

1.1.2 Q_nM	<p>Percentage of Programmes where syllabus revision was carried out during the last five years</p> <p>1.1.2.2 : Number of all Programmes offered by the institution during the last five years</p> <p>Data Requirement for last five years: (As per Data Template)</p> <ul style="list-style-type: none"> • Programme Code • Names of the Programmes revised <p>Formula:</p> $\frac{\text{Number of Programmes in which syllabus was revised during the last five years}}{\text{Total Number of Programmes offered by the institution during the last five years}} \times 100$ <p>File Description (Upload)</p> <ul style="list-style-type: none"> • Minutes of relevant Academic Council/BOS meetings • Any additional information • Details of Programme syllabus revisions in last 5 years (Data Template) • Total number of prog offered: 21 • No of programmes where revisions were carried out: 19
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Data template:

Prog ramme Code	Prog ramme name	Year of Intro duction	Status of impleme ntation of CBCS / Elective Course System (ECS)	Year of impleme ntation of CBCS/ ECS	Year of revision (if any)	If revision has been carried out in the syllabus during the last 5 years, Percentage of content added or replaced	<u>Link to the relevant documents</u>
		CBCS: No ECS: Yes	CBCS: ECS:	CBCS: ECS:	CBCS: ECS:	CBCS: ECS:	
04030	LL.M.	2016 39AC; item no 6	ECS	2016	NA	Latest prog	NA
05018	M.A. (Sustainable Development & Practice)	2009	ECS	2009	NA	Latest prog	NA
05007	M.A. (Public Policy and Sustainable Development)	2005	ECS	2005	2016-17, 2019-20	Earlier prog Latest prog 80%	40AC; item no 10, 48AC; item no 22
03014	M.B.A. (Business Sustainability) [renamed as Sustainability management]	2010	ECS	2010	2016-17, 2017-18	Earlier prog Latest prog 45%	40AC; item no 3(a), 43AC; item no 7
03006	M.B.A. (Infrastructure Management)	2007	ECS	2007	2016-17, 2016-17, 2017-18	Earlier prog Latest prog 35%	39AC; item no 5, 40AC; item no 3(b), 43AC; item no 8
02013	M.Sc. (Climate Science and Policy)	2010	ECS	2010	2016-17, 2017-18, 2019-20	Earlier prog Latest prog 30%	40AC; item no 8(a), 41AC; item no 11, 48AC, item no 15
02016	M.Sc. (Economics)	2010	ECS	2010	2017-18, 2017-18, 2020-21	Earlier prog Latest prog 45%	41AC; item no 5, 43AC; item no 4, 49AC, item no 12
02020	M.Sc. (Environmental Studies and Resource Management)	2012	ECS	2012	NA	Earlier prog Latest prog 25%	48AC, item no 16
02004	M.Sc.	2008	ECS	2008	2017-18,	Earlier prog	43AC; item no 5,

	(Geoinformatics)				2019-20	Latest prog 35%	48AC, item no 20
02005	M.Sc. (Plant Biotechnology)	2008	ECS	2008	2019-20	Earlier prog Latest prog 30%	48AC; item no 23
06031	M.Sc. (Water Science and Governance)	2014	ECS	2014	2019-20	Earlier prog Latest prog 40%	48AC; item no 19
06015	M.Tech (Renewable Energy Engineering and Management)	2010	ECS	2010	2016-17	Earlier prog Latest prog 20%	40AC; item no 7(a)
06022	M.Tech (Urban Development and Management)	2011	ECS	2011	2016-17, 2016-17	Earlier prog Latest prog 40%	39AC; item no 7, 40AC; item no 5(a)
06015	M.Tech (Water Resources Engineering and Management)	2010	ECS	2010	2019-20	Earlier prog Latest prog 60%	48AC; item no 19
01008	Ph.D. in Energy and Environment	2002	ECS		2019-20	Earlier prog Latest prog 50%	48AC; item no 13
01010	PhD in Bioresources and Biotechnology	2002	ECS		2019-20	Earlier prog Latest prog 50%	BoS of DBT
01014	PhD in Business Sustainability	2002	ECS		2020-21	Earlier prog Latest prog 50%	49AC, item no 10
01032	PhD in Legal Studies	2016	ECS		2019-20	Earlier prog Latest prog 50%	BoS, CPGLS
01002	PhD in Natural Resource Management	2002	ECS		2020-21	Earlier prog Latest prog 50%	49AC, item no 10
01012	PhD in Regulatory and Policy Studies	2002	ECS		2020-21	Earlier prog Latest prog 50%	49AC, item no 10
01025	PhD in Water Science and Governance	2014	ECS		2019-20	Earlier prog Latest prog 50%	BoS of DRWS

04017	PG Diploma in Renewable Energy	2009	ECS	2009	2016-17, 2016-17, 2018-19, 2018-19	Earlier prog Latest prog	39AC; item no 4, 40AC; item no 2, 45AC; item no 2, 46AC, item no 11
07017	Advanced PG Diploma in Renewable Energy	2009	ECS	2009	2016-17, 2016-17, 2018-19	Earlier prog Latest prog	39AC; item no 4, 40AC; item no 2, 45AC; item no 2

DVV requirement

Documents Needed

- ☐ List of programs where syllabus revision has been carried out during the last five years as certified by the Registrar, to be provided. [Annexure 1.1.2.A.](#)
- ☐ Approved Minutes of the relevant Academic Council/BOS meetings highlighting the specific agenda item relevant to the metric, to be provided year- wise. [Annexure 1.1.2.B.](#)

Specific instruction to HEI

If the number of courses in which the content is revised in a given programme to the extent of 20 % or more, it should be considered as “change in syllabus”

If the syllabus is changed more than once in a program during the five- year period, then it should be counted as one change.

Avoid the following while uploading data

Renaming/minor changes in the course content not to be included/considered

Prog ramme Code	Prog ramme name	Year of Intro duction	Status of impleme ntation of CBCS / Elective Course System (ECS)	Year of impleme ntation of CBCS/ ECS	Year of revision (if any)	If revision has been carried out in the syllabus during the last 5 years, Percentage of content added or replaced	<u>Link to the relevant documents</u>
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01002	PhD in Natural Resource Management	2002	ECS		2020-21	Earlier prog Latest prog 50%	49AC, item no 10
01012	PhD in Regulatory and Policy Studies	2002	ECS		2020-21	Earlier prog Latest prog 50%	49AC, item no 10
01025	PhD in Water Science and Governance	2014	ECS		2019-20	Earlier prog Latest prog 50%	BoS of DRWS



(Registrar)
Sign and Seal

Registrar
TERI School of Advanced Studies
10, Institutional Area, Vasant Kunj
New Delhi-110 070

4	Earth system Sciences	3
5	Basics of climate Science	3
6	Environmental law and policy	3
7	Energy: Science, Technology and Policy	2
8	Impacts of Climate Change	2
9	Environmental Statistics	3
10	Concept & Theories of Development	3
11	Climate Lab	2
12	Technical Writing	2

ITEM NO. 9. To consider and approve the outlines of courses for MTech/MSc (WSG). The recommendations of the meeting of the Board of Studies of Department of Regional Water Studies w.r.t. MTech/MSc (WSG) programme held on 23 June 2017 were placed before the Council. A detailed discussion was held on the course outline. Dr Jain stated that the nomenclature contained an acronym, therefore recommended that the title be rephrased. Dr Seth recommended that this being an open elective a pre-requisite for the course might be mentioned. The Chair recommended that a proper balance between the duration and the content be maintained.

TU/AC 40.9.1 The Council resolved that outline of following course of **MSc/MTech(WSG)** (vide Annexure 7) be accepted as amended and approved.

Ser	Course	Type	Cr
1.	Social, economic and health dimensions of water, sanitation and hygiene	Elective	3

ITEM NO. 10(a). To consider and approve the programme structure of MA(PP&SD). The recommendations of the meeting of the Board of Studies of Department of Energy & Environment w.r.t. MA(PP&SD) programme held on 22 June 2017 were placed before the Council.

TU/AC 40.10(a).1 The Council resolved that following programme structure of **MA(PP&SD)** be accepted as amended and approved.

Semester-I: (17 credits)

Ser	Course	Cr
1.	Introduction to sustainable development	1
2.	Society and development policy	2
3.	Sustainable consumption and production	2
4.	India and the world	2
5.	Industrial development and sustainability	2
6.	Energy policy and sustainable development	2
7.	Governance and law	2
8.	Challenges of a digital economy	2
9.	Policy lab-I	2

NGO Attachment — 2 Credits

Semester-II: (18 credits)

Ser	Course	Cr
1.	Public policy processes & institutions	2

2.	Assessing public policy: methods and measurements	2
3.	Water science and policy	2
4.	Innovations in public management	2
5.	Sustainable urbanization	2
6.	Agriculture and rural development	2
7.	Ecosystem services and communities	2
8.	India: major policy issues	2
9.	Policy lab-II	2

International Visit – 2 Credits

Major Project – 27 Credits

ITEM NO. 10(b) To consider and approve the outlines of courses for MA (PP & SD). The recommendations of the meeting of the Board of Studies of Department of Policy Studies w.r.t. MA(PP&SD) programme held on 22 June 2017 were placed before the Council. A detailed discussion was held on the course outlines. As the programme catered to the needs of the serving mid-career officers, the discussion allowed the newer ways of evaluation in terms of active classroom participation; article and book reviews exercises; individual and group presentations; and other course-works like critiques and discussions. As regards the course on ‘India and the world’, the council members suggested the reshuffling of the modules with a logical flow; In addition, the council discussed about the practicalities of policy lab course. The Chair suggested that greater level of objectivity should be followed in the method to be adopted in the proposed evaluation scheme.

TU/AC 40.10(b).1 The Council resolved that outline of following courses of **MA (PP &SD)** (vide Annexure 8) be accepted as amended and approved.

Ser	Course	Cr
1.	Society and development policy	2
2.	Sustainable consumption and production	2
3.	India and the world	2
4.	Industrial development and sustainability	2
5.	Energy policy and sustainable development	2
6.	Governance and law	2
7.	Challenges of a digital economy	2
8.	Policy lab-I	2

ITEM NO. 11. To consider and approve TERI University PhD Regulations 2017. The Registrar informed that the PhD regulations of the University had been revised on the basis of UGC (Minimum Standards and Procedure for awards of M Phil/PhD Degree) Regulation -2016 and required to be approved by the council for promulgation.

TU/AC 40.11.1 The Council resolved that draft of the regulation (vide Annexure 9) be circulated amongst the members for consideration.

TS/AC/48.20.1 The Academic Council resolved to approve the revised outline of M.Sc. (Geoinformatics) programme as placed at **Enclosure 16**.

Item No 21: To review and include degree in *Bachelor of Vocation (B.Voc.)* as an eligibility criterion for admission to M.Sc. (Water Science and Governance), PG Diploma (Water Science and Governance) and PG Certificate Course in Water Science and Governance offered by Department of Regional Water Studies. Dr Arun Kansal presented the recommendation of the Board of Studies (**Enclosure 17**) of the Department of Regional Water Studies held on 01 July 2020 with regard to inclusion of B.Voc. as an eligibility criteria for admission to M.Sc. (Water Science and Governance) programme.

TS/AC/48.21.1 The Academic Council resolved to approve the inclusion of the following degrees in the eligibility criteria for M.Sc. (Water Science and Governance), PG Diploma (Water Science and Governance) and PG Certificate Course in Water Science and Governance :-

B.Voc in Industrial Waste Management, Soil and Water Conservation, Industrial Chemistry, Industrial Waste Treatment Technology, Sustainable Agriculture.

Item No 22: To consider and review the outline of the Programme M.A. (Public Policy and Sustainable Development) offered by Department of Policy Studies. Dr L.N. Venkataraman presented the recommendation of the Board of Studies of the Department of Policy Studies held on 17 June 2020 with regard to amendments to the M.A. (Public Policy and Sustainable Development) programme.

TS/AC/48.22.1 The Academic Council resolved to approve the revised programme outline as placed at **Enclosure 18**.

Item No.23: To consider and review outline M.Sc. (Plant Biotechnology) programme. Dr Udit Soni presented the recommendation of the Board of Studies of the Department of Biotechnology held on 4 March 2020 and 4 July 2020 with regard to amendments to the M.Sc. (Plant Biotechnology) programme. The following suggestions were made by the members:-

- (a) The programme to be aligned with the Choice Based Credit System of UGC.
- (b) The feasibility of diversifying into other streams of Biotechnology was discussed and suggested.
- (c) It was discussed that one such diversification could be Microbial Biotechnology considering the facilities and expertise at TERI SAS and TERI. In that case, the existing MSc programme will be renamed as "M.Sc. Biotechnology," with specialisations offered in two streams namely, Plant Biotechnology and Microbial Biotechnology. More streams may be added in future.
- (d) Therefore, two streams, namely Plant Biotechnology and Microbial Technology would be offered under the M.Sc. Biotechnology Programme.

ITEM NO. 2 To confirm the draft programme structure of PGDRE/APGDRE. The Registrar intimated that as resolved in the 39th meeting of the Academic Council vide resolution no TU/AC/39.4.1 dated 23 Dec 16, the revised programme structure of PGDRE/APGDRE courses was circulated for consideration of the Council on 27 Jan 2017. No comments have been received; the Council may, therefore, consider confirming the draft programme structure presented.

TU/AC 40.2.1 The Council resolved that the programme structure of PGDRE/APGDRE be confirmed (Annexure 1).

ITEM NO.3(a) To consider and approve the programme structure of third semester for MBA (Infrastructure). The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 12 June 17 w.r.t. MBA(Infra) programme were placed before the Council.

TU/AC 40.3(a).1 The Council resolved that programme structure of the third semester of MBA (infrastructure) programme as given below be accepted as amended and approved.

Semester 3: (Min-16 Credits)

Ser.	Course name	Type	Cr
1	Statistical Methods for Management	Core	3
2	Sustainable Urban Transport	Elective	2
3	Urban Water supply and Waste Management	Elective	2
4	IT and System Infrastructure	Elective	2
5	Advanced Logistics and SCM	Elective	2
6	Corporate Governance- evolution, challenges, and future direction	Core	2
7	Financial Intermediaries, Institutions and Markets	Elective	2
8	Entrepreneurship Development and Management	Elective	2
9	Business 2 Business marketing	Elective	2
10	Accounting and finance for sustainability	Core	3

ITEM NO.3(b) To consider and approve the outlines of courses for MBA(Infrastructure/BS).

The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 12 June 17 were placed before the Council. A detailed discussion was held on the course outlines. The Council recommended the following: -

- Instead of having a specific course on statistics for infra there should be a common course which could be extended to other disciplines.
- The tutorials and assignments could be used to handle programme specific examples.
- Other types of sampling designs and distributions are to be included.
- Confidence interval should be part of estimation and both one & two-way techniques of analysis of variance(ANOVA) could be added.

4	Fundamentals of Computers and Programming	Core	2
5	Fundamentals of Physics	Audit	2

ITEM NO. 7 To consider and approve revised structure of MBA (Business Sustainability) Programme.. The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 22 May 18 w.r.t. MBA (Business Sustainability) were placed before the Council. A detailed discussion was held on the programme structure.

TU/AC 43.7.1 The Council resolved that revised structure of MBA (Business Sustainability) programme as under be accepted as amended and approved. The Council recommended that the structured feedback from various stakeholders be obtained in order to take inputs on the programme structure and analysis of the same be presented in the next Academic Council: -

Year/Semester	Course Title	Type	Credits
1st Year			
1 st Semester	Total Credits		23
	Principles and concepts of sustainability	Core	2
	Business ethics	Core	2
	Sustainability Reporting	Core	2
	Managerial economics	Core	3
	Marketing management	Core	3
	Fundamentals of Management	Core	2
	Business communication	Core	3
	Statistical methods for management	Core	3
	Corporate accounting and reporting	Core	3
2 nd Semester	Total Credits		21
	Legal aspects of business	Core	2
	Qualitative research methods in management	Core	2
	Strategies for Sustainable Business	Core	3
	Macroeconomic Environment	Core	3
	Corporate Finance	Core	3
	Management Information System	Core	2
	Advanced statistical methods for management	Core	2
	Corporate Social Responsibility	Core	2
	Organizational behaviour and leadership	Core	2
2nd year			
3 rd Semester	Total Credits		21 (15+6)
	Accounting and finance for sustainability	Core	3
	Minor Project	Core	6
	Entrepreneurship	Core	2
	Supply chain management	Core	2
	Business, Natural Ecosystems and Community	Core	2
	Health Finance	Elective	3
	Corporate governance	Elective	2
	Sustainable consumption and production	Elective	2
	Techniques of environmental valuation	Elective	4
	Financial intermediaries, institutions and	Elective	2

	regulations		
	Integrated impact assessment	Elective	4
	Derivatives and risk management	Elective	2
	International financial management	Elective	2
	Business to business marketing	Elective	2
	Urban Governance	Elective	4
	Environmental management system	Elective	4
	Brand management	Elective	2
	Security Analysis and portfolio management	Elective	2
	Production and Operations Management	Elective	3
	Consumer behavior	Elective	2
	Project design and management for sustainable development practice	Elective	4
	Social Entrepreneurship	Elective	2
	Design Thinking	Elective	2
4 th Semester	Major project	Core	14

ITEM NO.8 To consider and approve the revised programme structure of MBA (Infrastructure). The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 22 May 18 w.r.t. MBA (Infrastructure) were placed before the Council. A detailed discussion was held on the programme structure.

TU/AC 43.8.1 The Council resolved that revised structure of MBA (Infrastructure) programme as under be accepted as amended and approved. The Council recommended that the structured feedback from various stakeholders be obtained in order to take inputs on the programme structure and analysis of the same be presented in the next Academic Council:-

Year/ Semester	Course Title	Type	Credits
1 st year			
1 st Semester	Total Credits		20
	Module 1 Basics of Infrastructure Business		
	Introduction to Infrastructure Business	Core	2
	Economics of Infrastructure and Pricing Strategies	Core	2
	Infrastructure project finance	Core	2
	Corporate Accounting and Reporting	Core	2
	Corporate Finance	Core	2
	Statistical methods for management	Core	3
	Module 2 Law & Policy Framework for Infrastructure Business		
	Legal & Regulatory aspects of infrastructure	Core	2
	Business Laws and Infrastructure projects	Core	2
	Contracts Laws	Core	2
	Environmental and Social Laws	Core	1
2 nd Semester	Total Credits		20
	Module 1 Strategy and Risk		
	Business Ethics	Core	1
	Strategic planning	Core	2

(iii) Pen and paper based examination to be held at the TERI University campus at New Delhi.

ITEM NO.3(b) To consider and implement UGC (minimum standards and procedure for award of M.Phil./Ph.D degrees) Regulations, 2016. The Registrar informed the Council that the recommendations of TU PhD Programme Review Committee (meeting held on 21 Sep 2016) wrt to PhD policy were reviewed by the Executive Committee of Academic Council who have recommended adoption of new UGC regulations. The Chair stated that the new regulations would be incorporated for PhD program commencing wef 01 January, 2017. Dr Rajiv Seth intimated that as stipulated in the regulations, the main supervisor would be from amongst the regular faculty of the University and the number of students per guide would also be reviewed. He informed the Council that the amended rules would be put up in the next meeting of the Academic Council.

The Council considered the matter and recommended that a policy on the issue be presented to the Council.

ITEM NO. 4. To consider and approve revised programme structure for Advanced PG Diploma in Renewable Energy (APGDRE) and PG Diploma in Renewable Energy (PGDRE) ODL Programme. The recommendations of the meeting of the Board of Studies of Department of Energy and Environment held on 08 December, 2016 w.r.t. Distance Learning Programmes were placed before the Council. Prof Kandpal opined that the use of different course code for similar courses be avoided and suggested that if needed, the titles of the courses be changed. Members also wanted to know the rationale of the distribution of credits for various courses and suggested inclusion of SAM and Trans SYS software in the curriculum.

TU/AC 39.4.1 The Council recommended that the amended programme structure of APGDRE and PGDRE programmes be circulated to Council members for review.

ITEM NO. 5. To consider and approve the revised course outlines of second Semester of MBA (Infrastructure) programme. The recommendations of the meeting of the Board of Studies of Department of Business Sustainability held on 02 December, 2016 w.r.t. MBA (Infrastructure) were placed before the Council.

Prof Kandpal suggested that a Board of Academic Programmes (BAP) comprising members from all departments be constituted to review revision of syllabi and identifying overlapping of courses. Dr Rajiv Seth informed that, Board of Studies (BoS) constituted at Department level review syllabi before being presented to Academic Council. Prof Suneja recommended that the BoS of the University be made more representative by including members from other departments as well. The chairperson agreed to the suggestion and stated that the all the BoSs would be constituted accordingly.

Prof Suneja appreciated the course formats and meticulousness of the outlines and suggested that the pedagogical tool 'Group learning' experimented in MIT and other leading Institutions be adopted for better learning experience. Dr Malathi expressed that use of digital platforms like *TED talk*, *You tube* made a big difference in helping achieve learning objective by exciting the learners. Prof Kandpal recommended that a common template be used for all courses and references be mentioned properly in the outlines. He suggested that the course objectives/learning outcomes should be carefully drafted to reflect the intentions.

A detailed discussion was held on the course outlines of MBA (Infra). The Council recommended that the Course structure in *Strategic Communication and Stakeholder Engagement* be revised to incorporate specific requirements of infrastructure business. While reviewing the course *Pricing & Economics*, the Council suggested that the title of the course be changed to '*Economics of Infrastructure and Pricing Strategies*', and missing part of the details of modules to be incorporated. While reviewing the course *Infrastructure Organization and HR*, Dr Srivastava suggested that a module on 'contract labour management' be incorporated and the council recommended that the course should be made of 3 credits. In addition, Prof Suneja recommended inclusion of the books such as Creativity Inc.: Overcoming the Unseen Forces That Stand in the Way of True by Amy Wallace & Edwin Catmull, Creative Unity by RN Tagore, Lateral Thinking by Edward De Bono and Biographies (Elon Musk, Steve Jobs). The council recommended that a topic on 'internet of things' to be incorporated in the course *Innovation and Change Management for Infrastructure Projects*. On a suggestion of Prof Kandpal, the Council recommended that the evaluation process suggested in the *Logistics and Supply Chain Management* Course might be changed to include the following weightage: Quiz 10%; Case Study 30%; Mid-term 20%; and End-term 40%. The Council recommended that in the Course *Quality Management* a topic on 'quality standards' be incorporated.

TU/AC 39.5.1 The Council resolved that Course outlines of the following eleven courses of MBA (infrastructure) programme be accepted as amended (vide Annexure 1) and approved: -

Ser	Course Title
1	Strategic Communication and Stakeholder Engagement
2	Corporate Accounting and Reporting
3	Corporate Finance
4	Economics of Infrastructure and Pricing Strategies
5	Infrastructure organization and HR
6	Infrastructure Project Finance
7	Innovation and Change Management for Infrastructure Projects
8	Logistics and Supply Chain Management
9	Macroeconomic Environment
10	Management Information System
11	Quality Management

ITEM NO. 2 To confirm the draft programme structure of PGDRE/APGDRE. The Registrar intimated that as resolved in the 39th meeting of the Academic Council vide resolution no TU/AC/39.4.1 dated 23 Dec 16, the revised programme structure of PGDRE/APGDRE courses was circulated for consideration of the Council on 27 Jan 2017. No comments have been received; the Council may, therefore, consider confirming the draft programme structure presented.

TU/AC 40.2.1 The Council resolved that the programme structure of PGDRE/APGDRE be confirmed (Annexure 1).

ITEM NO.3(a) To consider and approve the programme structure of third semester for MBA (Infrastructure). The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 12 June 17 w.r.t. MBA(Infra) programme were placed before the Council.

TU/AC 40.3(a).1 The Council resolved that programme structure of the third semester of MBA (infrastructure) programme as given below be accepted as amended and approved.

Semester 3: (Min-16 Credits)

Ser.	Course name	Type	Cr
1	Statistical Methods for Management	Core	3
2	Sustainable Urban Transport	Elective	2
3	Urban Water supply and Waste Management	Elective	2
4	IT and System Infrastructure	Elective	2
5	Advanced Logistics and SCM	Elective	2
6	Corporate Governance- evolution, challenges, and future direction	Core	2
7	Financial Intermediaries, Institutions and Markets	Elective	2
8	Entrepreneurship Development and Management	Elective	2
9	Business 2 Business marketing	Elective	2
10	Accounting and finance for sustainability	Core	3

ITEM NO.3(b) To consider and approve the outlines of courses for MBA(Infrastructure/BS).

The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 12 June 17 were placed before the Council. A detailed discussion was held on the course outlines. The Council recommended the following: -

- Instead of having a specific course on statistics for infra there should be a common course which could be extended to other disciplines.
- The tutorials and assignments could be used to handle programme specific examples.
- Other types of sampling designs and distributions are to be included.
- Confidence interval should be part of estimation and both one & two-way techniques of analysis of variance(ANOVA) could be added.

TU/AC 40.3(b).1 The Council resolved that Course outlines of the following two courses for MBA (BS) & MBA(infrastructure) programmes be accepted as amended (vide Annexure 2) and approved:-

Ser	Course	Course	Type	Cr
1	Accounting and finance for sustainability	MBA(BS)/ MBA(Infra)	Core	3
2	Statistical methods for Management	MBA(Infra)	Core	3

ITEM NO. 4. To consider and approve inclusion of electives for MBA (BS) programme. The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 12 June 17 w.r.t. MBA(BS) programmes were placed before the Council. Dr Nandan stated that as per the existing practice students could choose any approved course as an optional course, hence academic council approval might not be required for finalisation of such electives. Dr Seth stated that the University had moved towards a system where electives across the University would be available to all students of any programmes, hence proposals on electives for programmes which were already approved need not be brought to the Council. He suggested that the issue could be discussed in the MPEC and the list of electives for a particular programme could be finalized. Dr Kaushik suggested that, as practiced in other Universities, the electives offered could be programme specific or open types.

TU/AC 40.4.1. The Council resolved that courses under any approved programme could be offered as electives for other programme.

ITEM NO. 5(a). To consider and approve the revised programme structure of the third semester of M.Tech (UDM). The recommendations of the meeting of the Board of Studies of Department of Energy and environment held on 08 June 17 w.r.t. MTech(UDM) were placed before the Council.

TU/AC 40.5(a).1 The Council resolved that following programme structure of the MTech (UDM) be accepted as amended and approved: -

Semester 3: 18 Credits (12 credits from Major Project Part 1; 2 credits from 1 Core Course; and 4 credits from 2 Elective Courses)

Ser	Course	Type	No of credits
1	Major project part 1	Core	12
2	Urban systems modelling	Core	2
3	Urban housing policy and practice	Elective	2
4	Energy efficient buildings	Elective	2
5	Sustainable urban transport	Elective	2
6	Urban disaster management and climate resilient cities	Elective	2

	regulations		
	Integrated impact assessment	Elective	4
	Derivatives and risk management	Elective	2
	International financial management	Elective	2
	Business to business marketing	Elective	2
	Urban Governance	Elective	4
	Environmental management system	Elective	4
	Brand management	Elective	2
	Security Analysis and portfolio management	Elective	2
	Production and Operations Management	Elective	3
	Consumer behavior	Elective	2
	Project design and management for sustainable development practice	Elective	4
	Social Entrepreneurship	Elective	2
	Design Thinking	Elective	2
4 th Semester	Major project	Core	14

ITEM NO.8 To consider and approve the revised programme structure of MBA (Infrastructure). The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 22 May 18 w.r.t. MBA (Infrastructure) were placed before the Council. A detailed discussion was held on the programme structure.

TU/AC 43.8.1 The Council resolved that revised structure of MBA (Infrastructure) programme as under be accepted as amended and approved. The Council recommended that the structured feedback from various stakeholders be obtained in order to take inputs on the programme structure and analysis of the same be presented in the next Academic Council:-

Year/ Semester	Course Title	Type	Credits
1 st year			
1 st Semester	Total Credits		20
	Module 1 Basics of Infrastructure Business		
	Introduction to Infrastructure Business	Core	2
	Economics of Infrastructure and Pricing Strategies	Core	2
	Infrastructure project finance	Core	2
	Corporate Accounting and Reporting	Core	2
	Corporate Finance	Core	2
	Statistical methods for management	Core	3
	Module 2 Law & Policy Framework for Infrastructure Business		
	Legal & Regulatory aspects of infrastructure	Core	2
	Business Laws and Infrastructure projects	Core	2
	Contracts Laws	Core	2
	Environmental and Social Laws	Core	1
2 nd Semester	Total Credits		20
	Module 1 Strategy and Risk		
	Business Ethics	Core	1
	Strategic planning	Core	2

	Risk analysis and Implementation Management	Core	3
	Project planning and management	Core	2
	Bidding System Management	Core	1
	Module 2 Operational aspects of Infrastructure		
	Quality Management	Core	2
	Management information systems	Core	2
	Infrastructure organization and HR	Core	3
	Logistics and supply chain management	Core	2
	Macroeconomic Environment	Core	3
2 nd Year			
3 rd Semester	Total Credits		23 (17+6)
	Minor Project	Core	6
	Integrated impact assessment	Core	3
	Public Private Partnership	Core	2
	Corporate governance	Core	2
	Innovation and change management for infrastructure projects	Core	2
	Strategic communication and stakeholder engagement	Core	2
	Advanced Logistics and Supply Chain Management	Elective	2
	Accounting and finance for sustainability	Elective	3
	Financial intermediaries, institutions and markets	Elective	2
	Sustainable Urban Transport	Elective	2
	Entrepreneurship	Elective	2
	Urban water supply and waste management	Elective	2
	Business to business marketing	Elective	2
	Total credits		
4 th Semester	Major Project	Core	14

ITEM NO. 9 To consider and approve the outlines of new Courses for MBA (Business Sustainability/ Infrastructure). The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 22 May 18 w.r.t. MBA (Business Sustainability/ Infrastructure) were placed before the Council. A detailed discussion was held on the course outlines. The following suggestions were provided:

(a) **Health Finance**

- (i) The title of the course may be revised for alignment with the content of the course.
- (ii) Learning outcomes to be linked with evaluation.
- (iii) Health care system should be discussed before we talk about the financing.
- (iv) Different financing mechanism like – publicly funded, provided by the private sector and PP should be included.
- (v) Other issues of health system like insurance coverage, availability of the healthcare services could be discussed.
- (vi) If the course title includes the word “sustainable” then sustainability for whom should be clearly mention.

9	Energy lab – I (Power system lab and Heat transfer lab)	2
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Ser	Semester 2	Cr
1	Solar technologies	4
2	Wind, small hydro and RE hybrid technologies	2
3	Biomass and other renewable technologies	3
4	Renewable energy policy and regulations	3
5	Optimization techniques for energy management and planning	3
6	Renewable energy project management	3
7	Energy lab – II	3
8	Fluid mechanics and wind turbine models	3
9	Applied numerical methods	3

ITEM NO. 8(a). To consider and approve the programme structure of MSc (CSP). The recommendations of the meeting of the Board of Studies of Department of Energy & Environment w.r.t. MSc (CSP) programme held on 15 June 2017 were placed before the Council.

TU/AC 40.8(a).1 The Council resolved that following programme structure of **MSc(CSP)** be accepted as amended and approved.

Semester 1 (21 credits):

Ser	Course	Cr
1	Earth System Sciences	3
2	Basics of Climate Science	3
3	Environmental Law and Policy	3
4	Energy: Science, Technology and Policy	2
5	Impact of Climate Change	2
6	Environmental Statistics	3
7	Concept & Theories of Development	3
8	Climate Lab	2
9	Technical Writing/Academic Writing	Compulsory audit

Semester 2 (17 credits):

Ser	Core Courses	Cr
1	Research Methodology	2
2	Basic Principles of Geo-informatics	3
3	Climate Change Vulnerability and Adaptation	3
4	Climate Change Mitigation	3
	Electives (can choose any two)	
5	Introduction to Uncertainty and Risk Analysis	3
6	Multivariate Data Analysis	3

7	Climate Change and Water	3
8	Introduction to Climate Modelling	3
9	Economics of Climate Change	3

Minor Project – 2 credits**Semester 3(15 credits)**

Core Course: Seminar Course [3]

Electives: [Choose any 4 courses. All the courses are 3 credits each.]

<i>Climate Science and Technology</i>	<i>Climate Policy and Development</i>
GHG Accounting	<i>Institutions and Governance</i>
Ecological Climatology	Adaptation and Mitigation Policy
Energy Modeling and Scenario Analysis	Climate Finance
Renewable Energy Technologies	Scenario Modeling
Atmospheric Dynamics	Climate Change and Public Health
Satellite Meteorology	Food Security and Agriculture
Advanced Geo-Informatics	Independent study
Climate Change and Disaster Risk Reduction	
Advanced Climate Modelling	

Semester 4: Major Project [15 credits]

ITEM NO. 8(b) To consider and approve the outlines of courses for MSc (CSP). The recommendations of the meeting of the Board of Studies of Department of Energy & Environment w.r.t. MS(CSP) programme held on 15 June 2017 were placed before the Council. A detailed discussion was held on the course outlines. Dr Prateek recommended that the revised course 'Earth system science' should be introduced to MSc(ESRM) students instead of the earlier course 'Geo sciences'. With regard to the bridge courses, Dr Jain stated that these courses would be conducted in the beginning of the session as audit courses for students not having prior knowledge of subjects such as basic mathematics/ programming/eEconomics post-secondary school level. Members recommended that the name of the 'Development theories and climate change' course be changed to 'Concept and theories of development' to make it more relevant.

TU/AC 40.8(b).1 The Council resolved that outline of following courses of **MSC(CSP)** (vide Annexure 6) be accepted as amended and approved.

Ser	Course	Cr
1	Applied Mathematics(Bridge)	1
2	Basic Computer Programming(Bridge)	1
3	Basic course in Economics(Bridge)	1

(i) Name of Dr Montu Bose to be incorporated in the “prepared by” List

(ii) On a query from member whether there should be practical hours for qualitative and quantitative data analysis (Module 5 and 6) it was informed that as it was a generic course on research methodology, separate practical hours might be avoided. Further it was brought out by Dr Datta that there were several other courses which substantially covered both qualitative and quantitative data analysis with a considerable number of practical hours.

(iii) In response to a query with respect to incorporation of impact evaluation tools into the Module-5 of the course outline it was clarified that the same is being repeated in other existing courses on quantitative research methods hence not considered.

(b) *Research and Publication Ethics* offered by Centre for Post Graduate Legal Studies. A presentation was made by Dr Jaya Vasudevan and Members suggested that evaluation criteria be improved.

TS/AC/48.14 The Academic Council resolved to approve the following: -

- (a) Course outlines of *Research Methodology* as amended and placed at **Enclosure 9**.
- (b) Course outlines of *Research and Publication Ethics* as amended and placed at **Enclosure 10**.

Item No 15: To consider and review the outline of the Programme M.Sc. (Climate Science and Policy). Dr. Manish Shrivastava presented the revised structure of the M.Sc. Climate Science and Policy (CSP) programme as approved by the Board of Studies (Department of Energy and Environment) held on 28 May 2020. The following suggestions and clarifications were discussed:-

(i) Lab component for Earth System Sciences: It was informed that the Earth System Sciences course did not require lab as such.

(ii) Considering the increasing importance of geo-sciences it would be useful to include a lab component as well : A full review of the CSP programme would be due by the year 2022 and these inputs be taken into account in that process, which involved wider stakeholder and industry consultation.

(iii) Need to introduce a separate course on globalization and policy assessment : The course on Climate Change and Law exclusively covers the global institutional developments that are relevant to climate change. It is also discussed in the courses on the governance of climate change and

the Seminar Course. Also, the aspects of policy analysis are covered in the courses on the Governance of Climate Change and Economics of Climate Change.

(iv) It would be better if the requirement of passing the bridge courses is made clear upfront, instead of saying just "0 credit".

(v) How the policy bouquet and science bouquet of courses are related to the award of degree, particularly when the students take courses from both the bouquets. - These groupings are only to inform students what courses they can choose from if they want to have more focus on the policy or science aspect of the programme.

TS/AC/48.15.1 The Academic Council resolved to approve the revised programme outline of M.Sc. (Climate Science and Policy) as amended and placed at **Enclosure 11**.

Item No.16: To consider and review the outline of M.Sc. (Environmental Studies and Resource Management) programme. Dr Chubamenla Jamir presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised programme outline of M.Sc. (Environmental Studies and Resource Management). It was suggested that ESRM and CSP students could opt for elective courses from each other.

TS/AC/48.16.1 The Academic Council resolved to approve the revised programme outline of M.Sc. (Environmental Studies and Resource Management) placed at **Enclosure 12**.

Item No 17: To consider and review the outline of courses of M.Sc. (Environmental Studies and Resource Management) programme. Dr Chubamenla Jamir presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised course outlines of M.Sc. (Environmental Studies and Resource Management) with respect to NRE 121 Ecology, NRE 139 Environmental Geo-sciences.

TS/AC/48.17.1 The Academic Council resolved to approve the revised outlines of following courses placed at **Enclosure 13**.

- (a) NRE 121 Ecology.
- (b) NRE 139 Environmental Geo-sciences.

Item No 18: To consider and review the course outline of the following course offered by Department of Energy and Environment. Prof Prateek Sharma presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised course outlines of NRE 111 – Environmental Statistics. It was informed that the course was offered in multiple programmes and the amendment would apply to all related programmes. Following were the comments/suggestions received from the AC members with regard to course NRE111 - Environmental Statistics:

(i) Name of Dr Montu Bose to be incorporated in the “prepared by” List

(ii) On a query from member whether there should be practical hours for qualitative and quantitative data analysis (Module 5 and 6) it was informed that as it was a generic course on research methodology, separate practical hours might be avoided. Further it was brought out by Dr Datta that there were several other courses which substantially covered both qualitative and quantitative data analysis with a considerable number of practical hours.

(iii) In response to a query with respect to incorporation of impact evaluation tools into the Module-5 of the course outline it was clarified that the same is being repeated in other existing courses on quantitative research methods hence not considered.

(b) *Research and Publication Ethics* offered by Centre for Post Graduate Legal Studies. A presentation was made by Dr Jaya Vasudevan and Members suggested that evaluation criteria be improved.

TS/AC/48.14 The Academic Council resolved to approve the following: -

- (a) Course outlines of *Research Methodology* as amended and placed at **Enclosure 9**.
- (b) Course outlines of *Research and Publication Ethics* as amended and placed at **Enclosure 10**.

Item No 15: To consider and review the outline of the Programme M.Sc. (Climate Science and Policy). Dr. Manish Shrivastava presented the revised structure of the M.Sc. Climate Science and Policy (CSP) programme as approved by the Board of Studies (Department of Energy and Environment) held on 28 May 2020. The following suggestions and clarifications were discussed:-

(i) Lab component for Earth System Sciences: It was informed that the Earth System Sciences course did not require lab as such.

(ii) Considering the increasing importance of geo-sciences it would be useful to include a lab component as well : A full review of the CSP programme would be due by the year 2022 and these inputs be taken into account in that process, which involved wider stakeholder and industry consultation.

(iii) Need to introduce a separate course on globalization and policy assessment : The course on Climate Change and Law exclusively covers the global institutional developments that are relevant to climate change. It is also discussed in the courses on the governance of climate change and

the Seminar Course. Also, the aspects of policy analysis are covered in the courses on the Governance of Climate Change and Economics of Climate Change.

(iv) It would be better if the requirement of passing the bridge courses is made clear upfront, instead of saying just "0 credit".

(v) How the policy bouquet and science bouquet of courses are related to the award of degree, particularly when the students take courses from both the bouquets. - These groupings are only to inform students what courses they can choose from if they want to have more focus on the policy or science aspect of the programme.

TS/AC/48.15.1 The Academic Council resolved to approve the revised programme outline of M.Sc. (Climate Science and Policy) as amended and placed at **Enclosure 11**.

Item No.16: To consider and review the outline of M.Sc. (Environmental Studies and Resource Management) programme. Dr Chubamenla Jamir presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised programme outline of M.Sc. (Environmental Studies and Resource Management). It was suggested that ESRM and CSP students could opt for elective courses from each other.

TS/AC/48.16.1 The Academic Council resolved to approve the revised programme outline of M.Sc. (Environmental Studies and Resource Management) placed at **Enclosure 12**.

Item No 17: To consider and review the outline of courses of M.Sc. (Environmental Studies and Resource Management) programme. Dr Chubamenla Jamir presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised course outlines of M.Sc. (Environmental Studies and Resource Management) with respect to NRE 121 Ecology, NRE 139 Environmental Geo-sciences.

TS/AC/48.17.1 The Academic Council resolved to approve the revised outlines of following courses placed at **Enclosure 13**.

- (a) NRE 121 Ecology.
- (b) NRE 139 Environmental Geo-sciences.

Item No 18: To consider and review the course outline of the following course offered by Department of Energy and Environment. Prof Prateek Sharma presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised course outlines of NRE 111 – Environmental Statistics. It was informed that the course was offered in multiple programmes and the amendment would apply to all related programmes. Following were the comments/suggestions received from the AC members with regard to course NRE111 - Environmental Statistics:

ITEM NO. 2 To consider and approve TERI University PhD Regulations 2017. The registrar stated that the revised PhD regulations of the University (based on UGC Minimum Standards and Procedure for awards of M Phil/PhD Degree **Regulation** -2016) was presented to the 40th Academic council on 05 July 2017. He stated that as resolved at the 40th Council an amended was recirculated, and no comments had been received so far.

TU/AC 41.2.1 The Council resolved that the PhD regulations as amended be accepted and approved (Annexure 1).

ITEM NO 3. To consider and approve PPR of Distance Education Programme. Coordinator, Distance Learning Programme Mr Sapan Thapar presented the Programme Project Report (PPR) of the PGDRE and APGDRE programmes. The PPR was discussed by the Council

TU/AC 41.3.1 The Council resolved that PPR as given at Annexure 2 be accepted and approved.

ITEM NO 4. To consider and approve renaming of MTech (Water Science & Governance) programme as MTech (Water Resources Engineering and Management). The Registrar informed that the programme covered applied courses in water resources engineering including design and planning aspects and learners skills were honed in software applications including modelling and optimization. He stated that the programme facilitated courses on water resource management, water audit & demand management, water planning & management and water governance etc. He stated that being an M Tech course the emphasis had been on water resources engineering and not on water science and therefore a change in name as recommended which would add value to the course name and structure.

TU/AC 41.4.1 The Academic Council resolved to approve the change of name of MTech (Water Science & Governance) to MTech (Water Resources Engineering and Management).

ITEM NO.5. To consider and approve revised programme structure of MSc (Economics). The recommendations of the meeting of the Board of Studies of Department of Policy Studies held on 27 Oct 17 were placed before the Council (Details placed at annexure 3). The following suggestions were provided: -

- (a) Percentage of overlap with other courses to be brought out explicitly.
- (b) Rationalize with 02 courses in macro and 02 courses in micro.
- (c) Not more than four courses should be taught per semester.
- (d) Add credits for internship.
- (e) Capitalise on the niche environment issues.
- (f) Add more elective courses.
- (g) Economic History may be made a core course.
- (h) Public finance may be added.

TU/AC 41.5.1 The Council resolved that the programme structure of MSc(Economics) as under be approved.

Semester 1: 4 Core Courses of 4 credits each, viz.

1. Microeconomics
2. Macroeconomics
3. Constrained optimization and linear Algebra
4. Probability and Statistics

Semester 2: 4 Core Courses of 4 credits each, viz.

1. Growth and Development
2. Indian Economy
3. Econometrics
4. Environment and Economic Development

Semester 3:

- (a) 1 Core Course of 4 credit: Research Methodology
- (b) 3 Elective Courses (with at least one from either Economics of Environment or Economics of Natural Resources) from those offered in the MSc Economics programme or open electives. *

Semester 4:

- (a) Thesis track (16 credits): Master's Thesis [Pre-requisite: B+ or above in Research Methodology]
- OR
- (b) Course track (16 credits): Elective courses from those offered in the MSc Economics programme or open electives.*

* Elective courses offered in the MSc Economics Programme are as follows:

- Economics of Environment
- Economics of Natural Resources
- Indian Agriculture in a Global Setting (MPE 128)
- Advanced Econometrics (MPE 179)
- Time Series and Regression Analysis (MPE 177)
- Ecological Economics (MPE 125)
- Labour Economics (MPE 174)
- Trade and the Environment (MPE 192)
- Law and Economics (MPE 151)
- Economics of Health and Environment (MPE 145)
- Energy Economics (MPE 183)
- Advanced Macroeconomics (MPE 123)
- Theory of Finance (MPE 126)
- Industrial Organisation (MPE 133)
- Theory of Contracts (MPE 140)
- Public Economics (MPE 148)
- Advanced Microeconomics

- Collective action and environmental management (MPE 135)

Students are also allowed to fulfil their elective credit requirement wholly or partly with courses offered in other programmes subject to the approval of the Programme Coordinator. Among others, they include the following:

- Water Resources Economics
- Corporate Finance
- Economics of Climate Change

The list of courses offered in either category may vary.

ITEM NO. 6. To consider and approve the outline of two courses for MSc (Economics). The recommendations of the meeting of the Board of Studies of Department of Policy Studies held on 27 Oct 17 w.r.t. MSc (Economics) programmes were placed before the Council. Members recommended that the name of the title be changed to Macroeconomics and books like 'Between Debt And The Devil: Money, Credit, And Fixing Global Finance by Adair Turner' be prescribed. In labour economics Marxian theories be included issues like NREGA and implications of labour laws be discussed.

TU/AC 41.6.1 The Council resolved that the outlines of the following courses placed at Annexure 4 be approved: -

Serial no	Course	Type	Credit
1	Macroeconomics*	Core	4
2	Labour Economics**	Elective	3

* Revision

** New course

ITEM NO. 7. To consider and approve the outline of three courses for LLM. The recommendations of the meeting of the Board of Studies of Department of Policy Studies held on 27 Oct 17 w.r.t. LLM were placed before the Council. A detailed discussion was held on the programme outline, and three new courses were suggested.

TU/AC 41.7.1 The Council resolved that the outlines of the following Courses placed at Annexure 5 be accepted as amended and approved: -

Serial no	Course	Type	Credit
Ser	Course	Type	Cr
1	Competition Law and Policy**	Elective	2
2	Hazardous Waste Law**	Elective	2
3	Water Resources law**	Elective	2

** New course

ITEM NO. 4. To consider and approve the revision in the programme structure of MSc (Economics) Programme. The recommendations of the meeting of the Board of Studies of Department of Policy Studies held on 25 Apr 18 w.r.t. MSc (Economics) programmes were placed before the Council. The following suggestions were given:-

- (a) Economics of Natural Resource title be changed to Natural Resource Economics.
- (b) Economics of the Environment title be changed to Environmental Economics.

TU/AC 43.4.1 The Council resolved that revised structure of MSc (Economics) programme as under be accepted as amended and approved. The Council recommended that the structured feedback from various stakeholders be obtained in order to take inputs on the programme structure and analysis of the same be presented in the next Academic Council:-

Restructured Outline of MSc Economics programme		
Year/Semester	Courses	Credits
First year		32
1st Semester	4 Core courses of 4 credits	16
	Probability and Statistics	4
	Macroeconomics	4
	Microeconomics	4
	Introduction to Mathematical Methods for Economics	4
2nd Semester	4 Core courses of 4 credits	16
	Environment and Economic Development	4
	Growth Economics	4
	Development Economics	4
	Econometrics	4
Second year		40
3 rd Semester	3 Core courses of 4 credits + Elective courses of 8 credits	20
	Core 1: Methods of Research in Economics	4
	Core 2: Environmental Economics	4
	Core 3: Natural Resource Economics	4
	Elective courses from those offered in the MSc Economics programme or open electives	8
4 th Semester	Master's Thesis	20

ITEM NO.5. To consider and approve the revised structure of M.Sc (Geoinformatics) Programme. The recommendations of the meeting of the Board of Studies of Department of Natural Resources held on 16 Mar 18 w.r.t. M.Sc (Geoinformatics) were placed before the Council.

TU/AC 43.5.1 The Council resolved that the following revised structure of MSc (Geoinformatics) programme be accepted as amended and approved: -

Year/ Semester	Courses	Type	Credits
1st year			
1st Semester	Total credits (5+0/1/2 Core Courses + 1 Core Audit)		15
	Principles of Cartography	Core	3

inputs and the views of other stakeholders are also taken. Therefore, we should go ahead with this programme and as the semester progresses, we may take the views of external members, specially Prof. Kharat's.

TS/AC/49.11.1 The Academic Council resolved to approve the new programme structure of the M.Sc. (Biotechnology) Programme offered by the Department of Biotechnology as placed at **Enclosure 7** with the condition that the Department should consider incorporating inputs provided by Prof. Kharat.

Item No. 12: To consider and approve change in the structure of the M.Sc. (Economics) Programme offered by Department of Policy Studies

Dr Kavita Sardana presented the change in the structure of the M.Sc. (Economics) as placed at **Enclosure 8** for the approval of the Academic Council. Members suggested that it would be better to go with the thesis in the fourth semester instead of taught courses. It would help us to keep uniformity across all programmes. It was also suggested by members that the new National Education Policy is laying more stress on research based work, so it would help to continue with it. After detailed deliberation, the Council feels that the list of electives being offered in the fourth semester should be researchbased electives as emphasised in the new education policy.

After hearing all the members, the Chairperson stated that we may continue with the programme in two track programme as presented. The department also proposed to reduce the credits from 72 to 64. The members had a diverse opinion on reducing these credits from 72 to 64. The Chairperson suggested that we may run the two track programme, as suggested by the department with emphasis on research based electives for one year and monitor its progress. The Council also proposed to change the name of the programme in line with the courses being offered.

TS/AC/49.12.1 The Academic Council resolved to approve the programme structure of the M.Sc. (Economics) offered by Department of Policy Studies as placed at **Enclosure 8** for the duration of one year and the programme will be reviewed thereafter and placed in Academic Council.

Item No. 13: Any other item with the permission of the Chair.

- (i) Prof. Arun Kansal informed that we have almost completed the academic semester and year. We have suspended teaching for four weeks during the pandemic time during April-May, 2021. The Academic Calendar was accordingly revised and as per the revised schedule, the next academic session will start from 31 August 2021.

Prof. Kandpal suggested that the revised academic calendar should be included in the Academic Council minutes which was noted and the revised academic calendar is placed as **Enclosure 9**.

- (ii) Dr Montu Bose presented the programme specific outcome for the two MBA programmes - MBA (Sustainability Management) and MBA (Infrastructure

the Seminar Course. Also, the aspects of policy analysis are covered in the courses on the Governance of Climate Change and Economics of Climate Change.

(iv) It would be better if the requirement of passing the bridge courses is made clear upfront, instead of saying just "0 credit".

(v) How the policy bouquet and science bouquet of courses are related to the award of degree, particularly when the students take courses from both the bouquets. - These groupings are only to inform students what courses they can choose from if they want to have more focus on the policy or science aspect of the programme.

TS/AC/48.15.1 The Academic Council resolved to approve the revised programme outline of M.Sc. (Climate Science and Policy) as amended and placed at **Enclosure 11**.

Item No.16: To consider and review the outline of M.Sc. (Environmental Studies and Resource Management) programme. Dr Chubamenla Jamir presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised programme outline of M.Sc. (Environmental Studies and Resource Management). It was suggested that ESRM and CSP students could opt for elective courses from each other.

TS/AC/48.16.1 The Academic Council resolved to approve the revised programme outline of M.Sc. (Environmental Studies and Resource Management) placed at **Enclosure 12**.

Item No 17: To consider and review the outline of courses of M.Sc. (Environmental Studies and Resource Management) programme. Dr Chubamenla Jamir presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised course outlines of M.Sc. (Environmental Studies and Resource Management) with respect to NRE 121 Ecology, NRE 139 Environmental Geo-sciences.

TS/AC/48.17.1 The Academic Council resolved to approve the revised outlines of following courses placed at **Enclosure 13**.

- (a) NRE 121 Ecology.
- (b) NRE 139 Environmental Geo-sciences.

Item No 18: To consider and review the course outline of the following course offered by Department of Energy and Environment. Prof Prateek Sharma presented the recommendation of the Board of Studies of the Department of Energy and Environment held on 19 June 2020 with regard to revised course outlines of NRE 111 – Environmental Statistics. It was informed that the course was offered in multiple programmes and the amendment would apply to all related programmes. Following were the comments/suggestions received from the AC members with regard to course NRE111 - Environmental Statistics:

ITEM NO. 4. To consider and approve the revision in the programme structure of MSc (Economics) Programme. The recommendations of the meeting of the Board of Studies of Department of Policy Studies held on 25 Apr 18 w.r.t. MSc (Economics) programmes were placed before the Council. The following suggestions were given:-

- (a) Economics of Natural Resource title be changed to Natural Resource Economics.
- (b) Economics of the Environment title be changed to Environmental Economics.

TU/AC 43.4.1 The Council resolved that revised structure of MSc (Economics) programme as under be accepted as amended and approved. The Council recommended that the structured feedback from various stakeholders be obtained in order to take inputs on the programme structure and analysis of the same be presented in the next Academic Council:-

Restructured Outline of MSc Economics programme		
Year/Semester	Courses	Credits
First year		32
1st Semester	4 Core courses of 4 credits	16
	Probability and Statistics	4
	Macroeconomics	4
	Microeconomics	4
	Introduction to Mathematical Methods for Economics	4
2nd Semester	4 Core courses of 4 credits	16
	Environment and Economic Development	4
	Growth Economics	4
	Development Economics	4
	Econometrics	4
Second year		40
3 rd Semester	3 Core courses of 4 credits + Elective courses of 8 credits	20
	Core 1: Methods of Research in Economics	4
	Core 2: Environmental Economics	4
	Core 3: Natural Resource Economics	4
	Elective courses from those offered in the MSc Economics programme or open electives	8
4 th Semester	Master's Thesis	20

ITEM NO.5. To consider and approve the revised structure of M.Sc (Geoinformatics) Programme. The recommendations of the meeting of the Board of Studies of Department of Natural Resources held on 16 Mar 18 w.r.t. M.Sc (Geoinformatics) were placed before the Council.

TU/AC 43.5.1 The Council resolved that the following revised structure of MSc (Geoinformatics) programme be accepted as amended and approved: -

Year/ Semester	Courses	Type	Credits
1st year			
1st Semester	Total credits (5+0/1/2 Core Courses + 1 Core Audit)		15
	Principles of Cartography	Core	3

	Principles of Remote Sensing	Core	3
	Principles of GIS and GNSS	Core	4
	Environmental Statistics	Core	3
	Fundamentals of Computers and Programming	Core	2
	Applied Mathematics	Core* (Audit)	-
	Fundamentals of Physics	Core** (Audit)	-
	Technical Writing	Core (Audit)	-
2 nd Semester	Total credits		19
	Photogrammetry	Core	3
	Digital Image Processing and Information Extraction	Core	4
	Spatial Data Modelling and its Applications	Core	4
	Multivariate Data Analysis	Core	3
	Programming in Geoinformatics	Core	3
	Law and Policy for Maps and Remote Sensing	Core	2
	Project Management	Core (Audit)	-
	Research Methodology and Thesis Writing	Core (Audit)	-
2 nd year			
3 rd Semester	Total Credits		21
	Advances in Remote Sensing	Core	4
	Advances in GIS and current trend	Core	4
	Geoinformatics Applications for Land Resources	Core	3
	Geoinformatics Applications for Water Resources	Core	3
	Geoinformatics Applications for Atmosphere	Core	3
	Minor Project (during summer break)	Core	2
	Geocomputation	Elective	3
4 th Semester	Total Credits		15
	Major Project		15

ITEM NO. 6 To consider and approve the outline of a few courses for MSc (Geoinformatics) Programme. The recommendations of the meeting of the Board of Studies of Department of Natural Resources held on 16 March 18 w.r.t. MSc (Geoinformatics) were placed before the Council. Dr Garg informed that a thorough review of the individual modules has been carried out by the BoS and the external faculty. A detailed discussion was held on the course outlines. As per the suggestion of Dean Academic, learning outcomes and evaluation criteria for all the five courses were revisited and revised.

TU/AC 43.6.1 The Council resolved that outlines of the following five courses of MSc (Geoinformatics) programme be accepted as amended (vide Annexure 3) and approved: -

Ser	Course	Type	Credit
1	Principles of Cartography	Core	3
2	Principles of GIS and GNSS	Core	4
3	Principles of Remote Sensing	Core	3

- (a) Course content should reflect explicitly the environmental part by adding some case studies etc.
- (b) Objectives of the course should justify the environmental statistics nomenclature else it should be called as Just "Statistics"
- (c) Members also raised concern on offering core credit course at masters level.

It was presented that the course content would be completely contextualized with respect to the environment with relevant concepts, case studies and applications explicitly specified in the course outline. It was also clarified that the course objectives and learning outcomes duly justified environmental statistics nomenclature and the special character of Environmental Statistics had been duly emphasized and widely covered in all the six modules.

TS/AC/48.18.1 The Academic Council resolved to approve the revised outlines of Course NRE111 -Environmental Statistics as amended and placed at **Enclosure 14**.

Item No. 19: To consider and review outline of the Programmes; M.Sc. (Water Science and Governance) and M.Tech. (Water Resource Engineering and Management) offered by the Department of Regional Water Studies. Dr Arun Kansal presented the recommendation of the Board of Studies of the Department of Regional Water Studies held on 01 July 2020. There was a suggestion that as PG Diploma and PG Certificate programme follows MSc (WSG) programme, the same should be mentioned both in the programme outline and in the eligibility criteria. Hence it was decided that PG Diploma and PG Certificate be included in the final document.

TS/AC/48.19.1 The Council resolved to approve the revised outline of the following Programmes offered by the Department of Regional Water Studies as placed at **Enclosure 15**.

- (a) M.Sc. (Water Science and Governance).
- (b) M.Tech. (Water Resource Engineering and Management).
- (c) PG Diploma in Water Science and Governance.
- (d) Certificate in Water Science and Governance.

Item No.20: To consider and review outline of M.Sc. (Geoinformatics) programme. Dr Anu Rani Sharma presented the recommendation of the Board of Studies of the Department of Natural Resources with respect to revised outline of M.S. (Geoinformatics) programme. She informed that MSc (ESRM) programme offered by Department of Energy and Environment offered NRE111 Environmental statistics course in the first semester which was a core course for MSc Geoinformatics programme. She mentioned that the course had now been changed from 3 credits to 4 credits with due amendments in course outline and due to this, MSc Geoinformatics first semester credits were increased from 15 to 16 and total credits had gone up to 71.

TS/AC/48.20.1 The Academic Council resolved to approve the revised outline of M.Sc. (Geoinformatics) programme as placed at **Enclosure 16**.

Item No 21: To review and include degree in *Bachelor of Vocation (B.Voc.)* as an eligibility criterion for admission to M.Sc. (Water Science and Governance), PG Diploma (Water Science and Governance) and PG Certificate Course in Water Science and Governance offered by Department of Regional Water Studies. Dr Arun Kansal presented the recommendation of the Board of Studies (**Enclosure 17**) of the Department of Regional Water Studies held on 01 July 2020 with regard to inclusion of B.Voc. as an eligibility criteria for admission to M.Sc. (Water Science and Governance) programme.

TS/AC/48.21.1 The Academic Council resolved to approve the inclusion of the following degrees in the eligibility criteria for M.Sc. (Water Science and Governance), PG Diploma (Water Science and Governance) and PG Certificate Course in Water Science and Governance :-

B.Voc in Industrial Waste Management, Soil and Water Conservation, Industrial Chemistry, Industrial Waste Treatment Technology, Sustainable Agriculture.

Item No 22: To consider and review the outline of the Programme M.A. (Public Policy and Sustainable Development) offered by Department of Policy Studies. Dr L.N. Venkataraman presented the recommendation of the Board of Studies of the Department of Policy Studies held on 17 June 2020 with regard to amendments to the M.A. (Public Policy and Sustainable Development) programme.

TS/AC/48.22.1 The Academic Council resolved to approve the revised programme outline as placed at **Enclosure 18**.

Item No.23: To consider and review outline M.Sc. (Plant Biotechnology) programme. Dr Udit Soni presented the recommendation of the Board of Studies of the Department of Biotechnology held on 4 March 2020 and 4 July 2020 with regard to amendments to the M.Sc. (Plant Biotechnology) programme. The following suggestions were made by the members:-

- (a) The programme to be aligned with the Choice Based Credit System of UGC.
- (b) The feasibility of diversifying into other streams of Biotechnology was discussed and suggested.
- (c) It was discussed that one such diversification could be Microbial Biotechnology considering the facilities and expertise at TERI SAS and TERI. In that case, the existing MSc programme will be renamed as "M.Sc. Biotechnology," with specialisations offered in two streams namely, Plant Biotechnology and Microbial Biotechnology. More streams may be added in future.
- (d) Therefore, two streams, namely Plant Biotechnology and Microbial Technology would be offered under the M.Sc. Biotechnology Programme.

TS/AC/48.20.1 The Academic Council resolved to approve the revised outline of M.Sc. (Geoinformatics) programme as placed at **Enclosure 16**.

Item No 21: To review and include degree in *Bachelor of Vocation (B.Voc.)* as an eligibility criterion for admission to M.Sc. (Water Science and Governance), PG Diploma (Water Science and Governance) and PG Certificate Course in Water Science and Governance offered by Department of Regional Water Studies. Dr Arun Kansal presented the recommendation of the Board of Studies (**Enclosure 17**) of the Department of Regional Water Studies held on 01 July 2020 with regard to inclusion of B.Voc. as an eligibility criteria for admission to M.Sc. (Water Science and Governance) programme.

TS/AC/48.21.1 The Academic Council resolved to approve the inclusion of the following degrees in the eligibility criteria for M.Sc. (Water Science and Governance), PG Diploma (Water Science and Governance) and PG Certificate Course in Water Science and Governance :-

B.Voc in Industrial Waste Management, Soil and Water Conservation, Industrial Chemistry, Industrial Waste Treatment Technology, Sustainable Agriculture.

Item No 22: To consider and review the outline of the Programme M.A. (Public Policy and Sustainable Development) offered by Department of Policy Studies. Dr L.N. Venkataraman presented the recommendation of the Board of Studies of the Department of Policy Studies held on 17 June 2020 with regard to amendments to the M.A. (Public Policy and Sustainable Development) programme.

TS/AC/48.22.1 The Academic Council resolved to approve the revised programme outline as placed at **Enclosure 18**.

Item No.23: To consider and review outline M.Sc. (Plant Biotechnology) programme. Dr Udit Soni presented the recommendation of the Board of Studies of the Department of Biotechnology held on 4 March 2020 and 4 July 2020 with regard to amendments to the M.Sc. (Plant Biotechnology) programme. The following suggestions were made by the members:-

- (a) The programme to be aligned with the Choice Based Credit System of UGC.
- (b) The feasibility of diversifying into other streams of Biotechnology was discussed and suggested.
- (c) It was discussed that one such diversification could be Microbial Biotechnology considering the facilities and expertise at TERI SAS and TERI. In that case, the existing MSc programme will be renamed as "M.Sc. Biotechnology," with specialisations offered in two streams namely, Plant Biotechnology and Microbial Biotechnology. More streams may be added in future.
- (d) Therefore, two streams, namely Plant Biotechnology and Microbial Technology would be offered under the M.Sc. Biotechnology Programme.

The two streams shall share a number of core courses and common electives with stream-specific core courses for each specialisation.

TS/AC/48.23.1 The Academic Council recommended that the Programme Outline to be revised with stakeholders inputs and be placed at the next meeting of the Academic Council for review.

There being no other items for discussion, the meeting was adjourned with a vote of thanks to the Chair.

Sd/
Capt Pradeep Kumar Padhy (Retd.)
Registrar

Enclosures:-

Enclosure 1
Enclosure 2
Enclosure 3
Enclosure 4
Enclosure 5
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Enclosure 18

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- (a) Course content should reflect explicitly the environmental part by adding some case studies etc.
- (b) Objectives of the course should justify the environmental statistics nomenclature else it should be called as Just "Statistics"
- (c) Members also raised concern on offering core credit course at masters level.

It was presented that the course content would be completely contextualized with respect to the environment with relevant concepts, case studies and applications explicitly specified in the course outline. It was also clarified that the course objectives and learning outcomes duly justified environmental statistics nomenclature and the special character of Environmental Statistics had been duly emphasized and widely covered in all the six modules.

TS/AC/48.18.1 The Academic Council resolved to approve the revised outlines of Course NRE111 -Environmental Statistics as amended and placed at **Enclosure 14**.

Item No. 19: To consider and review outline of the Programmes; M.Sc. (Water Science and Governance) and M.Tech. (Water Resource Engineering and Management) offered by the Department of Regional Water Studies. Dr Arun Kansal presented the recommendation of the Board of Studies of the Department of Regional Water Studies held on 01 July 2020. There was a suggestion that as PG Diploma and PG Certificate programme follows MSc (WSG) programme, the same should be mentioned both in the programme outline and in the eligibility criteria. Hence it was decided that PG Diploma and PG Certificate be included in the final document.

TS/AC/48.19.1 The Council resolved to approve the revised outline of the following Programmes offered by the Department of Regional Water Studies as placed at **Enclosure 15**.

- (a) M.Sc. (Water Science and Governance).
- (b) M.Tech. (Water Resource Engineering and Management).
- (c) PG Diploma in Water Science and Governance.
- (d) Certificate in Water Science and Governance.

Item No.20: To consider and review outline of M.Sc. (Geoinformatics) programme. Dr Anu Rani Sharma presented the recommendation of the Board of Studies of the Department of Natural Resources with respect to revised outline of M.S. (Geoinformatics) programme. She informed that MSc (ESRM) programme offered by Department of Energy and Environment offered NRE111 Environmental statistics course in the first semester which was a core course for MSc Geoinformatics programme. She mentioned that the course had now been changed from 3 credits to 4 credits with due amendments in course outline and due to this, MSc Geoinformatics first semester credits were increased from 15 to 16 and total credits had gone up to 71.

ITEM NO. 5(b) To consider and approve outline of courses for M.Tech (UDM). The recommendations of the meeting of the Board of Studies of Department of Energy and Environment held on 08 June 17 w.r.t. MTech (UDM) were placed before the Council. A detailed discussion was held on the course outlines. The following suggestions were provided: -

- Learning outcome of the course 'Urban housing policy & practice' could be rephrased.
- Modelling base (module 2) of the course 'Urban system modelling' be enhanced and module 3 of the course be developed as a separate OR course.

TU/AC 40.5(b).1 The Council resolved that course outlines of the following three courses of MTech(UDM) programme be accepted as amended (vide Annexure 3) and approved:

-

Ser	Course	Type	Cr
1	Sustainable urban transport	Elective	2
2	Urban housing policy & practice	Elective	2
3	Urban system modelling	Elective	2

ITEM NO. 6 To consider and approve the outline of a course for MSc (Plant Biotechnology) /PhD programmes. The recommendations of the meeting of the Board of Studies of Dept of Plant Biotechnology held on 09 Jun 2017 were placed before the Council. A detailed discussion was held on the course outlines Dr Malati recommended that cosmetic application of nanomaterials might be included. Dr Kamna suggested that the theoretical component could be covered separately in a different course and the contents of the proposed course reduced. The Council recommended that practical components be incorporated and modules be rearranged for purpose of linearity.

TU/AC 40.6.1 The Council resolved that the course outlines of the following course of MSc (Plant Biotechnology)/PhD programmes be accepted as amended (Annexure 4) and approved: -

Ser	Course	Type	Cr
1	Nanomaterials: Introduction and applications	Elective	2

ITEM NO. 7(a). To consider and approve the programme structure of MTech (REEM). The recommendations of the meeting of the Board of Studies of Department of Energy & Environment w.r.t. MTech (REEM) programme held on 12 June 2017 were placed before the Council.

TU/AC 40.7(a).1 The Council resolved that following programme structure of MTech (REEM) be accepted as amended and approved.

Semester 1(22 Credits)

❖ Nine Core courses

Ser	Course	Type	Cr
1	Fundamentals of thermal and electrical engineering	Core	2
2	Renewable energy resource characteristics	Core	4

3	Power system engineering	Core	3
4	Heat transfer	Core	4
5	Conventional energy and environmental implications	Core	2
6	Technical Writing (Communication skills and technical writing)	Core	2
7	Energy conservation and management	Core	2
8	Introduction to management techniques – I	Core	1
9	Energy Lab – I (Power system lab and Heat transfer lab)	Core	2

Semester 2 (22 Credits)❖ **Eight core courses**❖ **Two optional courses**

Ser	Course Name	Type	Cr
1	Field visits / exposure to RE plants	Core	1
2	Solar technologies	Core	4
3	Wind, small hydro and RE hybrid systems	Core	2
4	Biomass and other renewable technologies	Core	3
5	Renewable energy policy and regulations	Core	3
6	Optimization techniques for energy management and planning	Core	3
7	Renewable energy project and management	Core	3
8	Energy lab – II	Core	3
9	Fluid mechanics and wind turbine models*	Elective	3
10	Applied numerical methods*	Elective	3

* Optional courses

Semester 3❖ **Two core courses + Summer internship/minor project (2 credits)**❖ **Total required credits = 15 [6 Core + 9 elective]**

Ser	Course Name	Type	Cr
1	Energy Economics	Core	3
2	Energy simulation lab	Core	3
3	Introduction to management techniques – II	Elective	2
4	Solar photovoltaic power generation	Elective	3
5	Solar thermal power generation	Elective	3
6	Wind power generation	Elective	3
7	Biofuels and decentralized Energy Systems	Elective	3
8	Building energy and green building	Elective	3
9	Grid integration of renewable energy	Elective	3
10	Energy audit	Elective	3
11	Waste to energy	Elective	2
12	Independent study	Elective	3

Note:

1. Students need to acquire 9 credits through electives.
2. Elective courses having less than seven students will not be offered.

Semester 4 (15 Credits)❖ **One core course**

Ser	Course Name	Type	Cr
1	Major project	Core	15

ITEM NO. 7(b). To consider and approve the outlines of courses for MTech (REEM). The recommendations of the meeting of the Board of Studies of Department of Energy & Environment w.r.t. MTech (REEM) programme held on 12 June 2017 were placed before the Council. A detailed discussion was held on the course outlines and the following were recommended: -

- Learning outcomes of the Course IMT-I be changed and more reading material added.
- Experiments of energy lab I need to be rephrased.
- MHD being an older method of power generation and not in use hence might be removed from the course 'Biomass and other renewable technologies'.
- In the course, 'Renewable energy policy and regulations' topics on energy trading and energy exchange to be included.
- In the Optimization techniques for energy management and planning course, 'Queuing theory' is not directly related to optimization of renewable energy systems, rather more applicable to supply chain related courses hence not to be included.
- Integer programming to be included in the course 'Optimization techniques for energy management and planning'.
- The course 'wind small hydro and RE hybrid systems' be renamed as Wind, small hydro and hybrid technologies.
- The credits for optional courses should be over and above the total credits required to obtain the degree.
- Energy pricing to be included 'Energy economics' and the course renamed as "Energy economics and pricing".

TU/AC 40.7(b).1. The Council resolved that outline of following courses of **MTech (REEM)** (vide Annexure 5) be accepted as amended and approved.

Ser	Semester 1	Cr
1	Fundamentals of thermal and electrical engineering	2
2	Renewable energy resource characteristics	4
3	Power system engineering	3
4	Heat transfer	4
5	Conventional energy and environmental implications	2
6	Technical writing	2
7	Energy conservation and management	2
8	Introduction to management techniques - I	1

ITEM NO. 6 To consider and approve the course outlines of Second Semester of One Year LLM (Environment and Natural Resources Law) and LLM (Infrastructure and Business Law) programmes. The recommendations of the meeting of the Board of Studies of Centre for Post Graduate Legal Studies held on 05 December, 2016 w.r.t. LLM Programmes were placed before the Council. Prof Kandpal recommended that the essay component in evaluation criteria in all the courses be substituted with assignments/term papers. Prof Suneja recommended that title of the course *Urban Infrastructure Law* be changed to Urban Infrastructure Law and Management. Members recommended that the modules in courses be rearranged for demonstrating a logical flow.

TU/AC 39.6.1 The Council resolved that the Programme structure and Course outlines of the following fourteen courses of LLM programmes be accepted as amended (Annexure 2) and approved: -

Environment and Natural Resources Law Stream

Ser	Title	Core/Elective	Credits
1.	International Environmental Law	Core	3
2.	Mining and Mineral Laws	Core	2
3.	Environmental Aspects of Business Activities	Core	2
4.	Forest Law and Policy	Core	2
5.	Energy Law	Elective	2
6.	Climate Change and Law	Elective	2
7.	Biotechnology Law	Elective	2

Infrastructure and Business Law Stream

Ser	Title	Core/Elective	Credits
1.	Business and Taxation Laws	Core	3
2.	Contracts Law and Management	Core	2
3.	Infrastructure Project Finance Law	Core	2
4.	Legal Aspects of Bidding and Public Private Partnership	Core	2
5.	Urban Infrastructure Law & Management	Elective	2
6.	Telecommunication Law	Elective	2
7.	Electricity Law, Reforms and Practice	Elective	2

ITEM NO. 7 To consider and approve revised Programme structure for MTech Urban Development and Management (UDM). The recommendations of the meeting of the Board of Studies of Department of Policy Studies w.r.t. MTech (UDM) programme held on 13 Jun 2016 were placed before the Council.

TU/AC 39.7.1 The Council resolved that following programme structure of MTech Urban Development and Management (UDM) be accepted and approved.

Number of semesters: 4

Total credits: 72 (No change in total credits)

SEM I: 23 Credits from 8 Courses

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Ser	Course	Type	Credits
1	Urban Governance	Core	4
2	Project Development and Management	Core	3
3	Theories of Urbanisation	Core	3
4	Sustainable Provision and Management of Urban Services	Core	3
5	Urban Finance	Core	3
6	Urban Development Policies and Programmes	Core	3
7	Stochastic Modelling for Urban Development	Core	4
8	Technical Writing (Communication skills and technical writing)	Audit	

Change in Semester I: Increase in Credits of Semester I from 22 credits to 23 credits with increase of 1 credit in Stochastic Modelling for Urban Development

SEM II: 16 Credits from 6 Core Courses

Ser	Course	Type	Credits
1	Real Estate Development	Core	3
2	Geoinformatics for Urban Development	Core	3
3	City and Regional Planning and Management	Core	3
4	Urban Ecology and Environment	Core	3
5	Research Methodology	Core	2
6	Regeneration and City Competitiveness	Core	2

Change in Semester II: Shifting of Elective courses to the Third Semester, and therefore, a reduction in the credits in the Second Semester from 20 to 16 credits.

SEM III: 18 Credits (12 credits from Major Project Part 1; 2 credits from 1 Core Course; and 4 credits from 2 Elective Courses)

Ser	Course	Type	Credits
1	Sustainable Urban Transport	Elective	2
2	Urban Water Supply and Waste Water	Elective	2
3	Energy Efficient Buildings	Elective	2
4	Urban Disaster Management and Climate Resilient Cities	Elective	2
5	Operations Research	Core	2

Change in Semester III:

1. Reduction in the duration of Major Project Part 1 (engagement with Municipal Corporations and parastatals) from existing 19 weeks to 13 weeks. This was decided on the basis of feedback from the ULBs and students from previous batches.
2. Reduction in the credits of Major Project Part 1 from 15 credits to 12 credits
3. Shifting of existing elective courses to the Third Semester and taught over a duration of 4-6 weeks
4. Introduction of 2 credits core course on Operations Research.

Academic Council – 39 /23.12.2016

SEM IV: 15 Credits from Major Project Part 2 (Internship with bilateral or multilateral agencies, consulting firms, financial institutions, Non-Government Organisations, research organizations, ULBs and parastatals). No change

There being no other items for discussion, the meeting was adjourned with a vote of thanks to the Chair.

These minutes have the approval of the Chairperson, Academic Council.

Sd/
Capt Pradeep Kumar Padhy (retd.)
Registrar

Enclosures: -

Annexure 1 : MBA (infrastructure)
Annexure 2 : LLM programmes

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2. All members of the Academic Council
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4. Registrar, TERI University

TU/AC 40.3(b).1 The Council resolved that Course outlines of the following two courses for MBA (BS) & MBA(infrastructure) programmes be accepted as amended (vide Annexure 2) and approved:-

Ser	Course	Course	Type	Cr
1	Accounting and finance for sustainability	MBA(BS)/ MBA(Infra)	Core	3
2	Statistical methods for Management	MBA(Infra)	Core	3

ITEM NO. 4. To consider and approve inclusion of electives for MBA (BS) programme. The recommendations of the meeting of the Board of Studies of Department of Business & Sustainability held on 12 June 17 w.r.t. MBA(BS) programmes were placed before the Council. Dr Nandan stated that as per the existing practice students could choose any approved course as an optional course, hence academic council approval might not be required for finalisation of such electives. Dr Seth stated that the University had moved towards a system where electives across the University would be available to all students of any programmes, hence proposals on electives for programmes which were already approved need not be brought to the Council. He suggested that the issue could be discussed in the MPEC and the list of electives for a particular programme could be finalized. Dr Kaushik suggested that, as practiced in other Universities, the electives offered could be programme specific or open types.

TU/AC 40.4.1. The Council resolved that courses under any approved programme could be offered as electives for other programme.

ITEM NO. 5(a). To consider and approve the revised programme structure of the third semester of M.Tech (UDM). The recommendations of the meeting of the Board of Studies of Department of Energy and environment held on 08 June 17 w.r.t. MTech(UDM) were placed before the Council.

TU/AC 40.5(a).1 The Council resolved that following programme structure of the MTech (UDM) be accepted as amended and approved: -

Semester 3: 18 Credits (12 credits from Major Project Part 1; 2 credits from 1 Core Course; and 4 credits from 2 Elective Courses)

Ser	Course	Type	No of credits
1	Major project part 1	Core	12
2	Urban systems modelling	Core	2
3	Urban housing policy and practice	Elective	2
4	Energy efficient buildings	Elective	2
5	Sustainable urban transport	Elective	2
6	Urban disaster management and climate resilient cities	Elective	2

- (a) Course content should reflect explicitly the environmental part by adding some case studies etc.
- (b) Objectives of the course should justify the environmental statistics nomenclature else it should be called as Just "Statistics"
- (c) Members also raised concern on offering core credit course at masters level.

It was presented that the course content would be completely contextualized with respect to the environment with relevant concepts, case studies and applications explicitly specified in the course outline. It was also clarified that the course objectives and learning outcomes duly justified environmental statistics nomenclature and the special character of Environmental Statistics had been duly emphasized and widely covered in all the six modules.

TS/AC/48.18.1 The Academic Council resolved to approve the revised outlines of Course NRE111 -Environmental Statistics as amended and placed at **Enclosure 14**.

Item No. 19: To consider and review outline of the Programmes; M.Sc. (Water Science and Governance) and M.Tech. (Water Resource Engineering and Management) offered by the Department of Regional Water Studies. Dr Arun Kansal presented the recommendation of the Board of Studies of the Department of Regional Water Studies held on 01 July 2020. There was a suggestion that as PG Diploma and PG Certificate programme follows MSc (WSG) programme, the same should be mentioned both in the programme outline and in the eligibility criteria. Hence it was decided that PG Diploma and PG Certificate be included in the final document.

TS/AC/48.19.1 The Council resolved to approve the revised outline of the following Programmes offered by the Department of Regional Water Studies as placed at **Enclosure 15**.

- (a) M.Sc. (Water Science and Governance).
- (b) M.Tech. (Water Resource Engineering and Management).
- (c) PG Diploma in Water Science and Governance.
- (d) Certificate in Water Science and Governance.

Item No.20: To consider and review outline of M.Sc. (Geoinformatics) programme. Dr Anu Rani Sharma presented the recommendation of the Board of Studies of the Department of Natural Resources with respect to revised outline of M.S. (Geoinformatics) programme. She informed that MSc (ESRM) programme offered by Department of Energy and Environment offered NRE111 Environmental statistics course in the first semester which was a core course for MSc Geoinformatics programme. She mentioned that the course had now been changed from 3 credits to 4 credits with due amendments in course outline and due to this, MSc Geoinformatics first semester credits were increased from 15 to 16 and total credits had gone up to 71.

Sarangi, presented the proposed amendments and solicited the comments and inputs from the Council Members.

TS/AC/48.11.1 The Council resolved to approve the following:-

- (a) Amendments to the TERI SAS Ph.D. Rules 2019 placed at **Enclosure 6**.
- (b) The cases of co-supervision status of former faculty approved with respect to Reg Nos 1229REB and 1212REA stands revoked and the former faculty be provided Supervisor status.
- (c) Since Reg No 1229 REB had already been awarded the Ph.D. on 14th Nov 2019 in the Convocation and all approval documents and the thesis submitted by the student recorded the name of another internal faculty as the Supervisor, all the records be amended reinstating the former faculty member as Supervisor and the internal faculty members as Co-supervisor.

Item No.12: To prescribe courses /programmes of study leading to degree and diploma of the Institution Deemed to be University. The Registrar informed that based on the relevant statutory approvals the list of the programmes as offered by TERI School of Advanced Studies had been updated and placed at **Enclosure 7**.

TS/AC/48.12.1 The Academic Council resolved to recommend the list of Programmes of TERI School of Advanced Studies placed at **Enclosure 7** for Board's consideration.

Item No 13: To consider and approve outline of Ph.D. programme offered by Department of Energy and Environment. Dr Chander Kumar Singh presented the recommendation of the Board of Studies (BoS) of the Department of Energy and Environment held on 26 June 2020 with regard to Ph.D. programme outline offered by the Department. Dean (Academic) informed that Ph.D. programme outline of all other Departments/Centre were also prepared in similar lines and approved by respective BoS of the Departments/Centre, however, due to paucity of time Ph.D. programme outline of only one Department is being presented in this meeting,

TS/AC/48.13.1 The Academic Council resolved to approve the programme outline of Ph.D. programme of the Department of Energy and Environment as placed at **Enclosure 8**.

Item No.14: To consider and approve outline of following mandatory Courses for all Ph.D. programmes:-

- (a) *Research Methodology* Course offered by Department of Policy Studies. Dr Swarup Dutta presented the recommendation of the Board of Studies of the Department of Policy Studies held on 17 June 2020 with regard to the Research Methodology course offered for all Ph.D. programmes. The following suggestions were received:-



Board of Studies (BoS) MSc Plant Biotechnology (M.Sc. PBT), Meeting

Department of Biotechnology (DBT),
TERI School of Advanced Studies (TERI SAS),
Vasant Kunj, New Delhi

4th July 2020
03:00 pm to 4:30 pm,
Online Microsoft Team
TERI SAS, New Delhi

Following members were present in the meeting:

1. Dr. Shashi Bhushan Tripathi (HOD, DBT, TERI SAS, Chairperson, BoS)
2. Prof. Anandita Singh (Professor, DBT TERI SAS)
3. Prof. Ramakrishnan Sitaraman (Professor, DBT TERI SAS)
4. Dr. Chaithanya Madhurantakam (Associate Professor, DBT TERI SAS)
5. Dr. Pallavi Somvanshi (Associate Professor, DBT TERI SAS)
6. Dr. Udit Soni (Program Coordinator M.Sc. PBT DBT TERI SAS, Secretary BoS)
7. Prof. Ashis Kumar Nandi,
School of Life Sciences, Jawaharlal Nehru University, New Delhi
8. Prof. Shailendra Goel,
Department of Botany, University of Delhi, New Delhi
9. Dr. Sanjay Saxena, General Manager & HoD – Investment, BIRAC
10. Dr. Manoj Shrivastava, Principal Scientist
Centre for Environment Science and Climate Resilient Agriculture, ICAR

1. Following agenda points were taken up-

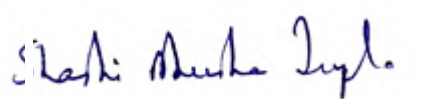
- 1.1. Ph.D. Programme Outline, Department of Biotechnology, TERI School of Advanced Studies, New Delhi Ph.D. Programme Outline.
- 1.2. Course outline of Major Project 4th Semester MSc Plant Biotechnology, TERI SAS.
- 1.3. Discussion on approved M.Sc. PBT programme outline (BoS held on 4th March 2020)

2. Following are the excerpts of discussions and deliberations in the meeting-

- 2.1. Ph.D. programme coordinator, Department of Biotechnology, Dr. Udit Soni presented an overview of “Draft Ph.D. Programme Outline, Department of Biotechnology, TERI School of Advanced Studies, New Delhi Ph.D. Program

Coordinator also presented “TERI SAS PhD Regulations 2019_17122019 _ Edited” and “PhD Programme Common Outline 20062020, TERI SAS”

- 2.2. The salient features of the draft “Ph.D. Programme Outline, Department of Biotechnology, TERI School of Advanced Studies, New Delhi Ph.D” were discussed and reviewed by all members present. Critical suggestions were made, and modifications were incorporated. The modified draft was approved by all the members. The finalised version of “Ph.D. Programme Outline, Department of Biotechnology, TERI SAS” is attached with the minutes of BoS as **Annexure 1, page 3 to 5.**
- 2.3. The course outline for the Major Project (4th Semester) within the MSc PBT programme as drafted during Departmental meeting (DBT) held on 5th December 2019, was presented. The members reviewed the course outline and suggested a few modifications. All the recommendations and suggestions have been incorporated in the final version of the course outline for the Major Project as **Annexure 2, page 6.**
- 2.4. The future plans on programme structure of M.Sc Plant Biotechnology, (approved in BoS 3rd March 2020), were discussed. Department faculty also shared that informal feedback received from stakeholders and student fraternity in past indicated a need for teaching programmes that do not restrict career avenues of students.
- 2.5. BoS members encouraged and advised the Department faculty to explore possibilities of diversification of the current post-graduate programme in terms of various biotechnology relevant sectors. Following plan of action was discussed by the members-
 - 2.5.1 First:- As per the course structure approved in the earlier BoS held on 4th December 2019, multiple courses for Elective 1 and 2 are to be offered to align the program with the CBCS system of UGC, starting with the academic year 2021-22.
 - 2.5.2 Second - The feasibility of diversifying into other streams of Biotechnology was discussed and agreed. It was discussed that one such diversification could be Microbial Biotechnology considering the facilities and expertise at TERI SAS and its parent organisation TERI. Such diversification would require that the existing MSc programme be renamed as "M.Sc. Biotechnology," with specialisations offered in Plant or Microbial Biotechnology. The two streams will share a number of common courses with several discipline-specific courses and/or electives for each specialisation.



Shashi Bhushan Tripathi

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Energy and Environment	M.Tech (UDM)	MEU 102 – Minor project – Part 1	3	6
		MEU 104 – Major project – Part 2	4	6
Energy and Environment	M.Sc (ESRM)	NRE 103 – Minor project	Summer break	6
		NRE 104 – Major project	4	6
Energy and Environment	M.Tech (REEM)	ENR 103 – Field visits/exposure to RE plants	2	6
		ENR 108 – Summer internship	3	6
		ENR 109 – Major project	4	6
Policy Studies	M.Sc (Economics)	MPE 108 – Master thesis	4	6
Business and Sustainability	MBA (SM)	PPM 100 – Minor project	3	6
	MBA (SM)	PPM 102 – Major project	4	6
	MBA (IM)	BSI 102 – Minor project	3	6
	MBA (IM)	BSI 106 – Major project	4	6
Department of Natural Resources	M.Sc (Geoinformatics)	NRG 107 – minor project	3	6
		NRG 104 - Major project	4	6

With respect to the presentation given by Dr Montu Bose on behalf of the Department of Business and Sustainability, Dr Nandan Nawn suggested that it would be better to include indicative practical hours in the course. It was suggested by Prof Arun Kansal that this can be taken care of during realignment. Prof. Kandpal was of the view that LTP format for all the programmes should not be different. Prof. Manipadma Datta agreed with Prof. Kandpal's view and said the issue would be looked into for bringing uniformity.

After all the deliberations, the Chairperson concluded that we should be consistent across programmes. Colleagues across Departments can look into it and develop it further based on the suggestions given by external members.

Prof. Datta suggested that we should stick to two practical hours as equal to one theory hour and requested the HoD to amend it accordingly so that we do not have any disparity.

TS/AC/49.9.1 The Academic Council resolved to approve the guidelines and course outlines of project/thesis/internships as placed in **Enclosure 5**, provided the suggestions are incorporated and amended accordingly.

Item No. 10: To consider and approve outline of Ph.D. programmes

Prof. Arun Kansal requested the members to consider approving the proposed outline of Ph.D. programme offered by various Departments as placed at **Enclosure 6**. He

further submitted that these are proposed in view of UGC guidelines and NAAC requirements. They have been discussed internally for their relevance to programme objectives and learning outcome and have been recommended by their respective Board of Studies. The Ph.D. outlines of several programmes of the university were approved by Forty-Eighth Academic Council. Presented below are the outlines for the remaining Programmes. He then requested the respective head of the Department to present the outline of Ph.D. Programme.

Department	Enclosure Number
Natural Resources	7
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TS/AC/49.10.1 The Academic Council resolved to approve the programme outline of Ph.D. programme of the Department of Natural Resources, Department of Business and Sustainability and Department of Policy Studies as placed at **Enclosure 6**.

Item No. 11: To consider and approve new programme structure of the M.Sc. (Biotechnology) Programme offered by Department of Biotechnology.

Dr. Shashi Bhushan Tripathi presented to the members the new programme structure of the M.Sc. (Biotechnology) Programme offered by the Department of Biotechnology. He requested the Academic Council to discuss and approve the new programme structure and course outlines of M.Sc (Biotechnology) programme, which are placed at **Enclosure 7**. The proposed programme will replace the existing M.Sc (Plant Biotechnology) programme from the Academic year 2021-22. He further submitted that:

- i) The rationale behind the proposed new programme was presented in the Forty-Eighth AC meeting.
- ii) The new programme has been developed in consultation with various stakeholders and the analysis of their feedback is available with the department.
- iii) The programme and course outline has been reviewed and recommended by the Board of Studies.
- iv) The new programme has been discussed internally.

Prof. Arun Kharat suggested that there is a need to improve the course structure with respect to the two specializations proposed to be taught. The course structure and the title does not seem to match. It has to be strengthened further. Similarly, the feedback of Alumni and stakeholders should be much broader.

Prof. Kandpal wanted to know whether student lab time and classroom time has been taken into account. Prof. Vivek Suneja emphasized on the need to look into the inter-disciplinarity of the areas as recommended in the National Education Policy.

The Chairperson concluded the deliberations by stating that a lot of efforts have gone into developing this programme by the Department. Board of Studies has given its

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TERI School of Advanced Studies
Coca- Cola Department of Regional Water Studies

Minutes of the Board of Studies Meeting

Date: 01 July 2020

Time: 10:00-12:00 Noon

A meeting of the Board of Studies (BoS) of the Coca Cola Department of Regional Water Studies was held online, through Microsoft Teams on 01/07/2020 during 10:00-12:00 Noon.

External Members –

1. Prof. R. B. Singh (Delhi University)
2. Prof Rakesh Mehrotra (DTU)

Internal Members present –

1. Prof. Arun Kansal (HoD)
2. Dr Fawzia Tarannum
3. Ms Ranjana Ray Chaudhuri
4. Dr Sherly M A

Summary of Approvals

- 1) BoS approved the minor and major project course outlines for M.Sc and M.Tech programmes given in Annexure 1 to 4.
- 2) BoS approved the second semester field trip course outline given in Annexure 5.
- 3) BoS approved the department specific Ph. D. programme outline given in Annexure 6.
- 4) BoS approved the removal of one credit assigned to the field trip in Semester 1.
- 5) BoS approved the inclusion of discipline-specific B.VoC programmes in the eligibility criteria for admission in MSc programme of the Department.
- 6) BoS granted automatic approval of changes in the contents and assigned credits of courses, whenever done in future, that are adopted from other programmes of TERI SAS.

With the above changes, the BoS approved the revised course outlines of minor/major project for M.Tech and M.Sc programmes, which are presented in the Annexure 1 to 4 of the minutes.

2. Review and approval of course outline for 'Field trip on water management practices' in second semester.

Dr Fawzia informed the BoS on the conduct and evaluation of the 'Field trip 2' in the past which had one credit assigned to it and was conducted in the second semester for M.Sc and M.Tech programme. The name change of the course to ***Field trip on water management practices*** and the course outline were presented to the BoS.

The BoS proposed the following suggestions:

- Prof. Singh suggested that one or two case studies for best practices in water management would enhance quality of the course. For this, Prof. Kansal suggested for a report on the sites/plants visited so that the best practices can be recorded.
- Prof. Singh also suggested that we should encourage students to take up comparable case studies from foreign countries too for which Dr Fawzia mentioned that case study based teaching is being practiced in the department.

With the above changes, the BoS approved the new course outline of the Field trip which is presented in the Annexure 5 of the minutes.

3. Review and approval of the Ph.D. programme in Water Science and Governance

Dr. Fawzia shared the background to the Ph.D. programme being run by the university since its inception and each Department/Centers following a university wide common guideline. The department specific programme guideline and the proposed nomenclature for the programme were presented by her to the BoS for approval. The BoS was informed that every Ph.D. programme would still adhere to the Ph.D. regulation and guidelines of the university.

The BoS gave the following suggestions:

- The BoS members suggested the following two broad themes for the Ph.D. programme being offered by the department:
 - Water Science, Governance and Sustainability
 - Water Resources Engineering and Management
- Prof. Singh suggested that in Research Methodology, equal emphasis should be given on qualitative and quantitative techniques.

With the above changes, the BoS approved the revised Ph.D. programme outline which is presented in the Annexure 6 of the minutes.

4. Removal of one credit assigned for field trip in first semester of all programmes offered by the Department.

The BoS was informed that removal of credit was already approved in the BoS meeting held in 2019, but we missed to present it in the AC meeting. Approval is sought again from the BoS to enable us to present it in the forthcoming AC meeting.

The BoS members approved the removal of credit.

5. Review and approval of inclusion of select discipline specific B.VoC programmes in the eligibility criteria for admission in M.Sc programme of the Department.

The inclusion of B.Voc programme in the following disciplines as the eligibility criteria for the M.Sc. (Water Science and Governance) programme, which was discussed in the MPEC (Masters Programme Evaluation Committee) meeting was presented before the BoS.

- Industrial Waste Management
- Soil and Water Conservation
- Industrial Chemistry
- Industrial Waste Treatment Technology
- Sustainable Agriculture

The UGC letter D.O.No.F.2-7 I20r 4(CC/NVEQF)/Misc. dated 04 Aug 2016 recognizing B.Voc. at par with other Bachelor Degrees and para (ii) stating the 'Students with B.Voc. Degree should be considered eligible for the trans-disciplinary vertical mobility into such courses where entry qualification is a Bachelor Degree without specific requirement in a particular discipline' (Annexure 7) and the Gazette of India Notification 'The Gazette of India, July 5, 2014, (Asadha 14, 1936), Part III-Section 4, Page 2990, S.No. 55 on the eligibility criteria of M.Sc programmes. The notification says that the entry criteria for M.Sc. Program is Bachelor's degree. (Relevant sections in Annexure 8) were presented before the BoS.

The BoS members deliberated on the above programs in its entirety and having found a strong alignment of the course outline with the M.Sc (Water Science and Governance) programme with these approved it for inclusion as the eligibility criteria for the M.Sc. (Water Science and Governance) Programme.