Consultancy work, leave as due will be taken by the staff member. For Departmental Consultancy work, persons concerned will be treated on duty during absence from the campus. Any absence from the Headquarters in connection with Consultancy project of any type will be with prior approval of HOD.	**2(g)** *Special casual leave* will be admissible for individual Consultancy work within the over all limits. *For further absence* for Consultancy work, leave as due will be taken by the staff. For Departmental Consultancy work, persons concerned will be treated on duty during absence from the campus. Any absence from the Headquarters in connection with Consultancy project of any type will be with prior approval of Competent Authority.

(C) 3. NORMS FOR EXPENDITURE	3. NORMS FOR EXPENDITURE
43.3(a) The Principal Investigator may get specific work done on payment from outside. However, such payment may not exceed 5% of the total amount contracted for the project. While making such expenditure all the rules regulations as applicable to Consultancy Projects should be followed. For higher expenditure HOD's prior permission will be necessary.	**3(a)** The Principal Investigator may get specific work done on payment from outside. However, such payment may not exceed 5% of the total amount contracted for the project. While making such expenditure all the rules regulations as applicable to Consultancy Projects should be followed. For higher expenditure HOD's prior permission will be necessary.
43.3(b) The Principal Investigator may engage University Students as Student Assistants for consultancy and testing work on payment of Rs. 30/- per hour subject to a maximum of 50 hours per month. However, students receiving fellowship from UGC/CSIR or from similar other agencies, shall not be entitled to such payments.	**3(b)** The Principal Investigator may engage Institute Students as Student Assistants for consultancy and testing work on payment of Rs. 50/- per hour subject to a maximum of 50 hours per month. However, students receiving fellowship from any agency shall not be entitled to such payments.
43.3(c) Expenses incurred on reasonable hospitality not exceeding Rs.200/- per head per meal and Rs. 50/- per head for snacks etc., in connection with the consultation work can be charged as expenses out of the fee received subject to the condition that the total expenditure on this account should not exceed 5% of gross fees contracted for the project. For larger expenditure approval of DRIL will be necessary.	**3(c)** Expenses incurred on reasonable hospitality not exceeding *Rs.300/-* per head per meal and *Rs. 75/-* per head for snacks etc., in connection with the consultation work can be charged as expenses out of the fee received subject to the condition that the total expenditure on this account should not exceed 5% of gross fees contracted for the project. For larger expenditure approval of Dean SRIC will be necessary.
43.3(d) Travel : The most expeditions and convenient mode of travel should be used to minimise period of absence from the University. There will be no restriction placed by the University, on the mode of travel on grounds of entitlement. DA will be paid as per University rules. Actual boarding & lodging expenses, in addition to DA, will be paid on production of receipt, subject to maximum of twice the daily gross salary at the ceiling of the person's pay scale. In case of field work, the field allowance will be permissible in addition to the DA as per University rules. All these expenses will be met out of the Consultancy project funds.	**3(d)Travel :** The most expeditious and convenient mode of travel should be used to minimise period of absence from the *Institute*. There will be no restriction placed by the *Institute,* on the mode of travel. Actual boarding & lodging expenses, in addition to DA, will be paid on production of receipt, subject to maximum of twice the daily gross salary at the ceiling of the person's pay scale. In case of field work, the field allowance will be permissible in addition to the DA as per *Institute* rules. All these expenses will be met out of the Consultancy project funds.
43.3(e) Outside Investigators : Normally provision for outside investigators, if necessary, will be made at the time of acceptance / approval of the project. An amount upto Rs. 25,000 or 10% of the	**3(e)** ***Consultants:*** Normally provision for *involving experts from outside the Institute as consultants,* if necessary, will be made at the time of acceptance / approval of the project. An

Consultancy fee whichever is lower, can be paid to outside investigator(s) after obtaining approval from the Dean, Research & Industrial Liaison. For payment over Rs.25,000 and upto Rs.50,000 or 15% of the total fees, whichever is lower, approval of a committee set up for this purpose by the Vice-Chancellor under the chairmanship of Dean, Research & Industrial Liaison would be required. For payments over Rs. 50,000 or over 15% of the Consultancy fee, Vice-Chancellor may approve payments on the recommendation of the Committee mentioned above. Payment exceeding 20% of the total Consultancy fee shall not normally be allowed to outside investigators.	amount upto Rs. 25,000 or 10% of the Consultancy fee whichever is lower, can be paid to *Consultant(s)* after obtaining approval from the *Dean, Sponsored Research & Industrial Consultancy*. For payment over Rs.25,000 and upto Rs.50,000 or 15% of the total fees, whichever is lower, approval of a committee set up for this purpose by the *Director* under the chairmanship of *Dean, Sponsored Research & Industrial Consultancy* would be required. For payments over Rs. 50,000 or over 15% of the Consultancy fee, *Director* may approve payments on the recommendation of the Committee mentioned above. Payment exceeding 20% of the total Consultancy fee shall not normally be allowed to *consultant(s)*.
(D) 4. DISTRIBUTION OF CONSULTANCY FUNDS **Individual Consultancy Projects:** **43.4(a)Consultancy work without use of laboratory facilities (Type I) :** For Consultancy work without use of Laboratory Facilities the norms for calculation of various percentages for distribution will be as follows: Total Fee received from client = I Amount paid to RUEF in the beginning = 0.05 I Remaining amount (F) = 0.95 I Total expenditure on the project = E Savings = (S) = (F –E) Amount paid of RUEF = 0.15 S Remaining Amount = 0.85 S 0.80 S to be distributed to the investigators 0.05 S to be distributed for office support and staff welfare. **43.4(b)Consultancy work involving use of laboratory facilities (Type II) :** For Consultancy work involving use of Laboratory Facilities, the norms for calculation of various percentages for distribution will be as follows: Total Fee received from client = I Amount paid to RUEF in the beginning = 0.05 I Remaining amount (F) = 0.95 I	**4. DISTRIBUTION OF CONSULTANCY FUNDS** **Individual Consultancy Projects:** **4(a) Consultancy work without use of laboratory facilities (Type I) :** For Consultancy work without use of Laboratory Facilities the norms for calculation of various percentages for distribution will be as follows: Total Fee received from client = I Amount paid *as Institute share* in the beginning = 0.05 I Remaining amount (F) = 0.95 I Total expenditure on the project = E Savings = (S) = (F –E) Amount paid as *Institute share* = 0.15 S Remaining Amount = 0.85 S 0.80 S to be distributed to the investigators 0.05 S to be distributed for office support and staff welfare fund **4(b) Consultancy work involving use of laboratory facilities (Type II) :** For Consultancy work involving use of Laboratory Facilities, the norms for calculation of various percentages for distribution will be as follows:

43.4(e) Sale proceeds of software products developed by a faculty member/ Scientist/ Research Worker, will be shared between the University and the individual as per the norms of TYPE II Consultancy Project. If a student is involved in developing a software, he/she will be paid due share. A list of computer programmes developed by a student as a part of the thesis will be included in the thesis as Annexure.		**4(e)** Sale proceeds of software products developed by a faculty member/ Scientist/ Research Worker, will be shared between the *Institute* and the individual as per the norms of TYPE II Consultancy Project. If a student is involved in developing a software, he/she will be paid due share. A list of computer programmes developed by a student as a part of the thesis will be included in the thesis as an Annexure.
43.5 The total remuneration to be received by an academic staff from Consultancy/ testing work will not exceed 100% of his gross salray received during the financial year. For departmental consultancies this limit will be 40% with the provision that the total remuneration from all consultancies does not exceed 100%. For Laboratory/ Workshop/ office staff the limits of total remuneration will be 40% of his gross salary received during the financial year. For departmental consultancies this limit will be 20% with the provision that the total remuneration from all consultancies does not exceed 40%. If the total remuneration payable to a staff member exceeds the prescribed limit, the excess amount will be deposited in the Professional Development Fund (PDF).	5	**Limit on Total Remuneration by an Academic staff from Consultancy/ Testing work:** **5(a)** There will be no limit on the total remuneration to be received from Consultancy projects during the financial year by faculty & other Academic staff. However for departmental consultancies this limit will be 40% of the gross salary received during the financial year. For technical staff, the limit on total remuneration will be 40% of his gross salary received during the financial year. For departmental consultancies this limit will be 20% with the provision that the total remuneration from all consultancies does not exceed 40%. If the total remuneration payable to a staff member exceeds the prescribed limit, the excess amount will be deposited in the Professional Development Fund (PDF).
43.6 The guidelines for operating Consultancy Projects will be framed by the Dean, Research & Industrial Liaison and approved by the University Administrative Committee (UAC).		**5(b)**If any of the academic staff wishes to divert part or whole of his/her own remuneration to his/her Professional Development Fund (P.D.F.), the same will be permissible. **6.** *Any revision in the guidelines for operating Consultancy Projects proposed by Dean, SRIC from time to time will be considered by Board for Sponsored Research & Industrial Consultancy (BSRIC) for approval.*

Appendix 'K'
Item No. 3.3.16

Rules For Professional Development Fund (As recommended by BSRIC & Senate)

The rules for generation and utilization of Professional Development Fund (PDF) will be as follows:

(i) The PDF of a faculty member or other academic staff member may be generated by crediting a certain percentage of the following:

(a) The Institute overhead charges received in a Sponsored Research Project from the funding agency.
(b) Institute share from a Consultancy Project and unspent balance, if any,
(c) Institutional overhead charges received from HRD Programmes.

The proposed percentages to be credited to the PDF of the concerned faculty/academic staff are as per the following table. Another portion of the Institutional overhead charges / Institute share will be credited to the Departmental Development Fund (DDF) of the concerned Department/Academic Centre as shown in the table:

Type of Project and Component available for distribution	Distribution			
	Professional Development Fund	Departmental Development Fund	Incentive toOffice/Tech.Staff/ Cont. toSWF etc.*	SRF Fund
(A) Sponsored Research Project Institutional overhead charges received from funding agency (I)	0.2 I	0.2 I	0.1 I	0.5 I
(B) Industrial Consultancy Projects				
Institute Share (I)				
(i) Type-I , Individual	0.25 I	0.25 I	-	0.5 I
(ii) Type- II, Individual	0.15 I	0.15 I	-	0.7 I
(iii) Type-I, Departmental	0.10 I	0.10 I	-	0.8 I
(iv) Type-II, Departmental	0.075 I	0.075 I	-	0.85 I
(v) For deficit Deptts(e.g. AHEC contributing @ 5% of gross amount only	Nil	Nil	-	I
Unspent Balance (UB)	UB	-	-	-
(c) HRD programmes				
Institutional Over head Charges(I)				
(i) Sponsored Courses				
(ii) Special Courses	0.3 I	0.1 I	0.1 I	0.5 I
Unspent Balance (UB)	0.3 I	0.15 I	0.05 I	0.5 I
	-	UB	-	-

*** The Guidelines for distributions of this amount will be made by BSRIC.**

(ii) The PDF can be utilized by the concerned faculty member for the following purposes:

1. TA/DA and Registration fee for attending a Conference in India or abroad and for making exploratory visits for Sponsored Research /Consultancy work.
2. Membership fee of Professional Societies.
3. Purchase of Professional Books, Journals, Stationery, Computer Stationery, Software or data on any storage medium
4. Equipments/ Air Conditioner facilities for laboratories and Phone/Fax facilities in the Office.
5. Upgradation or outright purchase of laptop or desk-top computer and related peripherals for use by the faculty member at any location as per the work requirement.
6. Purchase of office and laboratory furniture.
7. Cost of handset (Cellular Phone) once in five years and Rs. 500/- p.m. on any type of telephone calls including prepaid cash card.

(iii) All purchases and travel shall be made as per rules of the Institute.

(iv) The items procured out of PDF shall be properly accounted for and shall remain the property of the IITR. However, the items mentioned at serial nos (ii) 3,5, & 7 above may remain as permanent loan to the concerned faculty from the Departmental Library/Laboratory, where the stock entry was made.

(v) If expenditure on the above items at one time exceeds Rs.5000/-, prior approval of Dean (SRIC) will be necessary, For items at serial no. (ii) 1 prior approval of Dean SRIC will be necessary irrespective of the amount involved. For any expenditure not covered above, recommendation of Dean (SRIC) and prior approval of the Director will be necessary.

(vi) PDF will be available to the faculty member upto 3 years of his/her leaving the Institute or upto 3 years after retirement, as the case may be.

22/6/2012

Appendix 'L'
Item No. 3.3.17

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

ACADEMIC CALENDAR FOR THE AUTUMN SEMESTER OF THE SESSION 2002 - 2003

(FROM JULY 04, 2002 TO JANUARY 03,2003)

COUNSELLING FOR PG COURSES (ENGINEERING AND ARCHITECTURE).	July 04,2002 (Thursday)
COUNSELLING FOR PG COURSES (SCIENCES).	JULY 05, 2002 (Friday)
EXAMINATION FOR SUMMER TERMS CLASSES.	July 08,2002 (Monday) to July 11, 2002 (Thursday)
INSTITUTE REOPENS FOR THE SESSION 2002-2003.	July 15, 2002 (Monday)
SUBMISSION OF GRADES OF SUMMER TERMS EXAMINATIONS BY DEPTTS. TO AR (ACADEMIC).	JUL 15, 2002 (Monday)
DECLARATION OF RESULTS FOR SUMMER TERM EXAM.	JULY 16 ,2002 (Tuesday)
REGISTRATION FOR ALL UG COURSES (NEW ENTRANTS).	JULY 25 ,2002 (Thursday)
REGISTRATION FOR ALL PG COURSES (NEW ENTRANTS).	JULY 26 ,2002 (Friday)
COUNSELLING FOR VACANT SEATS (ALL PG COURSES) AND LAST DAY OF ADMISSION TO PG COURSES	July 27 ,2002 (Saturday)
CLASSES BEGIN FOR NEW ENTRANTS (UG/PG).	JULY 29, 2002 (Monday)
REGISTRATION OF ALL UG COURSES (EXCEPT NEW ENTRANTS).	JULY 29 ,2002 (Monday) 9.30 AM to 12.30 PM 2.30 PM to 5.00 PM
REGISTRATION FOR ALL PG COURSES (EXCEPT NEW ENTRANTS).	JULY 30 ,2002 (Tuesday) 9.30 AM to 12.30 PM 2.30 PM to 5.00 PM
CLASSES BEGIN FOR ALL UG/PG STUDENTS (OTHER THAN NEW ENTRANTS).	JULY 31 ,2002 (Wednesday)
REGISTRATION OF Ph.D SCHOLARS.	July 31 ,2002 (Wednesday) 9.30 AM to 12.30 PM
SUBJECT REGISTRATION OF UG /PG STUDENTS/Ph.D. SCHOLARS.	AUG 12-14 & 16, 2002 Monday to Wednesday & Friday
REQUEST TO HODS TO SEND TO AR (ACD.) POOL ELECTIVES / INSTITUTE ELECTIVES TO BE RUN BY THE DEPTTS. IN SPRING SEMESTER OF 2002-2003 SESSION.	AUG 20,2002 (Tuesday)
DOS (W) TO SEND LIST OF STUDENTS REGISTERED FOR VARIOUS PROFICIENCIES TO CHIEF ADVISIORS/ OC NCC/ AR (ACD).	AUG 29 ,2002 (Thursday)
AR (ACD.) TO SEND TO DEPTTS FINAL LIST OF REGISTERED STUDENTS.	SEPT 02, 2002 (Monday)
MINOR TEST-I FOR UG/PG STUDENTS.	SEPT 09-10, 2002 (Monday & Tuesday)
DEPTTS. TO SEND TO AR (ACD) LIST OF POOL ELECTIVES/ INSTITUTE ELECTIVES TO BE RUN IN SPRING SEMESTER.	SEPT 16, 2002 (Monday)
LAST DATE FOR WITHDRAWL FROM A COURSE.	SEPT 16, 2002 (Monday)
DEPPTS TO DISPLAY ATTENDANCE RECORDS OF STUDENTS	SEPT 25, 2002 (Wednesday)
DISPLAY/ASSIGNMENT OF UG PROJECT PROBLEMS	SEP 30,2002 (Monday)
LAST DATE FOR SUBMISSION OF M.PHIL/M.TECH (ES) DISSERTATION FOR THOSE TO WHOM EXTENTION HAS BEEN GRANTED ON SPECIAL GROUNDS.	SEPT 30, 2002 (Monday)
AR (ACD.) TO INVITE APLLICATIONS FROM UG STUDENTS FOR POOL ELECTIVES.	SEPT 30, 2002 (Monday)
LAST DATE OF SUBMISSION OF DOCUMENTS BY ALL NEW ENTRANTS	SEPT 30, 2002 (Monday)

SEMESTER BREAK (FOR STUDENTS ONLY)	OCT 14-18,2002 Monday to Friday)
AR (ACD.) TO SEND TO HODS LIST OF STUDENTS WHO HAVE OPTED FOR POOL ELECTIVES TO BE RUN IN SPRING SEMESTER	OCT 29,2002 (Tuesday)
MINOR TEST –II FOR UG/PG STUDENTS	OCT 31 & Nov 1, 2002 (Thursday & Friday)
AR (ACD.) TO NOTIFY SEATING PLAN FOR AUTUMN SEMESTER EXAM	NOV 08, 2002 (Friday)
AR (ACD.) TO NOTIFY DATES OF EXAM FOR COMMON SUBJECTS	NOV 09, 2002 (Saturday)
LAST DATE OF TEACHING FOR ALL UG/PG CLASSES.	NOV 25, 2002 (Monday)
FILLING OF RESPONSE FORMS BY UG/PG STUDENTS (3:00 PM TO 5:00 PM)	NOV 25, 2002 (Monday)
HODS TO SEND TO A.R (ACD.) NAMES OF STUDENTS HAVING INADEQUATE ATTENDANCE IN UG/PG COURSES INCLUDING LAST DAY OF TEACHING	NOV 26, 2002 (Tuesday)
DISPLAY OF COURSE WORK EVALUTION	NOV 26,2002 (Tuesday)
PRACTICAL EXAMINATIONS FOR ALL UG/PG STUDENTS	NOV 26-28, 2002 (Tuesday to Thursday)
THEORY EXAMINATIONS FOR ALL UG/PG STUDENTS	NOV 29-DEC 06, 2002 (Friday to Friday)
LAST DATE FOR SENDING THEORY AND PRACTICAL GRADES TO AR(ACD) AND DISPLAY OF GRADES AT DEPARTMENTAL NOTICE BOARD	DEC 13, 2002 (Friday)
JOINT ENTRANCE EXAMINATION 2003 FOR UG COURSES	DEC 15, 2002 (Sunday)
WINTER VACATIONS FOR TEACHING STAFF (TENTATIVE)	DEC 16-31, 2002 (Monday to Tuesday)
LAST DATE FOR DECLARATION OF AUTUMN SEMESTER RESULTS	DEC 17, 2002 (Tuesday)
SPRING SEMESTER 2002-2003 BEGINS	JAN 01, 2003 (Wednesday)
REGISTRATION OF B.TECH/B.ARCH STUDENTS	JAN 01, 2003 (Wednesday)
CALSSES BEGIN FOR ALL UG COURSES	JAN 02, 2003 (Thursday)
REGISTRATION OF ALL PG COURSES	JAN 02, 2003 (Thursday)
CLASSES BEGIN FOR PG COURSES	JAN 03, 2003 (Friday)
REGISTRATION OF Ph.D. SCHOLARS	JAN 03, 2003 (Friday)
BUFFER DAY	NOV 25,2002 (Monday)

Note :- Heads of Department are requested to plan the functions / Seminar on Saturdays and Sundays so that the Institute able to maintain the minimum Teaching days required in a semester.

List of Holidays –2002.

Aug 15(Th.) Independence Day, Aug 30(F) Janmashtami , Oct 02(W) Mahatma Gandhi's B'day, Oct 14(M) Dussehra (Mahanavmi) ★★
Oct 15(Tu) Dussehra (Vijay Dasmi), Nov 04 (M)Deepawali , Nov 19(Tu)Guru Nanak's B'day, Dec 06(F) Idu'l Fitr ★,
Dec 25(W) Christmas Day

★ In the event of change in the date of the above holiday announced by the Govt. of India through the media, (TV/ AIR / Newspaper- etc.) on account of the appearance of the Moon, then the Institute shall automatically observe the subject holiday accordingly and no notice in this regard shall be issued.

★★ This holiday will be observed as Restricted Holiday by the Institute.

Teaching days for Autumn Semester 2002-2003.

(a) Mondays 14 days, (b) Tuesdays 14 days , (c) Wednesdays 15 days, (d) Thursdays 14 days, (e) Fridays 14 days