

Progression of Autonomy & NEP 2020 (Inter-disciplinary Program)						
	AY 2024-25		AY 2025-26		AY 2026-27	
	SEM-I	SEM-II	SEM-I	SEM-II	SEM-I	SEM-II
FY	Autonomous (all faculty Foundation course in FY)					
		Intro (cert)	Intro	Intro (Adv. Cert)	Intro	Intro (Adv. Cert)
SY			Diploma	Adv. dip		
			FC-II	FC-II		
					Degree	
TY	---	---	---	---	SEM-V	SEM-VI
Autonomy: introduce progressively for three year UG course during academic Year(2024)						
	AY	FY	SY	TY	MSc Part- I	MSc Part- II
1	2024-25					
2	2025-26					
3	2026-27					
1	2024-2025	FY of UG & MSc Part-I	advisable to continue syllabus of GTU with 10% changes @ FY SEM-I and MSc Part-I. Syllabus of FY_SEM_II can be changed during 2025-2026			
		SY, TY & MSc Part-II	New curriculum of GTU be implemented completely			
2	2025-2026	FY & SY of UG and MSc Part-II	New Syllabus introduced at FY and SY of UG and also at MSc-Part-II during 2025-2026			
	2026-2027	FY, SY and TY and MSc Part-I & -II	New Syllabus introduced at FY, SY and TY of UG and also at MSc-Part- I and II during 2025-2026.			
<p>Please note, if the new syllabus is introduced as Applied Component, it can be implemented at TY SEM-V and TY SEM-VI, ie in academic year 2025-2026.</p> <p>Announcing the syllabus in 2024 September and introduce during 2025-2026, full-fledged.</p> <p>Keeping in view the emergency situation of Climate change and water crisis this syllabus shall serve the purpose of making students water-literate, which is the need of the hour.</p>						

It is advisable to introduce the syllabus module wise from FY onwards as a “**foundation course,**” in different faculty, so that it has a **wider reach**, serving the cause of preparing **responsible citizens sensitized to water stress and water crisis** and with **capabilities to contribute to management of water crisis** faced by the Nation and globally.

The students may choose in UG & PG program

- Water & Wastewater management program **as their career**
- In any vocation, implement their water & wastewater management skills to the advantage of the industry/irrigation/ household, thus adding to the cause of water security.
- This program implies to Reuse and Reduce use of water for Circular economy
- They will understand connection of Farmer suicide which is world phenomena, how sewage mismanagement is impacting soil nutrient balance and soil gene bank, ultimately leading to food security along with water security.
- World population is facing Cholera, influenza, diarrhoea, plague, due to transfer of pathogens through partially treated sewage
- NEP 2020 all key aspects are incorporated in this Program

GTU will be the first to introduce such a novel idea serving the social and environmental cause of creating sustainable water literate society.

The progression of introduction of Foundation Course on Water Conservation Management is As follows:

Sr.no	Academic Year	SEM	Unit	Topic	Credits	No. of lectures	
1	2024-25	I	To be Implemented in SEM_-II				
	FC @ FY	II	I	Water & Rivers : basic Component, primitive Life & Zero order streams (human body mimics rivers)	2	3L/Week	
			II	Sewage Water Crisis: Principles and science			
			III	Case Studies (Hydrological cycle, Sabarmati river front, Saraswati and other river disappearance, erratic rain, etc.) & Field visits (river front development, sources of water, effluents & sewage discharge in water bodies)			
2	2025-2026	I	I	Water & Rivers : basic Component, primitive Life & Zero order streams, human body mimics rivers	2		
	FC @ FY		II	Sewage Water Crisis: Principles & Science/Anoxic vs anoxic world			
			III	Case Studies (as above and pandemics) & field visits (same as above)			

		II	I	Water conservation & Management: River basin/ catchments/command area and Dam water distribution efficiency	2	
			II	Atmospheric & Living rivers: River Zonation & its essentials		
			III	Case Studies: (Waynad landslide, Thames cleaning, Seine river Paris Olympics issues) & Field visits (Forests, STPs & water purification units)		
	FC @ SY	III	I	Molecular nature: Water Quality and Pollution (BOD/COD/ORP, C:N:P, DO, aerosols etc.)	2	3L/week
			II	Sustainable Ground water management & Recharging essentials/ Rain water harvesting		
			III	Case studies-Droughts and Floods & Field visits (organic/natural farming and other practices, soil sponge)		
		IV	I	Water Consumption Patterns in India & Sewage generation	2	
			II	Sewage water management: for Soil to night soil dimensions & Biodiversity		
			III	Case Studies: Rain Pattern and Crop Pattern, technology interventions/weather stations/multi-parameter probes, etc. & Field studies		
3	AC @ TY	V	I	Hydrobiology & Interlinking of rivers	2+2*	4L+ 4P Periods per week
			II	Hydro geographical Infrastructure	Practicals	
			III	Recharge and Discharge of Aquifers and Streams		
			IV	Case studies (Interlinking of Rivers, nutrient pollution and its consequences)		
				Practical based on SEM-V; AC-Water Management		
		VI	I	Water Budgeting and Auditing	2+2*	4L+ 4P Periods per week
			II	Sewage and public health assessment	Practicals	
			III	River rejuvenation Strategies/ root zone system		
			IV	Case Studies / Live Project-Dissertation		
				Practical based on SEM-VI AC Water Management		
Course on Water Management Under skill Development Initiatives						
		V	I	Biodiversity Act and its relevance/Status of Biodiversity Management Committees		

			II	Water Analysis : Physicochemical, Chemical & Biological		
			III	Nature Awareness Program-Report Writing		
			IV	Maps & Remote Sensing Analysis: Land Use Land cover/Topography/ contour maps		
			V	Water Policy analysis /Western and Eastern Ghats reports/ Review Madhav Gadgil and Kasturirangan reports of Western Ghats to balance conservation and development		
		VI		Research Project Dissertation/ wetlands/ role of rhizomatous vegetation/lagoons		
Theme: Ecology for Economy and sustainable development						
MSc		I	I	Sewage Crisis: Causes and cure / Role of Prokaryotes (aerobes/anaerobes) & Eukaryotes	2+2	pract
			II	Facts about Activated Sludge process & Sludge disposal	2+2	pract
			III	Molecular pathway of organic degradation & reverse Krebs cycle,	2	
			IV	Analysis of STP infrastructure development & growth (seed organism): Liability or asset	2	
			V	Ground water pollution and impacts on sewage treatment (hardness and chlorination)	2	
			VI	Research Methodology & Statistics	2+2	
			VII	On job training/ Dissertation submission	4	
MSc		II	I	Waterbodies and soil restoration: Bacteria-Nutrients and the Environment	2	
			II	Population dynamics driven by sludge age/SRT/S:N	2	
			III	Analysis of bacteria in sewage degradation process	4	
			IV	Climate related Pathological analysis: Sewage & Public health	4	
			V	Metagenomics and other tools principles and application	4	
			VI	Research project dissertation submission	6	

AC: applied component FC: foundation course C: Certificate course Ad.C: Advanced certificate course

D: Diploma, Ad. D: Advanced diploma Sem V & Vi: Degree program

FY/SY/TY UG Program will include other aspects of NEP 2020 in the curriculum for mental physical fitness, Indian Knowledge system, Languages, Environmental studies, etc.

The framework and tasks will be changed from time to time

Evaluation Pattern

Flexi syllabi and continuous evaluation on the basis of 80% field work and 20% theory should be the priority. UG & PG assessment on the basis of Internal:External 40:60 score. Seminar Class test of case studies, project work, field work, dissertation etc. shall be the mode of assessment. Other norms of University shall be maintained.

On Job training description (PG FY)

River rejuvenation projects to make the rivers flow with ecological restoration. This shall include vast areas
i) river basin planning and management by digital mapping of rivers/ tributaries/contributories/ ground water assessment etc. ii) Forest areas exploration and inventory development (with innovative apps or tools) iii) identifying water bodies and reviving it (apps or any innovative solution), iv) Sewage treatment – STPs or nature based solutions

Water budgeting and auditing for any State or any other place (as students can choose to work anywhere in India and Abroad as most of the technology can be developed with virtual exploration), students may choose to work in collaboration with local administration or Industry for;

- water management & Future demand of water
- Water supply and distribution
- Rain Water harvesting services and facilities
- Solid water management technologies by resource mapping
- Micro ecosystem development
- Water recycling and reuse of storm water and drainage
- Effluent treatment plants and Sewage treatment plants. New low-cost models with fast treatments
- Dam water/silt assessment and regulation, to save from floods and droughts.
- Forest and land resources
- Coastal habitat revival
- Tribal development
- Watershed development and rural development
- Sustainability and circular economy

College/University shall connect students to the right govt departments to collect data and design solutions for water crisis mitigation and climate change resilience.

Benefits to UG/PG students on joining organizations for on job training:

- Build capabilities, competencies and capacity,
- Actual/practical field exposure and experiences
- Certificate from government department/industry/NGO recognizing the work, this shall enrich the profile to pick up consultancy services or any other environmental assessment job instantly as there is lack of skilled and technically sound workforce
- Explore Sustainable venture capital/ start-ups - empower for commercial innovations to address climate change.
- Opportunities to meet, interact and work with high profile Experts/resource persons face to face

- Attend conferences or meetings with respective organization

The proposal (considering 5 years time) is divided into objectives:

1. To ensure incessant and ecological flow of rivers/lakes and creating a forest cover
2. To ensure sewage treatment with poop amount instead of at the rate of water supply per capita per person
3. Recharge and rain water harvesting following the geological structure and soil texture
4. To ensure an increase in the groundwater table,
5. To prevent groundwater exploitation,
6. To procure Scientific understanding of interlinking of rivers and river front development, beyond steel and cement,
7. To prepare a participatory/community-based river rejuvenation and groundwater management system
8. Methodology for pathogen study

Compulsorily College/University must encourage live Project work and identify & adopt in campus or outside campus a waterbody (lake/river/pond/wells etc.) or forest area and all the tasks be divided into stages and groups/batches. Stage 1 must be on surveying and collecting whole information about the area identified for the study and making strategy, Stage 2 shall contain initial preparations and establishing an analysis and monitoring system to check the progress and Stage 3 shall be completing the structures with the handholding of the community and local administration for an application based learning and actual green practices to comply with the norms of NAAC.

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