

Adamas University  
School of Basic and Applied Science  
Department of Chemistry

Course Structure and Syllabus of B.Sc. Environmental  
Science

Programme Code: CHM3304  
Duration: 3 Years Full Time  
Academic Year 2022-2023

<b>Summary of the Programme</b>	
<b>Course Credit</b>	<b>Theory +Practical</b>
<b>Core Course (CC)</b>	
15 Theory Papers (4 credits each)	15×4=60
14 Practical Papers (2 credits each)	14×2=28
<b>Discipline Specific Elective Course (DSE)</b>	
4 Theory Papers (4 credits each)	4×4=16
4 Practical Papers (2 credits each)	4×2=08
<b>Generic Elective (GE)</b>	
4 Theory Papers (4 credits each)	4×4=16
4 Practical Papers (2 credits each)	4×2=08
<b>Ability Enhancement Compulsory Course (AECC)</b>	
2 AECC Paper (2 credits each)	2×2= 04
<b>Skill Enhancement Elective Course (SEC)</b>	
2 Theory Papers (2 credits each)	2×2=04
<b>Value Added Courses</b>	
5 Value Added Courses	10
<b>Summer Internship/Environmental camp/Dissertation//Viva Voce</b>	
Credits	6
<b>Total credit</b>	<b>160</b>

**A. ENVIRONMENTAL SCIENCE (THEORY)**

	<b>Discipline/ Name (Theory)</b>	<b>Paper No</b>	<b>Total Credits</b>	<b>L-T-P</b>
1.	<b>Earth and Earth Surface Processes</b>	1	4	4-0-0
2.	<b>Physics and Chemistry of the Environment</b>	1	4	4-0-0
3.	<b>Energy and Environment</b>	1	4	4-0-0
4.	<b>Atmospheric science and Climate Change</b>	1	4	4-0-0
5.	<b>Water And Water Resources Management</b>	1	4	4-0-0
6.	<b>Land and Soil Conservation and Management</b>	1	4	4-0-0
7.	<b>Mathematics for Environmental Modelling</b>	1	4	4-0-0
8.	<b>Ecology and Ecosystems</b>	1	4	4-0-0
9.	<b>Evolutionary biology</b>	1	4	4-0-0
10.	<b>Environmental Biochemistry and Biotechnology</b>	1	4	4-0-0
11.	<b>Natural Resource Management and Sustainability</b>	1	4	4-0-0
12.	<b>Systematics and Biodiversity</b>	1	4	4-0-0
13.	<b>Environmental Pollution and Human health</b>	1	4	4-0-0
14.	<b>Analytical methods, instrumentation, and Measurement</b>	1	4	4-0-0
15.	<b>Environmental Legislation and Environmental Impact Assessment</b>	1	4	4-0-0
	<b>Total</b>	<b>15</b>	<b>60</b>	

**B. ENVIRONMENTAL SCIENCE (PRACTICAL)**

	<b>Discipline/ Name (Practical)</b>	<b>Paper No</b>	<b>Total Credits</b>	<b>L-T-P</b>
1.	<b>Earth and Earth Surface Processes</b>	1	2	0-0-3
2.	<b>Physics and Chemistry of the Environment</b>	1	2	0-0-3
3.	<b>Energy and Environment Lab</b>	1	2	0-0-3
4.	<b>Atmospheric science and Climate Change Lab</b>	1	2	0-0-3
5.	<b>Water And Water Resources Management Lab</b>	1	2	0-0-3
6.	<b>Land and Soil Conservation and Management Lab</b>	1	2	0-0-3
7.	<b>Ecology and Ecosystems</b>	1	2	0-0-3
8.	<b>Evolutionary Biology Lab</b>			
9.	<b>Environmental Biochemistry and Biotechnology Lab</b>	1	2	0-0-3
10.	<b>Natural Resource Management and Sustainability Lab</b>	1	2	0-0-3
11.	<b>Systematics and biodiversity Lab</b>	1	2	0-0-3
12.	<b>Environmental Pollution and Human health Lab</b>			
13.	<b>Analytical methods, instrumentation, and Measurement</b>	1	2	0-0-3
14.	<b>Solid Waste Management Lab</b>	1	2	0-0-3
	<b>Total</b>	<b>8</b>	<b>16</b>	

**Course-wise distribution:****C. GENERIC ELECTIVE Papers**

Discipline/ Name	Paper No	Total Credits	L-T-P
1. GE Chemistry I	1	4	3-1-0
2. GE Chemistry I (Lab)	1	2	0-0-3
3. GE Chemistry II	1	4	3-1-0
4. GE Chemistry II (Lab)	1	2	0-0-3
5. GE Geography I	1	4	3-1-0
6. GE Geography I Lab	1	2	0-0-4
7. GE Geography II	1	4	3-1-0
8. GE Geography II Lab	1	2	0-0-4
<b>Total</b>	<b>8</b>	<b>24</b>	

**D. SKILL ENHANCEMENT COURSES SUBJECTS**

	Discipline/ Name	Paper No	Total Credits	L-T-P
1.	<b>SEC A1: Natural Hazards &amp; Disaster Management</b>	1	2	2-0-0
	<b>Or</b>			
	<b>SEC A2: Wildlife Management</b>			
2.	<b>SEC B1: Gender and Environment</b>	1	2	2-0-0
	<b>Or</b>			
	<b>SEC B2: Health, Safety and Environment</b>			
	<b>Total</b>	<b>2</b>	<b>4</b>	

**E. DISCIPLINE SPECIFIC ELECTIVE PAPERS**

	Discipline/ Name	Paper No. Theory + Lab	Total Credits
1.	<b>Environmental Economics and Statistics</b>	1+1	4+2
	<b>Or</b>		
	<b>Solid Waste Management</b>		
2.	<b>Green Technologies</b>	1+1	4+2
	<b>Or</b>		
	<b>Urban Ecosystem</b>		
3.	<b>Wastewater Engineering</b>	1+1	4+2
	<b>Or</b>		
	<b>Environmental Health and Toxicology</b>		
4.	<b>Remote Sensing and Geographic Information System</b>	1+1	4+2
	<b>Or</b>		
	<b>Environmental data analysis</b>		
	<b>Total</b>	<b>8</b>	<b>24</b>

**F. ABILITY ENHANCEMENT COMPULSORY COURSES:**

Discipline/ Name	Paper No	Total Credits	L-T-P
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**Course-wise distribution:**

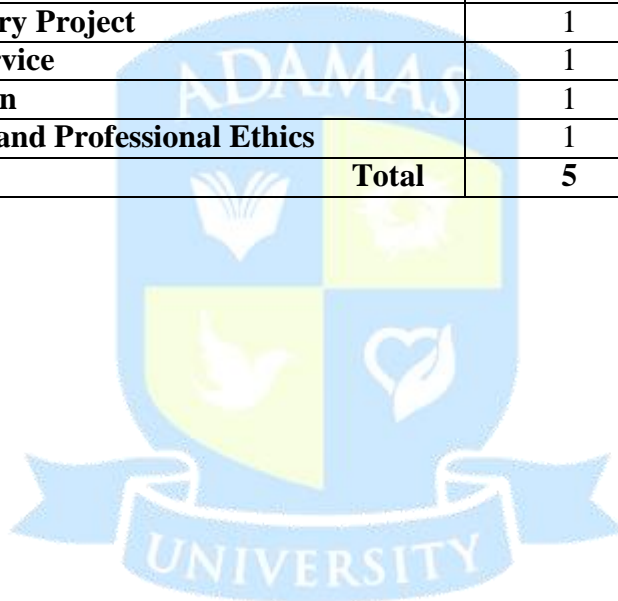
1	AECC-1 (English / Modern Indian Language)	1	2	2-0-0
2	AECC-2 (Environmental Science and Energy Resources)	1	2	2-0-0
<b>Total</b>		<b>2</b>	<b>4</b>	

**G. DISSERTATION/VIVA VOCE**

	Discipline/ Name	Paper No	Total Credits
1.	Summer Internship/Environmental camp	1	2
2.	Dissertation/Project and Viva voce	1	4

**H. VALUE ADDED COURSES**

	Discipline/ Name	Paper No	Total Credits
1.	Design Thinking	1	2
2.	Inter Disciplinary Project	1	3
3.	Community Service	1	1
4.	Venture Ideation	1	2
5.	Human Values and Professional Ethics	1	2
<b>Total</b>		<b>5</b>	<b>10</b>



1 <sup>ST</sup> Year – SEMESTER I								
Sl. No.	Type	Course Code	Title of the Course	Lecture	Tutorial	Practical	Credit	Contact Hours/ per week
1.	Core Theory	EVS11201	Earth and Earth Surface Processes	4	0	0	4	4
2.	Core Theory	EVS11202	Physics and Chemistry of the Environment	4	0	0	4	4
3.	Core Theory	EVS11203	Energy and Environment	4	0	0	4	4
4.	GE Theory	CHM1115 1	Generic Elective Chemistry I	3	1	0	4	4
5.	AECC Theory	ENG11057	AECC-1: English Communication (Modern Indian Language)	2	0	0	2	2
6.	Value Added Course Theory	DGS11011	Design Thinking	2	0	0	2	2
7.	Core Practical	EVS12204	Earth and Earth Surface Processes Lab	0	0	3	2	3
8.	Core Practical	EVS12205	Physics and Chemistry of Environment Lab	0	0	3	2	3
9.	Core Practical	EVS12206	Energy and Environment Lab	0	0	3	2	3
10.	GE Practical	CHM1215 2	Generic Elective Chemistry-I Lab	0	0	3	2	3
<b>Total</b>				<b>19</b>	<b>1</b>	<b>12</b>	<b>28</b>	<b>32</b>

1 <sup>ST</sup> Year – SEMESTER II								
Sl. No.	Type	Course Code	Title of the Course	Lecture	Tutorial	Practical	Credit	Contact Hours/ per week
1.	Core Theory	EVS11207	Atmospheric Science and Climate Change	4	0	0	4	4
2.	Core Theory	EVS11208	Water And Water Resources Management	4	0	0	4	4
3.	Core Theory	EVS11209	Land and Soil Conservation and Management	4	0	0	4	4
4.	Core Theory	MTH11512	Mathematics for Environmental Modelling	3	1	0	4	4

5.	GE Theory	<b>CHM11153</b>	<b>Generic Elective Chemistry II</b>	3	1	0	4	4
6.	AECC Theory	<b>EVS11105</b>	<b>AECC-2: Environmental Science and Energy Resources</b>	2	0	0	2	2
7.	Value Added Course	<b>EIC11001</b>	<b>Venture Ideation</b>	2	0	0	2	2
8.	Core Practical	<b>EVS12210</b>	<b>Atmospheric Science and Climate Change Lab</b>	0	0	3	2	3
9.	Core Practical	<b>EVS12211</b>	<b>Water and Water Resources Management Lab</b>	0	0	3	2	3
10.	Core Practical	<b>EVS12212</b>	<b>Land and Soil Conservation and Management Lab</b>	0	0	3	2	3
11.	GE Practical	<b>CHM12154</b>	<b>Generic Elective Chemistry II Lab</b>	0	0	3	2	3
<b>Total</b>				<b>22</b>	<b>2</b>	<b>12</b>	<b>32</b>	<b>36</b>

<b>2<sup>ND</sup> Year – SEMESTER III</b>								
<b>Sl. No</b>	<b>Type</b>	<b>Course Code</b>	<b>Title of the Course</b>	<b>Lecture</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Credit</b>	<b>Contact Hours per week</b>
1.	Core Theory	<b>EVS11213</b>	<b>Ecology and Ecosystems</b>	4	0	0	4	4
2.	Core Theory	<b>EVS11214</b>	<b>Evolutionary Biology</b>	4	0	0	4	4
3.	GE Theory	<b>GEO11001</b>	<b>Generic Elective Geography-I</b>	4	0	0	4	4
4.	Core Practical	<b>EVS12215</b>	<b>Ecology and Ecosystems Lab</b>	0	0	3	2	3
5.	Core Practical	<b>EVS12216</b>	<b>Evolutionary Biology Lab</b>	0	0	3	2	3
6.	GE Practical	<b>GEO12002</b>	<b>Generic Elective Geography-I Lab</b>	0	0	4	2	4
7.	Value Added Course	<b>IDP14001</b>	<b>Inter Disciplinary Project</b>	-	3	-	3	3
8.	Value Added Course	<b>SOC14100</b>	<b>Community Service</b>	-	1	-	1	1
9.	SEC Theory	<b>EVS11217</b>	<b>SEC A1: Natural Hazards &amp; Disaster Management</b>	2	0	0	2	2
		<b>Or</b>						
		<b>EVS11218</b>	<b>SEC A2: Wildlife Management</b>					
<b>Total</b>				<b>12</b>	<b>3</b>	<b>10</b>	<b>24</b>	<b>28</b>

2 <sup>ND</sup> Year – SEMESTER IV								
Sl. No .	Type	Course Code	Title of the Course	Lecture	Tutorial	Practical	Credit	Contact Hours per week
1.	Core Theory	EVS11219	Environmental Biochemistry and Biotechnology	4	0	0	4	4
2.	Core Theory	EVS11220	Natural Resource Management and Sustainability	4	0	0	4	4
3.	Core Theory	EVS11221	Systematics and Biodiversity	4	0	0	4	4
4.	GE Theory	GEO11005	GE Geography II	4	0	0	4	4
5.	Core Practical	EVS12222	Environmental Biochemistry and Biotechnology Lab	0	0	3	2	3
6.	Core Practical	EVS12223	Natural Resource Management and Sustainability Lab	0	0	3	2	3
7.	Core Practical	EVS12224	Systematics and biodiversity Lab	0	0	3	2	3
8.	GE Practical	GEO12006	GE Geography II Lab	0	0	4	2	4
9.	Value Added Course	PSG11021	Human Values and Professional Ethics	0	2	0	2	2
10.	SEC Theory	EVS11225	SEC B1: Gender and Environment	2	0	0	2	2
		Or						
		EVS11226	SEC B2: Health, Safety and Environment					
<b>Total</b>				<b>18</b>	<b>2</b>	<b>13</b>	<b>28</b>	<b>33</b>

#Summer Internship / Environment Camp for 7-15 days will be taken at the end of 4<sup>th</sup> semester and will be evaluated in the 5<sup>th</sup> semester.



**3<sup>RD</sup> Year – SEMESTER V**

<b>Sl. No.</b>	<b>Type</b>	<b>Course Code</b>	<b>Title of the Course</b>	<b>Lecture</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Credit</b>	<b>Contact Hours per week</b>
1.	Core Theory	<b>EVS11227</b>	<b>Environmental Pollution and Human health</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
2.	Core Theory	<b>EVS11228</b>	<b>Analytical methods, Instrumentation and Measurement</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
3.	DSE I Theory	<b>EVS11229</b>	<b>Environmental Economics and Statistics</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
		<b>Or</b>						
		<b>EVS11230</b>	<b>Solid Waste management</b>					
4.	DSE II Theory	<b>EVS11231</b>	<b>Green Technologies</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
5.		<b>Or</b>						
6.		<b>EVS11232</b>	<b>Urban Ecosystem</b>					
7.	Core Practical	<b>EVS12233</b>	<b>Environmental Pollution and Human health Lab</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>
8.	Core Practical	<b>EVS12234</b>	<b>Analytical methods, instrumentation, and Measurement Lab</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>
9.	Core Practical	<b>EVS12235</b>	<b>Waste Management Site Visit</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>3</b>
10.	Core Practical	<b>EVS14236</b>	<b>Summer Internship / Environmental camp</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>3</b>
11.	DSE I Practical	<b>EVS12237</b>	<b>Environmental Economics and Statistics Lab</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>
		<b>Or</b>						
		<b>EVS12238</b>	<b>Solid Waste Management Lab</b>					
12.	DSE II Practical	<b>EVS12239</b>	<b>Green Technologies Lab</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>
		<b>Or</b>						
		<b>EVS12240</b>	<b>Urban Ecosystem Lab</b>					
<b>Total</b>				<b>16</b>	<b>0</b>	<b>12</b>	<b>28</b>	<b>28</b>

**3<sup>RD</sup> Year – SEMESTER VI**

<b>Sl. No.</b>	<b>Type</b>	<b>Course Code</b>	<b>Title of the Course</b>	<b>Lecture</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Credit</b>	<b>Contact Hours per week</b>
1.	Core Theory	<b>EVS11241</b>	<b>Environmental Legislation and Environmental Impact Assessment</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
2.	DSE III Theory	<b>EVS11242</b>	<b>Wastewater Engineering</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
		<b>Or</b>						
		<b>EVS11243</b>	<b>Environmental Health and Toxicology</b>					
3.	DSE IV Theory	<b>EVS11244</b>	<b>Remote Sensing and Geographic Information System</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
		<b>Or</b>						
		<b>EVS11245</b>	<b>Environmental data analytics</b>					
4.	DSE III Practical	<b>EVS12246</b>	<b>Wastewater Engineering</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>
		<b>Or</b>						
		<b>EVS12247</b>	<b>Environmental Health and Toxicology</b>					
5.	DSE IV Practical	<b>EVS12248</b>	<b>Remote Sensing and Geographic Information System</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>
		<b>Or</b>						
		<b>EVS12249</b>	<b>Environmental Data Analytics lab</b>					
6.	Core Practical/ Dissertation Project	<b>EVS15250</b>	<b>Dissertation Project and Viva voce</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>
<b>Total</b>				<b>12</b>	<b>0</b>	<b>6</b>	<b>20</b>	<b>18</b>