10, Institutional Area, Vasant Kunj,
New Delhi 110 070

MINUTES OF THE FORTY SIXTH MEETING OF THE BOARD OF MANAGEMENT

The Forty Sixth meeting of the Board of Management was held on 24 May 2023 at 1000 hours. The following were present:-

PRESENT:

Members
Prof. Prateek Sharma, Chairperson
Prof Basabi Bhaumik
Dr Swati Basu
Mr O P Agarwal
Dr Kiran Kumar Sharma
Prof. Shaleen Singhal
Prof. Ramakrishnan Sitaraman
Prof. Anandita Singh
Dr Sukanya Das
Mr Kamal Sharma, Secretary

Special invitees
Dr Vibha Dhawan
Prof Vinay S.P. Sinha
Dr Shruti Sharma Rana

Leave of absence: Dr Sachin Chaturvedi and Prof. Nitya Nanda could not attend the meeting.

Prof Prateek Sharma welcomed all the members. He introduced Dr O.P. Agarwal and Dr Kiran Kumar Sharma to the BoM members, who were attending the Board meeting for the first time. He requested the Registrar to take up the agenda items for the BoM.

Item No. 1: To confirm the minutes of the Forty Fifth Meeting of the Board of Management held on 26 December 2022

The Registrar informed that the minutes of the Forty Fifth meeting of the Board of Management held on 26 December 2022 were circulated to the members of the Board and no comments were. The Board may, consider confirming the minutes.

TS/BM/46.1.1 The Board resolved that the minutes of the 45th meeting of the Board of Management held on 26 December 2022 be confirmed.

Prof Prateek Sharma briefed the members about the initiative to launch Five-Year Integrated Postgraduate Programmes (FYIPP) and Four-Year Undergraduate Programmes (FYUP) before the detailed presentations by the department heads. He provided the salient features of the programmes and how

these programmes provided opportunities to implement the various provisions of the National Education Policy 2020 (NEP), including the multiple entry and multiple exit options. He then requested the Registrar to take up the agenda items.

Item No. 2: Launching of new five-year Integrated Postgraduate Programmes in (i) Data Science and (ii) Environmental Studies

Prof Vinay S.P. Sinha presented to the Board the new FYIPP in Data Science and FYIPP in Environmental Studies as per NEP 2020 as placed at **Enclosure 1**. He mentioned that there are provisions for students to earn B.Sc. (Honours)/B.Sc. (Honours with Research) after completing four years, which can be offered as a separate four-year undergraduate programme (FYUP); a student completing five years would be awarded dual degrees – B.Sc. (Honours)/B.Sc. (Honours with Research) & M.Sc. The programme structure has been designed based on the National Education Policy (NEP) 2020 and has the Multiple Entry and Multiple Exit options as per the latest guidelines issued by the UGC. The Board after some minor modifications approved the launch of the two new five-year Integrated Postgraduate Programmes in (i) Data Science and (ii) Environmental Studies.

TS/BM/46.2.1 The Board resolved to approve the launch of the new five-year Integrated Postgraduate Programmes in (i) Data Science and (ii) Environmental Studies placed as **Enclosure 1**.

Item No. 3: Launching of new five-year Integrated Postgraduate Programme in Economics

The agenda item circulated to the Board members was a FYIPP in Economics. However, after internal discussions and deliberations within the department, it was felt that the department is already offering a postgraduate programme in economics and it would be more appropriate to go for a FYUP in economics instead of FYIPP. Dr Sukanya Das, Head, Department of Policy and Management Studies presented to the Board new FYUP in Economics as per NEP 2020 as placed at **Enclosure 2**. The Board after deliberation approved the launch of the new FYUP in Economics.

TS/BM/46.3.1 The Board resolved to approve the launch of the new FYUP in Economics placed as **Enclosure 2**.

Item No. 4: Launching of BBA Honours/Honours with Research (Four Year Undergraduate Programme)

Dr Shruti Sharma Rana, Coordinator, Management programmes, presented to the Board BBA (Honours/Honours with research) (FYUP) as placed at **Enclosure 3**. The Board after deliberation approved the launch of the BBA (Honours/Honours with research) (FYUP).

TS/BM/46.4.1 The Board resolved to approve the launch of the BBA (Honours/Honours with Research) (FYUP) placed as **Enclosure 3**.

Item No. 5. Matters of information

(a) Resignations: The following faculty have resigned from their posts with the approval of the Vice Chancellor: -

Sr. No.	Name	With effect from
1	Dr Kavita Sardana	23 January 2023
2	Dr Sapan Thapar	24 January 2023
3	Dr Abhijit Datey	30 January 2023
4	Dr Sherly M A	14 February 2023
5.	Dr Shikha Mittal Shrivastav	28 February 2023
6.	Dr Anu Rani Sharma	10 March 2023
7	Dr L N Venkataraman	14 May 2023

The Board noted the matter

(b) **New Joining's**: The following faculty members have joined with the approval of the Vice Chancellor

Sr. No.	Name	Designation	With effect from
1	Dr Sanyyam Khurana	Assistant Professor	6 February 2023
2	Dr Priyanka Arora (Adhoc)	Assistant Professor	13 March 2023
3	Dr Moumita Acharyya	Assistant Professor	15 March 2023
4	Ms Ann Francis	Assistant Professor	17 April 2023

The Board noted and resolved to approve the appointments. It was also suggested that in addition to designation, level of the appointment should also be mentioned which was noted.

Item No. 6: Any other item with the permission of the Chair

(a) To apprise the Board about the preparedness of submission of AQAR for the year 2021-22: Dr. Naqui Anwer (Coordinator – IQAC) has informed the members of the BoM that the process of submission of AQAR 2021-22 has been started. The last date of submission as notified by NAAC is 31st May 2023. He further informed that the AQAR is divided into seven criteria – Criteria 1: curricular aspects; Criteria 2: teaching, learning and evaluation; Criteria 3: research innovation and extension; Criteria 4: infrastructure and learning resources; Criteria 5: student support and progression; Criteria 6: governance, leadership and management; and Criteria 7: institutional values and best practices. Dr Anwer further stated that evidence-based information needs to be uploaded against all the metrics spread over the above seven criteria. The final PDF generated after submission of all the information, for each metrics corresponding to all the criteria, shall be circulated to the members of BoM.

The Board noted the matter.

There being no other points the meeting concluded at 1205 hours.

Sd/-
Kamal Sharma
Registrar (Acting)

Enclosures:-

1. FYIPP in Data Science and Environmental Studies
2. FYUP in Economics
3. BBA (Honours/Honours with research) (FYUP)

Distribution: -
Electronic Copy:
1. Chancellor, TERI School of Advanced Studies
2. Vice Chancellor, TERI School of Advanced Studies
3. All members of Board of Management
4. Website

Printed Copy:
5. Registrar, TERI School of Advanced Studies

Enclosure 1

Approval of Proposed course structure in - Four Year Under Graduate Programme in Data Science (BSc Honours/BSc Honours with Research);Four Year Under Graduate Programme in Environmental Studies (BSc Honours/BSc Honours with Research); Five Year Integrated Post-Graduate Programme in Data Science (MSc in Data Science) and Five Year Integrated Post-Graduate Programme in Environmental Studies (MSc in Environmental Studies)

NEP 2020 Definitions

A. Type of courses

1. Major:

Major discipline is the discipline or subject of main focus and the degree will be awarded in that discipline. Students should secure the prescribed number of credits (about 50% of total credits) through core courses in the major discipline

Disciplinary/Interdisciplinary major provides the opportunity to the student to pursue in-depth study of a particular subject or discipline (Section 5.1.1, Page 20, NEP 2020).

All major courses may be of 4 credits (Section 3.2.5a, Page 14, NEP 2020).

A studenthas to secure a minimum of 50% of credits from the major discipline (for a disciplinary/interdisciplinary degree) in order to obtain a 3-year/4-year **UG degree with single major**.

A student has to secure a minimum of 40% credits from the second major discipline in order to obtain a 3-year/4-year UG degree with double major[1].

	3-yearSingle Major		3-yearDouble Major	
Types	Credit	% Credit	Credit	% Credit
Major	60	50.0	72	40.0
Minor	24	20.0	72	40.0
Multidisciplinary	9	7.5	9	5.0
Ability Enhancement Courses (AEC)	8	6.7	8	4.4
Skill Enhancement Courses (SEC)	9	7.5	9	5.0
Value Added Courses (VAC)	6	5.0	6	3.3
Summer Internship (SI)	4	3.3	4	2.2
Total	120	100.0	180	100.0

[1] Thus, in order to obtain double UG degree, the student will have to take at least 50% from the first major and 40% from the second major discipline (minor discipline may be converted into the second major discipline: 60 major + 24 minor + 9 multidisciplinary + 8 AEC + 9 SEC + 6-8 VAC + 2-4 Summer internship (= 120 Credits) will be the credits distribution for UG degree with one major for 3-year UG, while 72 major 1 + 72 major 2 + 9 multidisciplinary + 8 AEC + 9 SEC + 6-8 VAC + 2-4 Summer internship (180 Credits) will be the credits distribution for UG degree with double major for 3-year UG.

2. Minor

Minor discipline helps a student to gain a broader understanding beyond the major discipline.

The minor stream courses include vocational courses which will help the students to equip with job-oriented skills. (Section 5.1, Page 20, NEP 2020).

Students will have the option to choose courses from disciplinary/interdisciplinary minors and skill-based courses relating to a chosen vocational education programme (Section 5.1.2, Page 20, NEP 2020).

All minor courses may be of 4 credits (Section 3.2.5a, Page 14, NEP 2020).

3. Multidisciplinary

All courses under the multi-disciplinary may be of 3-credits (Section 5.1.4, Page 22, NEP 2020).

I. Natural and Physical Sciences: Students can choose basic courses from disciplines such as Natural Science, for example, Biology, Botany, Zoology, Biotechnology, Biochemistry, Chemistry, Physics, Biophysics, Astronomy and Astrophysics, Earth and Environmental Sciences, etc.

II. Mathematics, Statistics, and Computer Applications: Courses under this category will facilitate the students to use and apply tools and techniques in their major and minor disciplines. The course may include training in programming software like Python among others and applications software like STATA, SPSS, Tally, etc. Basic courses under this category will be helpful for science and social science in data analysis and the application of quantitative tools.

III. Library, Information, and Media Sciences: Courses from this category will help the students to understand the recent developments in information and media science (journalism, mass media, and communication).

IV. Commerce and Management: Courses include business management, accountancy, finance, financial institutions, fintech, etc.,

V. Humanities and Social Sciences: The courses relating to Social Sciences, for example, Anthropology, Communication and Media, Economics, History, Linguistics, Political Science, Psychology, Social Work, Sociology, etc. will enable students to understand the individuals and their social behaviour, society, and nation. Students be introduced to survey methodology and available large-scale databases for India. The courses under humanities include, for example, Archaeology, History, Comparative Literature, Arts & Creative expressions, Creative Writing and Literature, language(s), Philosophy, etc., and interdisciplinary courses relating to humanities. The list of Courses that can include interdisciplinary subjects such as Cognitive Science, Environmental Science, Gender Studies, Global Environment & Health, International Relations, Political Economy and Development, Sustainable Development, Women's and Gender Studies, etc.

4. Ability Enhancement Courses (AEC)

I. Students are required to achieve competency in a Modern Indian Language (MIL) and in the English language with special emphasis on language and communication skills (Section 5.1.4, Page 22, NEP 2020).

II. The courses aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills, that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity.

III. They would also enable students to acquaint themselves with the cultural and intellectual heritage of the chosen MIL and English language, as well as to provide a reflective understanding of the structure and complexity of the language/literature related to both the MIL and English language.

IV. The courses will also emphasize the development and enhancement of skills such as communication, and the ability to participate/conduct discussion and debate.

All courses under Ability Enhancement (language) categories may be of 3-credits.

5. Skill Enhancement Courses (SEC)

These courses are aimed at imparting practical skills, hands-on training, soft skills, etc., to enhance the employability of students. (Section 5.1.5, Page 22, NEP 2020).

All courses under the Skill Enhancement categories may be of 3-credits.

6. Value-Added Courses (VAC)

Courses under Value Added, Summer Internship/ Apprenticeship/ Community outreach activities, etc., for all majors, may be of 2-credits. (Section 5.1.6, Page 22, NEP 2020).

I. Understanding India: The course aims at enabling the students to acquire and demonstrate the knowledge and understanding of contemporary India with its historical perspective, the basic framework of the goals and policies of national development, and the constitutional obligations with special emphasis on constitutional values and fundamental rights and duties.

II. Environmental science/education: The course seeks to equip students with the ability to apply the acquired knowledge, skills, attitudes, and values required to take appropriate actions for mitigating the effects of environmental degradation, climate change, and pollution, effective waste management, conservation of biological diversity, management of biological resources, forest and wildlife conservation, and sustainable development and living.

III. Digital and technological solutions: Courses in cutting-edge areas that are fast gaining prominences, such as Artificial Intelligence (AI), 3-D machining, big data analysis, machine learning, drone technologies, and Deep learning with important applications to health, environment, and sustainable living that will be woven into undergraduate education for enhancing the employability of the youth.

IV. Health & Wellness, Yoga education, sports, and fitness: Course components relating to health and wellness seek to promote an optimal state of physical, emotional, intellectual, social, spiritual, and environmental well-being of a person. Sports and fitness activities will be organized outside the regular institutional working hours.

B. Type of programmes

B1: UG Degree Programmes with Single Major: A student has to secure a minimum of 50% credits from the major discipline for the 3-year/4-year UG degree to be awarded a single major.

B2: UG Degree Programmes with Double Major:A student has to secure a minimum of 40% credits from the second major discipline for the 3-year/4-year UG degree to be awarded a double major.

B3: Interdisciplinary UG Programmes: The credits for core courses shall be distributed among the constituent disciplines/subjects so as to get core competence in the interdisciplinary programme.

B4: Multidisciplinary UG Programmes:

The credits to core courses will be distributed among the broad disciplines such as Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.

The statutory bodies of the Universities and Colleges such as the Board of Studies and Academic Council will decide on the list of courses under major category and credit distribution for double major, interdisciplinary and multidisciplinary programmes

Year 1: Semester 1 (Data Science)

S.No.	Course	Type	Level	Credit	Credits
1.	Fundamentals of Data Science	Major 1	101	2	10
2.	Mathematics for Data Science	Major 2	103	4	
3.	Statistics for Data Science	Major 3	105	4	
4.	Minor 1*	Minor 1 (Elective)	107	4	4
5.	Environment and Society	Multidisciplinary 1	109	2	2
6.	Communication Skills and Technical Writing	AEC 1	111	2	2
7.	Fundamentals of Computers and Programming	SEC 1	113	2	2
8.	Principles and Concepts of Sustainability	VAC 1	115	2	2
Credits earned				**22**	**22**

S.No.	List of Minor 1 Elective*	Type	Level	Credit	Credits
1	Ecology and Ecosystems	Minor	107	4	4
2	Earth and Earth Surface Processes	Minor	107	4	4
3	Basics of Climate Science and Policy	Minor	107	4	4
Credits earned				**4**	**4**

Year 1: Semester 2 (Data Science)

S.No.	Course	Type	Level	Credit	Credits
1.	Problem-Solving and Python Programming	Major 4	102	3	9
2.	Fundamentals of Information Technology	Major 5	104	3	
3.	Database Management System	Major 6 (Elective)[2]	106	3	
4.	Web Technology	Major 6 (Elective)[2]	108	3	
5.	Minor 2*	Minor 2 (Elective)	110	3	3
6.	Environmental Chemistry	Multidisciplinary 2	112	3	3
7.	Modern Indian Language 1 or Business Communication and Information Ethics	AEC 2	114	3	3
8.	Introduction to Remote Sensing	SEC 2	116	2	2
9.	Ancient Indian Sustainable Practices	VAC 2	118	2	4
10.	Constitutional Values and Fundamental Duties	VAC 2	120	2	
Credits earned in 2nd semester				**24**	**24**
Total credits earned at the end of first year = 22 + 24 = 46 (Minimum requirement 40)					
11.	**Vocational course/ Summer internship project (8-weeks) to Exit with UG-Certificate**	**Vocational/ Internship [3]**	**122**	**4**	**4**

[2] Choose one elective as Major 6

[3]Students exiting the programme after securing minimum 40 credits will be awarded UG Certificate in Data Science provided they secure additional 4 credits in work-based vocational courses offered during summer-term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during 1st and 2nd semester.

Total credits earned for UG Certificate = 22 + 24 + 4 = 50

S.No.	**List of Minor 2 Elective***	**Type**	**Level**	**Credit**	**Credits**
1	Biological Science	Minor	110	3	3
2	Environmental Physics	Minor	110	3	3
Credits earned				**3**	**3**

EXIT 5: UG Certificate in Data Science earned credit 50, Minimum requirement 44 by UGC

Year 2: Semester 3 (Data Science)

S.No.	Course	Type	Level	Credit	Credits
1.	Data Wrangling and Visualization	Major 7	201	3	9
2.	Data Structures and Algorithm	Major 8	203	3	
3.	Data Mining and Data Analysis	Major 9	205	3	
4.	Minor 3*	Minor 3 (Elective)	211	3	3
5.	Multidisciplinary 3±	Multidisciplinary 3(Elective)	213	3	3
6.	Modern Indian Language 2	AEC 3	215	3	3
7.	Introduction to Geographic Information System	SEC 3	217	3	3
8.	Cybersecurity for Data Science	SEC 4	219	2	2
Credits earned				**23**	**23**

S.No.	List of Minor 3 Elective*	Type	Level	Credit	Credits
1.	Atmosphere and Global Climate Change	Minor	211	3	3
2.	Land and Soil Conservation and Management	Minor	211	3	3
3.	Biodiversity and Conservation	Minor	211	3	3
Credits earned				**3**	**3**

S.No.	List of Multidisciplinary 3 Elective±	Type	Level	Credit	Credits
1.	Advanced Statistics	Multidisciplinary	213	4	4
2.	Linear Algebra and Discrete Mathematics	Multidisciplinary	213	4	4
3.	Bioinformatics	Multidisciplinary	213	4	4
Credits earned				4	4

Year 2: Semester 4 (Data Science)

S.No.	Course	Type	Level	Credit	
1.	Artificial Intelligence	Major 10	202	4	16
2.	Time Series Analysis	Major 11	204	4	
3.	Object Oriented Programming	Major 12	206	4	
4.	Computer Networks	Major 13 (Elective)[4]	208	4	
5.	Business Analytics	Major 13 (Elective)[5]	210		
6.	Minor 4*	Minor 4 (Elective)	212	4	4
Credits earned				**20**	**20**
Credits earned in 2nd year = 23 + 20= 43				**46**	**46**
Credits earned at end of the 2nd year = 46 + 43 = 89 (Minimum requirement 80)					
7.	**Vocational course/ Summer internship project (8-weeks) to Exit with UG-Diploma**	**Vocational course[6]**	**214**	**4**	**4**
Total credits earned for UG Diploma = 46 + 43 + 4 = 93					

S.No.	List of Minor 4 Elective*	Type	Level	Credit	Credits
1	Water Resources Management	Minor	212	4	4
2	Natural Hazards and Disaster Risk Reduction	Minor	212	4	4
3	Project Management	Minor	212	4	4
Credits earned				**4**	**4**

EXIT 6: UG Diploma in Data Science earned credit 93, Minimum requirement 84 by UGC

Year 3: Semester 5 (Data Science)

S.No.	Course	Type	Level	Credit	Credits
1.	Machine Learning	Major 14	301	4	12
2.	Analysis and Design of Algorithms	Major 15	303	4	

[4] Choose one elective as Major 13

[5] Choose one elective as Major 13

[6]Students exiting the programme after securing minimum 80 credits will be awarded UG Diploma in Data Science provided they secure additional 4 credits in work-based vocational courses offered during first or (check) second year summer-term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during 1st and 2nd semester.

3.	Blockchain	Major 16	305	4	
4.	1st Minor Course 5*	Minor 5 (Elective)	307	4	8
5.	2nd Minor Course 5*	Minor 5 (Elective)	307	4	
Credits earned				**20**	**20**

S.No.	**List of Minor 5 Elective***	**Type**	**Level**	**Credit**	**Credits**
1.	Geoinformatics for Resource Management	Minor	307	4	4
2.	Green Technologies	Minor	307	4	4
3.	Solid and Hazardous Waste Management	Minor	307	4	4
4.	Environmental Movement	Minor	307	4	4
5.	Business and Professional Communication	Minor	307	4	4
6.	OR any one Minor Course from Semester-7 which student cannot opt in 4-Year.	Minor	307	4	4
Credits earned				**8**	**8**

Year 3: Semester 6 (Data Science)

S.No.	**Course**	**Type**	**Level**	**Credit**	
1.	Big Data Technology	Major 17	302	4	12
2.	Natural Language Processing	Major 18	304	4	
3.	Predictive Modelling and Analytics	Major 19	306	4	
4.	1st Minor Course 6*	Minor 6 (Elective)	308	4	8
	2nd Minor Course 6*	Minor 6 (Elective)	308	4	
Credits earned				**20**	**20**
Credits earned in 3rd year = 20 + 20 = 47				**47**	**47**
Credits earned at end of the 3rd year = 46 + 43 + 40 = 129 (Minimum requirement 120)					
5.	**Vocational course/ Summer internship project (8-weeks) to Exit 3-Years BSc Degree**	**Vocational course[7]**	**310**	**4**	**4**
Total credits earned for 3-year UG Degree = 46 + 43 + 40 + 4 = 133					

S.No.	**List of Minor 6 Elective***	**Type**	**Level**	**Credit**	**Credits**
1.	Internet of Things	Minor	308	4	4
2.	Digital Marketing Analytics	Minor	308	4	4
3.	Cloud Computing	Minor	308	4	4
4.	Urban Ecosystem	Minor	308	4	4
5.	Marine Ecology	Minor	308	4	4
6.	Forest Ecology	Minor	308	4	4
7.	Environmental Ethics	Minor	308	4	4
8.	OR any one Minor Course from Semester-8 which student cannot opt in 4-Year.	Minor	308	4	4
Credits earned				**8**	**8**

EXIT 7: 3-year UG Degree in Data Science earned credit 133, Minimum requirement 124 by UGC

[7]Students exiting the programme after securing minimum 120 credits will be awarded 3-Years BSc Degree in Data Science provided they secure additional 4 credits in work-based vocational courses offered during first or (check) second year summer-term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during 1st and 2nd semester.

Year 4: Semester 7 (Data Science-Honours/ Honours with Research)

S.No.	Course	Type	Level	Credit	Credits
1.	Soft- Computing	Major 20	401	4	14
2.	Data Warehousing and Data Pipeline	Major 21	403	4	
3.	Research Methodology and Thesis Writing	Major 22	405	2	
4.	Internet of Things	Major 23(Elective)[8]	407	4	
5.	Cloud Computing	Major 23(Elective)[9]	409	4	
6.	1st Minor Course 7*	Minor 7 (Elective)	411	3	6
7.	2nd Minor Course 7*	Minor 7 (Elective)	411	3	
8.	Principles and Concepts of Sustainability @	VAC	413	2	2
Credits earned				**20+2**	**22@**

@ VAC Introduce in case students from other institutions have not opted for such courses in B.Sc.

S.No.	List of Minor 7 Elective*	Type	Level	Credit	Credits
1.	Earth and Environment	Minor	411	4	4
2.	Ecosystem Processes	Minor	411	3	3
3.	Environmental Policy, Law and Governance	Minor	411	4	4
4.	Atmospheric Science	Minor	411	4	4
5.	Climate Change Impact on Natural Systems	Minor	411	4	4
6.	Climate Change Mitigation Approaches	Minor	411	3	3
7.	Principles of GIS & GNSS	Minor	411	4	4
8.	Principles of Remote Sensing	Minor	411	4	4
Credits earned				**3**	**3**

Year 4: Semester 8 (Data Science-Honours/ Honours with Research)

S.No.	Course	Type	Level	Credit	Credits
1.	Introduction to Deep Learning	Major 24	402	4	8
2.	Parallel Programming	Major 25	404	4	
3.	Minor 8*	Minor 8	406	4	4
4.	Spatial Data Analysis and Modelling	Major 26[10]	408	4	12
5.	Environmetrics	Major 27[11]	410	4	
6.	Environmental Finance and Economics	Major 28[12]	412	4	
7.	**Research Project/Dissertation[13]**		**414**	**12**	**12**
Credits earned				**24**	**24**
Credits earned in 4th year = 20 + 24 = 44				**44**	**44**
Credits earned at end of the 4th year = 46 + 43 + 40 + 44= 173 (Minimum requirement 160)					
Total credits earned for 4-year UG Degree = 46 + 43 + 40 + 44= 173					

EXIT 8: 4-year UG Degree in Data Science (Honours/ Honours with Research) earned credit 173, Minimum requirement 160 by UGC

S.No.	List of Minor 8 Elective*	Type	Level	Credit	Credits
1.	Earth and Environment	Minor	406	4	4
2.	Ecosystem Processes	Minor	406	3	3
3.	Ecological Footprint and EIA	Minor	406	4	4
4.	Climate Risk and Vulnerability Assessment	Minor	406	4	4

[8] Choose one elective as Major 23

[9] Choose one elective as Major 23

[10] Students exiting the programme after securing minimum 160 credits will be awarded 4-year UG Degree (Honours) in Data Science after doing at least 3 courses for 12 credits in lieu of a research project/dissertation.

[11] Students exiting the programme after securing minimum 160 credits will be awarded 4-year UG Degree (Honours) in Data Science after doing at least 3 courses for 12 credits in lieu of a research project/dissertation.

[12] Students exiting the programme after securing minimum 160 credits will be awarded 4-year UG Degree (Honours) in Data Science after doing at least 3 courses for 12 credits in lieu of a research project/dissertation.

[13] Students who secure 75% marks and above in the first six semesters and wish to undertake research at the UG level can choose a research stream in the fourth year by doing a research project or dissertation under the guidance of a faculty member of the University; the students who secure at least 160 credits, including 12 credits from a research project/dissertation cane exit the programme with 4-year UG Degree (Honours with Research) in Data Science.

5.	Climate Change Impacts on Managed System	Minor	406	3	3
6.	Digital Image Processing	Minor	406	4	4
7.	Multivariate Data Analysis	Minor	406	4	4
8.	Environmental Policy, Law and Governance	Minor	406	4	4
Credits earned				**3**	**3**

Five Year Integrated Masters Programme in Data Science (MSc in Data Science)
Year 5: Semester 9 (MSc. in Data Science)

S.No.	Course	Type	Level	Credit	Credits
1.	Advanced Machine Learning	Major 29	501	4	12
2.	Recent Trends in Data Science	Major 29	503	4	
3.	Big Data Ethics and Data Communication	Major 30 (Elective)[14]	505	4	
4.	Location Analytics	Major 30 (Elective)[15]	505	4	
5.	1st Minor Course 9*	Minor 9	507	4	8
6.	2nd Minor Course 9*	Minor 9	507	4	
Credits earned				**20**	**20**

S.No.	List of Minor 9 Elective*	Type	Level	Credit	Credits
1.	Application of Geoinformatics for Land Resources	Minor	507	4	4
2.	Application of Geoinformatics for Water Resources	Minor	507	4	4
3.	Applications of Geoinformatics for Atmosphere	Minor	507	4	4
4.	ESG and Sustainability	Minor	507	4	4
5.	Air Quality Management	Minor	507	4	4
6.	Aerosol Science and Satellite Meteorology	Minor	507	4	4
7.	Climate Modelling	Minor	507	4	4
8.	Environmental Modelling	Minor	507	4	4
9.	Optimization Techniques	Minor	507	4	4
Credits earned				**8**	**8**

Year 5: Semester 10 (Master of Science Degree in Data Science)

S.No.	Course	Type	Level	Credit	Credits
1.	4 core courses in Data Science*	Core	502	16	16
2.	1 elective course*	Elective	504	4	4
Credits earned				**20**	**20**
Credits earned in 2nd year = 20 + 20 = 40				**40**	**40**
Credits earned at end of the 2nd year in MSc. = 20 + 20 = 40					
Total credits earned for Dual Degree (UG + PG) = 173 + 40 = 213 (Minimum requirement 200)					

*** Under the approval of Academic Council**

EXIT 9: 5-year PG Degree in Data Science earned credit 213, Minimum requirement 200 by UGC

[14] Choose one elective as Major 30
[15] Choose one elective as Major 30

Five Years Course Distribution of Integrated Master Programme in Data Science

Semester	Discipline Specific Courses - Core / Major	Minor	Inter-disciplinary courses	Ability Enhancement courses (language)	Skill Enhancement courses /Internship /Dissertation	Common Value-Added	Vocational course/ Summer internship	Research Project/ Dissertation	Total Credits
I	10	4	2	2	2	2	0	-	22
II	9	3	3	3	2	4	4*		24
Students exiting the programme after **securing 40 credits will be awarded UG Certificate** in the relevant Discipline /Subject **provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship** in addition to 6 credits from skill-based courses earned during first and second semester.									**40+4**
III	9	3	3	3	5	-	-	-	23
IV	16	4	0	0	0	0	4**	-	20
Students exiting the programme after **securing 80 credits will be awarded UG Diploma** in the relevant Discipline /Subject **provided they secure additional 4 credit in skill based vocational courses** offered during first year or second year summer term.									**80 +4**
V	12	8	-	-	-	-	-	-	20
VI	12	8	-	-	-	-	4**	-	20
3-Year BSc in Data Science: Students who want to undertake 3-year UG programme will be awarded UG Degree in the relevant Discipline /Subject upon securing 120 credits									120 +4
VII	14	6	-	-	-	2	-	-	20
VIII	20	4	-	-	-	-	4**	12#	24
4-Year BSc (Honours/ Honours with Research) **in Data Science:** Students will be awarded UG Degree (Honours/ Honours with Research) in the relevant Discipline /Subject									160
VII	14	6	-	-	-	2	-	-	20
VIII	20	4	-	-	-	-	4**	12#	24
4-Year BSc (Honours/ Honours with Research) **in Geoinformatics:** Students will be awarded UG Degree (Honours/ Honours with Research) in the relevant Discipline /Subject									160
IX	12	8	-	-	-	-	-	-	20
X	-	-	-	-	-	-	4	16	20
5-Year MSc in Data Science: Students will be awarded PG Degree in the relevant Discipline /Subject									200
IX	12	8	-	-	-	-	-	-	20
X	-	-	-	-	-	-	4	16	20
5-Year MSc in Geoinformatics: Students will be awarded PG Degree in the relevant Discipline /Subject									

*Applicable only when student want to exit the programme

** Student can exit the programme without earning 4 credits in the second year, provided candidate taken this credits in the first-year under Vocational course/ Summer internship.

4-Year BSc (Honours with Research) students will opt in-house 12 credits of Research Project/ Dissertation requirement and it will be considered as core (major).

Year 1: Semester 1 (Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	Ecology and Ecosystems	Major 1	101	4	10
2.	Earth and Earth Surface Processes	Major 2	103	4	
3.	Environment and Society	Major 3	105	2	
4.	Minor 1*	Minor (Elective)1	107	4	4
5.	Fundamentals of Data Science	Multidisciplinary	109	2	2
6.	Communication Skills and Technical Writing	AEC 1	111	2	2
7.	Fundamentals of Computers and Programming	SEC 1	113	2	2
8.	Principles and Concepts of Sustainability (SD)	VAC 1	115	2	2
Credits earned				**22**	**22**

S.No.	List of Minor 1 Elective*	Type	Level	Credit	Credits
1.	Mathematics for Data Science	Minor	107	4	4
2.	Statistics for Data Science	Minor	107	4	4
3.	Basics of Climate Science and Policy	Minor	107	4	4
Credits earned				**4**	**4**

Year 1: Semester 2 (Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	Environmental Chemistry	Major 4	102	3	9
2.	Environmental Laboratory	Major 4	104	3	
3.	Environmental Physics	Major 5 (Elective)[16]	106	3	
4.	Biological Science	Major 5 (Elective)[17]	108	3	
5.	Minor 2*	Minor 2 (Elective)	110	3	3
5.	Problem-Solving and Python Programming	Multidisciplinary 2	112	3	3
6.	Modern Indian Language 1 or Business Communication and Information Ethics	AEC 2	114	3	3
7.	Introduction to Remote Sensing	SEC 2	116	2	2
8.	Ancient Indian Sustainable Practices	VAC 2	118	2	4
9.	Constitutional Values and Fundamental Duties	VAC 3	118	2	
Credits earned in 2nd semester				**24**	**24**
Total credits earned at the end of first year = 22 + 24 = 46 (Minimum requirement 40)					
10.	**Vocational course/ Summer internship (8-weeks) to Exit with UG-Certificate**	**Vocational/ Internship[18]**	**120**	**4**	**4**
Total credits earned for UG Certificate = 22 + 24+ 4 = 50					

EXIT 5: UG Certificate in Environmental Studies earned credit 50, Minimum requirement 44 by UGC

S.No.	List of Minor 2 Elective*	Type	Level	Credit	Credits
1.	Fundamentals of Information Technology	Minor	110	3	3
2.	Database Management System	Minor	110	3	3

[16] Choose one elective as Major 5

[17] Choose one elective as Major 5

[18] Students exiting the programme after securing minimum 40 credits will be awarded UG-Certificate in Environmental Studies provided they secure additional 4 credits in work-based vocational courses offered during summer-term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during 1st and 2nd semester.

3.	Web Technology	Minor	110	3	3
Credits earned				**3**	**3**

Year 2: Semester 3 (Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	Atmosphere and Global Climate Change	Major 6	201	3	9
2.	Biodiversity and Conservation	Major 7	203	3	
3.	Gender and Environment	Major 8	205	3	
4.	Minor 3*	Minor 3	207	3	3
5.	Multidisciplinary 3±	Multidisciplinary 3 (Elective)	209	3	3
6.	Modern Indian Language 2	AEC 3	211	3	3
7.	Introduction to Geographic Information System	SEC 3	213	3	5
8.	Cybersecurity for Data Science	SEC 4	215	2	
Credits earned				**23**	**23**

S.No.	List of Minor 3 Elective*	Type	Level	Credit	Credits
1.	Greenhouse Gas Budget and Climate Change	Minor	207	3	3
2.	Land and Soil Conservation and Management	Minor	207	3	3
3.	Climate Change and Extreme Events	Minor	207	3	3
4.	Data Handling and Visualization	Minor	207	3	3
5.	Data Mining and Data Analysis	Minor	207	3	3
Credits earned				**3**	**3**

S.No.	List of Multidisciplinary 3 Elective±	Type	Level	Credit	Credits
1.	Advanced Statistics	Multidisciplinary	209	4	4
2.	Linear Algebra and Discrete Mathematics	Multidisciplinary	209	4	4
3.	Bioinformatics	Multidisciplinary	209	4	4
Credits earned				**4**	**4**

Year 2: Semester 4 (Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	Principles of Hydrology	Major 9	202	4	16
2.	Natural Hazards and Disaster Risk Reduction	Major 10	204	4	
3.	Environment and Pollution Science	Major 11	206	4	
4.	Natural Resource Management and Sustainability	Major 12	208	4	
5.	Minor 4*	Minor (Elective) 4	210	4	4
Credits earned				**20**	**20**
Credits earned in 2nd year = 23 + 20 = 43				**43**	**43**
Credits earned at end of the 2nd year = 46 + 43 = 89 (Minimum requirement 80)					
6.	**Vocational course/ Summer internship project (8-weeks) to Exit with UG-Diploma**	Vocational/ Internship[19]	**212**	**4**	**4**
Total credits earned for UG Diploma = 46 + 43 + 4 = 93					

S.No.	List of Minor 4 Elective*	Type	Level	Credit	Credits
1.	Artificial Intelligence	Minor	210	4	4
2.	Time Series Analysis	Minor	210	4	4
3.	Object Oriented Programming	Minor	210	4	4
4.	Computer Networks	Minor	210	4	4

[19]Students exiting the programme after securing minimum 80 credits will be awarded UG-Diploma in Environmental Studies provided they secure additional 4 credits in work-based vocational courses offered during summer-term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during 1st and 2nd semester.

5.	Business Analytics	Minor	210	4	4
Credits earned				**4**	**4**

EXIT 6: UG-Diploma in Environmental Studies earned credit 93, Minimum requirement 84 by UGC

Year 3: Semester 5 (Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	Green Technologies	Major 13	301	4	12
2.	Solid and Hazardous Waste Management	Major 14	303	4	
3.	Environmental Movement	Major 15	305	4	
4.	1st Minor Course 5*	Minor 5 (Elective)	307	4	8
5.	2nd Minor Course 5*	Minor 5 (Elective)	307	4	
Credits earned				**20**	**20**

S.No.	List of Minor 5 Elective*	Type	Level	Credit	Credits
1.	Geoinformatics for Resource Management	Minor	307	4	4
2.	Watershed Management	Minor	307	4	4
3.	Machine Learning	Minor	307	4	4
4.	Analysis and Design of Algorithms	Minor	307	4	4
5.	Blockchains	Minor	307	4	4
6.	Business and Professional Communication	Minor	307	4	4
7.	OR any one Minor Course from Semester 7	Minor	307	4	4
Credits earned				**8**	**8**

Year 3: Semester 6 (Environmental Studies)

S.No.	Course	Type	Level	Credit	
1.	Urban Ecosystem	Major 16	302	4	12
2.	Marine Ecology	Major 17	304	4	
3.	Forest Ecology	Major 18	306	4	
4.	1st Minor Course 6*	Minor 6 (Elective)	308	4	8
5.	2nd Minor Course 6*	Minor 6 (Elective)	308	4	
Credits earned				**20**	**20**
Credits earned in 3rd year = 20 + 20 = 40				**40**	**40**
Credits earned at end of the 3rd year = 46 + 43 + 40 = 129 (Minimum requirement 120)					
Total credits earned for 3-year UG Degree = 46 + 43 + 40 + 4 = 133					
6.	**Vocational course/ Summer internship project (8-weeks) to Exit 3-Years BSc Degree**	**Vocational/ Internship[20]**	**310**	**4**	**4**
Total credits earned for 3-year UG Degree = 46 + 43 + 40 + 4 = 133					

S.No.	List of Minor 6 Elective*	Type	Level	Credit	Credits
1.	Digital Marketing Analytics	Minor	308	4	4
2.	Environmental Ethics	Minor	308	4	4
3.	Big Data Technology	Minor	308	4	4
4.	Predictive Modelling and Analytics	Minor	308	4	4
5.	OR any one Minor Courses from Semester 8	Minor	308	4	4
Credits earned				**8**	**8**

[20]Students exiting the programme after securing minimum 80 credits will be awarded UG-Diploma in Environmental Studies provided they secure additional 4 credits in work-based vocational courses offered during summer-term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during 1st and 2nd semester.

EXIT 7: 3-year UG Degree in Environmental Studies earned credit 133, Minimum requirement 124 by UGC

Year 4: Semester 7 (Honours/ Honours with Research) in Environmental Studies

S.No.	Course	Type	Level	Credit	Credits
1.	Ecosystem Processes	Major 19	401	3	15
2.	Environmental Chemistry II	Major 20	403	3	
3.	Environmental Monitoring Lab II	Major 21	405	4	
4.	Research Methodology and Thesis Writing	Major 22	407	2	
5.	Earth and Environment	Major 23(Elective)[21]	409	4	
6.	Energy and Environment	Major 23(Elective)[22]	411	3	
7.	1st Minor Course 7*	Minor 7 (Elective)	413	3	6
8.	2nd Minor Course 7*	Minor 7 (Elective)	413	3	
9.	Principles and Concepts of Sustainability (SD) @	VAC	415	2	2
Credits earned				**21+2**	**23@**

@VAC Introduce in case students from other institutions have not opted for such courses in B.Sc.

S.No.	List of Minor 7 Elective*	Type	Level	Credit	Credits
1.	Principles of GIS & GNSS	Minor	413	4	4
2.	Principles of Remote Sensing	Minor	413	4	4
3.	Atmospheric Science	Minor	413	4	4
4.	Climate Change Impact on Natural Systems	Minor	413	4	4
5.	Climate Change Mitigation Approaches	Minor	413	3	3
6.	Machine Learning	Minor	413	4	4
7.	Analysis and Design of Algorithms	Minor	413	4	4
8.	Blockchain	Minor	413	4	4
9.	Soft-Computing	Minor	413	4	4
10.	Data Warehousing and Data Pipeline	Minor	413	4	4
11.	Cloud Computing	Minor	413	4	4
12.	Internet of Things	Minor	413	4	4
Credits earned				**4**	**4**

Year 4: Semester 8 (Honours/ Honours with Research) in Environmental Studies

S.No.	Course	Type	Level	Credit	Credits
1.	Ecological Footprint and EIA	Major 24	402	4	8
2.	Environmental Finance and Economics	Major 25	404	4	
3.	Minor 8*	Minor 8 (Elective)	406	4	4
4.	Wildlife Assessment, Conservation and Management	Major 26[23]	408	4	12
5.	Integrated Watershed Management	Major 27[24]	410	4	
6.	Environment Health and Risk Assessment	Major 28[25]	412	4	
7.	**Research Project/Dissertation[26]**		**414**	**12**	**12**

[21] Choose one elective as Major 23

[22] Choose one elective as Major 23

[23]Students exiting the programme after securing minimum 160 credits will be awarded 4-year UG Degree (Honours) in Environmental Studies after doing at least 3 courses for 12 credits in lieu of a research project/dissertation.

[24]Students exiting the programme after securing minimum 160 credits will be awarded 4-year UG Degree (Honours) in Environmental Studies after doing at least 3 courses for 12 credits in lieu of a research project/dissertation.

[25]Students exiting the programme after securing minimum 160 credits will be awarded 4-year UG Degree (Honours) in Environmental Studies after doing at least 3 courses for 12 credits in lieu of a research project/dissertation.

[26] Students who secure 75% marks and above in the first six semesters and wish to undertake research at the UG level can choose a research stream in the fourth year by doing a research project or dissertation under the guidance of a faculty member of the University; the students who secure at least 160 credits, including 12

Credits earned	**24**	**24**
Credits earned in 4th year = 21 + 24 = 45	**45**	**45**
Credits earned at end of the 4th year = 46 + 43 + 40 + 45 = 174 (Minimum requirement 160)		
Total credits earned for 4-year UG Degree = 41 + 46 + 47 + 46 = 178		

S.No.	List of Minor 8 Elective*	Type	Level	Credit	Credits
1.	Environmental Policy, Law and Governance	Minor	406	4	4
2.	Multivariate Data Analysis	Minor	406	4	4
3.	Environmental Statistics	Minor	406	4	4
4.	Climate Change Impacts on Managed System	Minor	406	4	4
5.	Climate Risk and Vulnerability Assessment	Minor	406	4	4
6.	Introduction to Deep Learning	Minor	406	4	4
7.	Predictive Modelling and Analytics	Minor	406	4	4
8.	Big Data Technology	Minor	406	4	4
Credits earned				**4**	**4**

EXIT 8: 4-year UG Degree in Environmental Studies (Honours/ Honours with Research) earned credit 173, Minimum requirement 160 by UGC

credits from a research project/dissertation cane exit the programme with 4-year UG Degree (Honours with Research) in Environmental Studies.

Five Year Integrated Masters Programme in Environmental Studies (MSc in Environmental Studies)

Year 5: Semester 9 (MSc. in Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	ESG and Sustainability	Major 29	501	4	12
2.	Air Quality Management	Major 30	502	4	
3.	Water and Wastewater Treatment Methods	Major 31	503	4	
4.	1st Minor Course 9*	Minor 9 (Elective)	504	4	8
5.	2nd Minor Course 9*	Minor 9 (Elective)	504	4	
Credits earned				**20**	**20**

S.No.	List of Minor 9 Elective*	Type	Level	Credit	Credits
1.	Aerosol Science and Satellite Meteorology	Minor	504	4	4
2.	Climate Modelling	Minor	504	4	4
4.	Environmental Modelling	Minor	504	4	4
5.	Life Cycle and Vulnerability Assessment Techniques	Minor	504	4	4
6.	Industrial Ecology and EMS	Minor	504	4	4
7.	Entrepreneurship in Solid Waste Management	Minor	504	4	4
8.	Advanced Machine Learning	Minor	504	4	4
9.	Recent Trends in Data Science	Minor	504	4	4
10.	Independent Study	Minor	504	4	4
Credits earned				**8**	**8**

Year 5: Semester 10 (Master of Science Degree in Environmental Studies)

S.No.	Course	Type	Level	Credit	Credits
1.	4 core courses of 16 credits*	Core	502	16	16
2.	1 elective course of 4 credits*	Elective	504	4	4
Credits earned				**20**	**20**
Credits earned in 2nd year = 20 + 20 = 40				**40**	**40**
Credits earned at end of the 2nd year in MSc. = 20 + 20 = 40					
Total credits earned for Dual Degree (UG + PG) = 174 + 40 = 214 (Minimum requirement 200)					

* Under the approval of Academic Council

EXIT 9: 5-year PG Degree in Environmental Studies earned credit 214, Minimum requirement 200 by UGC

Five Years Course Distribution of Integrated Master Programme in Environmental Studies

Semester	Discipline Specific Courses - Core / Major	Minor	Inter-disciplinary courses	Ability Enhancement courses (language)	Skill Enhancement courses /Internship /Dissertation	Common Value-Added	Vocational course/ Summer internship	Research Project/ Dissertation	Total Credits
I	10	4	2	2	2	2	-	-	22
II	9	3	3	3	2	4	4*	-	24
Students exiting the programme after **securing 40 credits will be awarded UG Certificate** in the relevant Discipline /Subject **provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship** in addition to 6 credits from skill-based courses earned during first and second semester.									**40+4**
III	9	3	3	3	5				23
IV	16	4					4**		20
Students exiting the programme after **securing 80 credits will be awarded UG Diploma** in the relevant Discipline /Subject **provided they secure additional 4 credit in skill based vocational courses** offered during first year or second year summer term.									**80 +4**
V	12	8	-	-	-	-	-	-	20
VI	12	8	-	-	-	-	4**	-	20
3-Year BSc in Environmental Studies: Students who want to undertake 3-year UG programme will be awarded UG Degree in the relevant Discipline /Subject upon securing 120 credits									120 +4
VII	15	6	-	-	-	2	-	-	21
VIII	20	4	-	-	-	-	4**	12#	24
4-Year BSc (Honours/ Honours with Research) **in Environmental Studies:** Students will be awarded UG Degree (Honours/ Honours with Research) in the relevant Discipline /Subject									160
VII	15	6	-	-	-	2	-	-	21
VIII	20	4	-	-	-	-	4**	12#	24
4-Year BSc (Honours/ Honours with Research) **in Climate Science and Policy:** Students will be awarded UG Degree (Honours/ Honours with Research) in the relevant Discipline /Subject									160
IX	12	8	-	-	-	-	-	-	20
X	-	-	-	-	-	-	4	16	20
5-Year MSc in Environmental Studies: Students will be awarded PG Degree in the relevant Discipline /Subject									200
IX	12	8	-	-	-	-	-	-	20
X	-	-	-	-	-	-	4	16	20
5-Year MSc in Climate Science and Policy: Students will be awarded PG Degree in the relevant Discipline /Subject									200

*Applicable only when student want to exit the programme

** Student can exit the programme without earning 4 credits in the second year, provided candidate taken this credits in the first-year under Vocational course/ Summer internship.

4-Year BSc (Honours with Research) students will opt in-house 12 credits of Research Project/ Dissertation requirement and it will be considered as core (major).

Enclosure 2

Four-Year Undergraduate Programme in Economics

The Department of Policy and Management Studies, TERI School of Advanced Studies will be launching a Four-Year Undergraduate Programme (FYUP) in Economics from the forthcoming academic session, starting from August 2023. The FYUP is designed in accordance with the National Education Policy (NEP) 2020 and the recent guidelines issued by the University Grants Commission with in-built options of multiple entry and exit.

Eligibility

Senior Secondary School Leaving Certificate or Higher Secondary (12th Grade) Certificate obtained after successful completion of Grade 12 or equivalent from any discipline with Mathematics or Applied Mathematics in Grade 12 can apply. There is no upper age bar.

Admission criteria

Candidates shall be admitted based on the merit list prepared of the National Level Test (CUET-UG) or 12th Grade marks. In all cases the students are required register online at the admission link that will be provide once the admissions are announced. For any further query write to admissions@terisas.ac.in.

Structure of the FYUP (with entry and exit points)

Year	Semester	Credits	Total credit	Exit Option
B.Sc. in Economics (1st Year)	Semester 1	22	22+24+4=50	Exit with UG Certificate
	Semester 2	24		
B.Sc. in Economics (2nd Year)	Semester 3	25	46+46+4=96	Exit with UG Diploma
	Semester 4	21		
B.Sc. in Economics (3rd Year)	Semester 5	25	46+46+45=137	Exit with a 3year B.Sc. in Economics Degree
	Semester 6	20		
B.Sc. in Economics (4th Year)	Semester 7	20	46+46+45+48=185	Exit with a 4 year B.Sc. Honours (or Honours with research) in Economics Degree
	Semester 8	28		

Proposed Programme Outline—FYUP

Year 1: Semester 1

S.No.	Course	Type	Level	Credit	Credits
1.	Principles of Economics	Major 1	101	4	8
2.	Introductory Mathematical Methods for Economics	Major 2	103	4	
3	Minor from Data Science/Environmental Studies/Management	Minor 1		4	4
4.	Environment and Society	Multidisciplinary 1		2	2
5.	Fundamentals of Computers and Programming	SEC 1		4	4
6.	Communication Skills and Technical Writing	AEC 1		2	2
7.	Principles and Concepts of Sustainability	VAC 1		2	2
Credits earned				**22**	**22**

Year 1: Semester 2

S.No.	Course	Type	Level	Credit	Credits
1	Introductory Statistical and Econometric Methods	Major 3	102	4	8
2	Introduction to Development Economics	Major 4	104	4	
3.	Minor from Data Science/Environmental Studies/Management	Minor 2		3	3
4.	Introduction to Mathematics and Statistics	Multidisciplinary 2		3	3
5.	Modern Indian Language	AEC 2		3	3
6.	Behavioural Science	SEC 2		2	2
7.	Ancient Indian Sustainable Practices	VAC 2		2	3
8.	Constitutional Values and Fundamental Duties	VAC 3		2	2
Credits earned in 2nd semester				**24**	**24**

Total credits earned at the end of first year = 22 + 24= 46					
9.	Vocational course TBD	Vocational course		4	4
10.	Summer internship project (8-weeks)	Internship		4	
Total credits earned for UG Certificate = 22+ 24 + 4 = 50					
Exit option: UG Certificate in Economics if 50 credits earned (Min. requirement by UGC is 44 credits)					

Year 2: Semester 3

S.No.	**Course**	**Type**	**Level**	**Credit**	**Credits**
1.	Intermediate Microeconomics-I	Major 5	201	4	12
2.	Basic Mathematics for Economics	Major 6	203	4	
3.	Intermediate Macroeconomics-I	Major 7	204	4	
4.	Minor from Data Science/Environmental Studies/Management	Minor 3		3	3
5.	Data analysis and spreadsheet modelling	Multidisciplinary 3		3	3
6	Modern Indian Language	AEC 3		3	3
7.	Data Visualization	SEC 3		2	2
8.	Team Building	SEC 4		2	2
Credits earned				**25**	**25**

Year 2: Semester 4

S.No.	**Course**	**Type**	**Level**	**Credit**	
1.	Intermediate Microeconomics-II	Major 8	202	4	12
2.	Intermediate Statistical Methods for Economics	Major 9	205	4	
3.	Intermediate Macroeconomics-II	Major 10	206	4	

6.	Minor from Data Science/Environmental Studies/Management	Minor 4		4	4
7.	Cybersecurity for Data Science (Cybersecurity)	SEC 5		3	3
8.	Aerial Photography	VAC 4		2	2
Credits earned				**21**	**21**
Credits earned in 2nd year = 25 + 21 = 46				**46**	**46**
Credits earned at end of the 2nd year = 46 + 46 = 92 (Min. credits required are 80)					
9.	Vocational course	Vocational course		4	4
10.	Summer internship project (8-weeks)	Internship		4	
Total credits earned for UG Diploma = 46 + 46 + 4 = 96					
Exit option: UG Diploma in Economics if 96 credits earned (Min. requirement by UGC is 84 credits)					

Year 3: Semester 5

S.No.	**Course**	**Type**	**Level**	**Credit**	**Credits**
1.	Game Theory	Major 11	301	4	16
2.	Econometrics-I	Major 12	303	4	
3.	Growth Economics	Major 13	305	4	
4	Issues in the Indian Economy	Major 14	307	4	
5	Minor from Data Science/Environmental Studies/Management	Minor 5		4	4
6	Environmental Law, Policy and Governance (Environmental Politics)	Multidisciplinary 4		3	3
7	TBD	AEC 4		2	2
Credits earned				**25**	**25**

Year 3: Semester 6

S.No.	Course	Type	Level	Credit	
1.	Development Economics	Major 15	302	4	16
2.	International Trade Theory and Policy	Major 16	304	4	
3.	International Finance and Capital Flows	Major 17	306	4	
4.	Econometrics -II	Major 18	308	4	
5.	Minor from Data Science/Environmental Studies/Management	Minor 6	312	4	4
Credits earned				**20**	**20**
Credits earned in 3rd year = 25 + 20 = 45				**41**	**41**
Credits earned at end of the 3rd year = 46 + 46 + 45 = 137					
Total credits earned for 3-year UG Degree = 46 + 46 + 45 = 137 (Min. requirement is 120 credits)					

Year 4: Semester 7

S.No.	Course	Type	Level	Credit	Credits
1.	Environmental Economics	Major 19	401	4	16
2.	Research Methodology	Major 20	403	4	
3.	Econometrics using R	Major 21	405	4	
4.	Behavioural Economics/ Public Economics/ Global Political Economy/ History of Economic Thought/ Economic History (Major elective)	Major 22	407	4	
5.	Minor from Data Science/Environmental Studies/Management	Minor 7	409	4	4
Credits earned				**20**	**20**

Year 4: Semester 8

S.No.	Course	Type	Level	Credit	
1.	Energy and Resource Economics	Major 23	404	4	12
2.	Financial Economics	Major 24	406	4	
3.	Health Economics	Major 25	408	4	
4.	Minor from Data Science/Environmental Studies/Management	Minor 8	410	4	4
5.	Climate Change Economics	Major 26	412	4	12
6.	Public Economics/Industrial Organization/Money & Banking/Law & Economics	Major 27	414	4	
7.	Impact Evaluation	Major 28	416	4	
8.	Research Project/Dissertation		418	12	12
Credits earned				**28**	**28**
Credits earned in 4th year = 20 + 28 = 48				**48**	**48**
Credits earned at end of the 4th year = 46 + 46 + 45 + 48 = 185					
Total credits earned for 4-year UG Degree are 185 (Min. requirement is 160 credits)					

Enclosure 3

Program highlights

TERI-SAS's Bachelor of Business Administration (BBA) Hons is a 4-year undergraduate degree programme designed to impart a comprehensive knowledge and understanding of business administration and management. The course is designed to cater to the interdisciplinary and industry specific needs of the future world. This four-year BBA FYUP (Four-year undergraduate programme) offers not only a wide range of core managerial and administration-related subjects but also an option to do minor specialization in areas such as data science and environmental science. A combination of various such domains would equip the graduates to explore diverse career opportunities.

Further, beyond general management, this UG program offers four core specializations in select disciplines of human resources management, finance, operations management, marketing management, and sustainability management. TERI-SAS being a pioneer in sustainability education with a key focus on areas related to climate change, climate financing, ESG strategies, energy and water management, economics and policies for a sustainable future and lifestyle for the environment, provides unique opportunities to its students to interact and engage with faculty and industry leaders in developing further skills in these futuristic domains. Further, the programme comes with a unique opportunity to pursue BBA Hons with research to help interested students in pursuing a research career.

Program outcomes

- Provide students with a sound theoretical foundation on the business challenges of the future
- Prepare students with capabilities and skills in areas of general management, marketing, finance, global business, human resource management and sustainability to take up roles in managerial position across diverse industries.
- To encourage creativity, critical and innovative thinking leading to entrepreneurial skills.
- Enhance the ability of students to work in interdisciplinary domains by providing opportunities to a wide variety of electives and courses

Programme Structure (with entry and exit points)

BBA FYUP HONS PROGRAMME					
Year	Semester	Credits	Vocational Course	Total credit	Exit Option
BBA (1st Year)	Semester 1	22	4	22+24+4=50	Exit with UG Certificate
	Semester 2	24			
BBA (2nd Year)	Semester 3	22	4	46+42+4=92	Exit with UG Diploma
	Semester 4	20			
BBA (3rd Year)	Semester 5	20	4	88+40+4=132	Exit with 3yr BBA Degree
	Semester 6	20			
BBA (4th Year)	Semester 7	21		46+42+40+45=173	BBA Honours degree

Year 1: Semester 1 (BBA FYUP)

BBA 1st Semester

S.No.	**Course**	**Type**	**Credit**	**Total Credits**
1	Financial Accounting	Major	4	8
2	Principles of Management	Major	4	
3	Minor	Minor	4	4
4	Environment and Society	Multidisciplinary	2	2
5	Communication Skills and Technical Writing	AEC	2	2
6	Fundamentals of Computers and Programming	SEC	4	4
7	Principles and Concepts of Sustainability	VAC	2	2
Credits earned			**22**	**22**

Year 1: Semester 2 (BBA FYUP)

BBA 2nd Semester				
S.No.	**Course**	**Type**	**Credit**	**Total Credits**
1	Marketing management I	Major	4	8
2	Organisational Behaviour	Major	4	
3	Minor	Minor	3	3
4	Introduction to Mathematics and Statistics	Multidisciplinary	4	4
5	Modern Indian Language	AEC	3	3
6	Behavioural Science	SEC	2	2
7	Ancient Indian Sustainable Practices	VAC	2	4
8	Constitutional Values and Fundamental Duties	VAC	2	
Credits earned			**24**	**24**
Credits earned in 2nd year = 22 + 24= 46			**46**	**46**
Total credits earned at the end of first year = 22 + 24 = 46 (Minimum requirement 40)				
9	**Vocational course/ Summer internship project (8-weeks) to Exit with UG-Certificate**		**4**	**4**

Year 2: Semester 3 (BBA FYUP)

BBA 3rd Semester

S.No.	**Course**	**Type**	**Credit**	**Credits**
1	Marketing management II	Major	4	8
2	Introduction to Operations Management	Major	4	

3	Minor	Minor	3	3
4	Data analysis and spreadsheet modelling	Multidisciplinary	3	3
5	Modern Indian Language 2	AEC	3	3
6	Data Visualization	SEC	3	3
7	Team Building	SEC	2	2
Credits earned			**22**	**22**

Year 2: Semester 4(BBA FYUP)

BBA 4th Semester

S.No.	**Course**	**Type**	**Credit**	
1	Human Resource Management	Major	4	16
2	Management Accounting	Major	4	
3	Economic environment and business implication	Major	4	
5	Business law	Major	4	
6	Minor	Minor	4	4
Credits earned			**20**	**20**
Credits earned in 2nd year = 22 + 20= 42			**42**	**42**
Total Credits earned at end of the 2nd year = 46 + 42 = 88 (Minimum requirement 80)				
7	**Vocational course/ Summer internship project (8-weeks) to Exit with UG-Diploma**		**4**	**4**

Year 3: Semester 5 (BBA FYUP)

BBA 5th Semester

S.No.	**Course**	**Type**	**Credit**	**Credits**
1	Entrepreneurship and startup ecosystems in India	Major	4	12
2	Design thinking and critical analysis	Major	4	

3	Operations Research	Major	4	
4	1st Minor Course	Minor	4	8
5	2nd Minor Course	Minor	4	
Credits earned			**20**	**20**

Year 3: Semester 6 (BBA FYUP)

BBA 6th Semester

S.No.	**Course**	**Type**	**Credit**	
1	Financial Management	Major	4	12
2	Business Research Methods	Major	4	
3	Supply Chain Management	Major	4	
4	1st Minor Course	Minor	4	8
5	2nd Minor Course	Minor	4	
Credits earned			**20**	**20**
Credits earned in 3rd year = 20 + 20 = 40			**40**	**40**
Credits earned at end of the 3rd year = 46+ 42 + 40 = 128 (Minimum requirement 120)				
6	**Vocational course/ Summer internship project (8-weeks) to Exit 3-Years BBA Degree**		**4**	**4**
Total credits earned for 3-year UG Degree = 46+ 42 + 40 + 4 = 132				

Year 4: Semester 7 (BBA – Honours/ Honours with Research)

BBA 7th Semester				
S.No.	**Course**	**Type**	**Credit**	**Credits**
1	Strategic management	Major	4	8
2	Entrepreneurship development and SME	Major	4	

3	Major Elective	HR/FIN/OP/MKT	4	8
4	Major Elective	HR/FIN/OP/MKT	4	
5	1st Minor Course	Minor	3	3
7	AI for everyone	VAC	2	2
Credits earned			**21**	**21**

Year 4: Semester 8 (BBA – Honours/ Honours with Research)

BBA 8th Semester

S.No.	**Course**	**Type**	**Credit**	**Credits**
1	Entrepreneurship for sustainable business	Major	4	8
2	Global business operations/International Business	Major	4	
3	Minor	Minor	4	4
4	Major Elective	HR/FIN/OP/MKT	4	12
5	Major Elective	HR/FIN/OP/MKT	4	
6	Major Elective	HR/FIN/OP/MKT	4	
7	**Research Project/Dissertation**		**12**	**12**
Credits earned			**24**	**24**
Credits earned in 4th year = 21 + 24 = 45			**44**	**44**
Credits earned at end of the 4th year = 46+ 42 + 40+ 45= 173 (Minimum requirement 160)				
Total credits earned for 4-year UG Degree = = 46+ 42 + 40+ 45= 173				