



South Calcutta Girls' College

**SYLLABUS OF THE COURSES THAT
INCLUDE EXPERIENTIAL LEARNING
THROUGH PROJECT WORK
DURING THE YEAR**

2020-21

**UNIVERSITY OF CALCUTTA****Notification No. CSR/ 12 /18**

It is notified for information of all concerned that the Syndicate in its meeting held on 28.05.2018 (vide Item No.14) approved the Syllabi of different subjects in Undergraduate Honours / General / Major courses of studies (CBCS) under this University, as laid down in the accompanying pamphlet:

List of the subjects

<u>Sl. No.</u>	<u>Subject</u>	<u>Sl. No.</u>	<u>Subject</u>
1	Anthropology (Honours / General)	29	Mathematics (Honours / General)
2	Arabic (Honours / General)	30	Microbiology (Honours / General)
3	Persian (Honours / General)	31	Mol. Biology (General)
4	Bengali (Honours / General /LCC2 /AECC1)	32	Philosophy (Honours / General)
5	Bio-Chemistry (Honours / General)	33	Physical Education (General)
6	Botany (Honours / General)	34	Physics (Honours / General)
7	Chemistry (Honours / General)	35	Physiology (Honours / General)
8	Computer Science (Honours / General)	36	Political Science (Honours / General)
9	Defence Studies (General)	37	Psychology (Honours / General)
10	Economics (Honours / General)	38	Sanskrit (Honours / General)
11	Education (Honours / General)	39	Social Science (General)
12	Electronics (Honours / General)	40	Sociology (Honours / General)
13	English ((Honours / General/ LCC1/ LCC2/AECC1)	41	Statistics (Honours / General)
14	Environmental Science (Honours / General)	42	Urdu (Honours / General /LCC2 /AECC1)
15	Environmental Studies (AECC2)	43	Women Studies (General)
16	Film Studies (General)	44	Zoology (Honours / General)
17	Food Nutrition (Honours / General)	45	Industrial Fish and Fisheries – IFFV (Major)
18	French (General)	46	Sericulture – SRTV (Major)
19	Geography (Honours / General)	47	Computer Applications – CMAV (Major)
20	Geology (Honours / General)	48	Tourism and Travel Management – TTMV (Major)
21	Hindi (Honours / General /LCC2 /AECC1)	49	Advertising Sales Promotion and Sales Management –ASPV (Major)
22	History (Honours / General)	50	Communicative English –CMEV (Major)
23	Islamic History Culture (Honours / General)	51	Clinical Nutrition and Dietetics CNDV (Major)
24	Home Science Extension Education (General)	52	Bachelor of Business Administration (BBA) (Honours)
25	House Hold Art (General)	53	Bachelor of Fashion and Apparel Design – (B.F.A.D.) (Honours)
26	Human Development (Honours / General)	54	Bachelor of Fine Art (B.F.A.) (Honours)
27	Human Rights (General)	55	B. Music (Honours / General) and Music (General)
28	Journalism and Mass Communication (Honours / General)		

The above shall be effective from the academic session 2018-2019.

SENATE HOUSE
KOLKATA-700073
The 4th June, 2018

Paul
4/6/18
(Dr. Santanu Paul)
Deputy Registrar

University of Calcutta

Under Graduate Curriculum under Choice Based Credit System (CBCS)

Syllabus for Ability Enhancement Compulsory Course-2 (AECC-2) in **Environmental Studies**

Semester-2

Total Marks-100(Credit -2)

(50 Theory-MCQ type + 30 Project + 10 Internal Assessment + 10 Attendance)

[Marks obtained in this course will be taken to calculate SGPA & CGPA]

Theory

Unit 1 Introduction to environmental studies	2 lectures
<ul style="list-style-type: none">•Multidisciplinary nature of environmental studies;•Scope and importance; Concept of sustainability and sustainable development.	
Unit 2 Ecology and Ecosystems	6 lectures
<ul style="list-style-type: none">•Concept of ecology and ecosystem, Structure and function of ecosystem; Energy flow in an ecosystem; food chains, food webs; Basic concept of population and community ecology; ecological succession.•Characteristic features of the following:<ul style="list-style-type: none">a) Forest ecosystemb) Grassland ecosystemc) Desert ecosystemd) Aquatic ecosystems (ponds, streams, lakes, wetlands, rivers, oceans, estuaries)	
Unit 3 Natural Resources	8 lectures
<ul style="list-style-type: none">• Concept of Renewable and Non-renewable resources• Land resources and land use change; Land degradation, soil erosion and desertification.•Deforestation: Causes, consequences and remedial measures•Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).•Energy resources: Environmental impacts of energy generation, use of alternative and nonconventional energy sources, growing energy needs.	
Unit 4 Biodiversity and Conservation	8 lectures
<ul style="list-style-type: none">•Levels of biological diversity: genetic, species and ecosystem diversity;• Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots•India as a mega-biodiversity nation; Endangered and endemic species of India•Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;•Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.•Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
Unit 5 Environmental Pollution	8 lectures
<ul style="list-style-type: none">• Environmental pollution: concepts and types,• Air, water, soil, noise and marine pollution- causes, effects and controls• Concept of hazardous waste and human health risks• Solid waste management: Control measures of Municipal, biomedical and e-waste.	

Unit 6 Environmental Policies and Practices	7 lectures
<ul style="list-style-type: none"> •Climate change, global warming, ozone layer depletion, acid rain and their impacts on human communities and agriculture •Environment Laws: Wildlife Protection Act; Forest Conservation Act. Water (Prevention and control of Pollution) Act; Air (Prevention & Control of Pollution) Act; Environment Protection Act; Biodiversity Act. •International agreements: Montreal Protocol, Kyoto protocol and climate negotiations; Convention on Biological Diversity (CBD). •Protected area network, tribal populations and rights, and human wildlife conflicts in Indian context. 	
Unit 7 Human Communities and the Environment	6 lectures
<ul style="list-style-type: none"> •Human population growth: Impacts on environment, human health and welfare. •Case studies on Resettlement and rehabilitation. • Environmental Disaster: Natural Disasters-floods, earthquake, cyclones, tsunami and landslides; Manmade Disaster- Bhopal and Chernobyl. •Environmental movements: Bishnois, Chipko, Silent valley, Big dam movements. •Environmental ethics: Role of gender and cultures in environmental conservation. •Environmental education and public awareness 	
Project/ Field work	Equal to 5 lectures
<ul style="list-style-type: none"> •Visit to an area to document environmental assets: Natural resources/flora/fauna, etc. •Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. •Study of common plants, insects, fish, birds, mammals and basic principles of identification. •Study of ecosystems-pond, river, wetland, forest, estuary and agro ecosystem. 	
Total	50 Lectures

Suggested Reading:

Asthana, D. K. (2006). *Text Book of Environmental Studies*. S. Chand Publishing.

Basu, M., Xavier, S. (2016). *Fundamentals of Environmental Studies*, Cambridge University Press, India

Basu, R. N., (Ed.) (2000). *Environment*. University of Calcutta, Kolkata

Bharucha, E. (2013). *Textbook of Environmental Studies for Undergraduate Courses*. Universities Press.

De, A.K., (2006). *Environmental Chemistry*, 6th Edition, New Age International, New Delhi.

Mahapatra, R., Jeevan, S.S., Das, S. (Eds) (2017). *Environment Reader for Universities*, Centre for Science and Environment, New Delhi.

Masters, G. M., & Ela, W. P. (1991). *Introduction to environmental engineering and science*. Englewood Cliffs, NJ: Prentice Hall.

Odum, E. P., Odum, H. T., & Andrews, J. (1971). *Fundamentals of ecology*. Philadelphia: Saunders.

Sharma, P. D., & Sharma, P. D. (2005). *Ecology and environment*. Rastogi Publications.

2.28 GEO-A-CC-6-14-P – Hazard Management Lab ✧ 30 Marks / 2 Credits

A Group Project Report is to be prepared and submitted based on any one case study among the following hazards from West Bengal, incorporating a preparedness plan, preferably in the vicinity of the candidates' institution / district:

1. Earthquake
2. Landslide
3. Land subsidence
4. Thunderstorm
5. Flood
6. Riverbank / coastal erosion
7. Fire
8. Industrial accident
9. Road / Railway accident
10. Structural collapse
11. Environmental Pollution
12. Biohazard

One case study will be done by a group of five to ten students. Different groups may choose different case studies from any one or different types of disasters. The report should be prepared on secondary data and handwritten on A4 page in candidates' own words not exceeding 2,000 words excluding references. The report should contain a proper title. The report should incorporate relevant tables, maps, diagrams and references, not exceeding ten pages. Photographs are optional and should not exceed three. A copy of the stapled / spiral-bound report in a transparent cover, duly signed by the concerned teacher, will be submitted during examination. Without the report the candidates will not be evaluated for GEO-A-CC-6-14-P.

Marks division: 20 on report + 10 on viva-voce = 30

(b) Gender inequality in India : caste, Class and gender.

Module IV :

- (a) Social change in India : Westernization, Modernization and Globalization.
- (b) Social movements in India : Post-independence Peasant, Working Class, Dalit, Women's and Environment movements.

Paper VIII : Contemporary Indian Social Problems and Dissertation 100 Marks

Group A : Contemporary Indian Social Problems (Full Marks: 50)

Module I :

- (a) Conceptualising social problem : Approaches to the study of social problem.
- (b) Population : Trends and Policies in India; Migration : causes and consequences.
- we* (c) Poverty : conceptualizing poverty; Poverty in India: nature and extent; Poverty amelioration programmes
- (d)

Module II :

- PS* (a) Problems of mass illiteracy and school drop-out; Mass literacy programme in India.
- MAG* (b) Problems of youth: addiction, alienation and identity crisis; Abuses against children, women and elderly
- (c) Communalism; Secularism; Terrorism; Ethnic problems.

Group B : Practical : Field Work and Dissertation (Full Marks : 50)
(Dissertation : 40 marks and Viva-voce : 10 marks)

Dissertation may be written by using any method as prescribed in the syllabus. Size of the dissertation should be around 5000 words. Dissertation paper will be examined jointly by one Internal and one External Examiner to be appointed by the University. Marks will be awarded jointly by the Internal and External Examiners on the basis of the written Dissertation and Viva-voce.

Unit 7: Complement System	5
Components and pathways of complement activation.	
Unit 8: Hypersensitivity	4
Gell and Coombs' classification and brief description of various types of hypersensitivities.	
Unit 9: Vaccines	4
Various types of vaccines. Active & passive immunization (Artificial and natural).	

Immunology Lab; ZOOA-CC4-10-P

Full Marks 30	60 Hours	2 Credits
List of Practical		
<ol style="list-style-type: none"> 1. Demonstration of lymphoid organs (by picture). 2. Histological study of Bursa fabricius, spleen, thymus and lymph nodes through slides/ photographs 3. Demonstration of ELISA 		

PART III: SEMESTER 5 CORE COURSE 11.Ecology ZOOA-CC5-11-TH

Full Marks 50	4 Credits	50 Hours
Unit 1: Introduction to Ecology	4	
Autecology and synecology, Levels of organization, Laws of limiting factors, Study of Physical factors, The Biosphere.		
Unit 2: Population	20	
Unitary and Modular populations Unique and group attributes of population: Demographic factors, life tables, fecundity tables, survivorship curves, dispersal and dispersion. Geometric, exponential and logistic growth, equation and patterns, r and K strategies Population regulation - density-dependent and independent factors, Population Interactions, Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition.		
Unit 3: Community	11	
Community characteristics: species diversity, abundance, dominance, richness, Vertical stratification, Ecotone and edge effect; Ecological succession with one example.		

Unit 5: Application in Health	8
Hybridoma technology, Production of recombinant Proteins: Insulin and growth hormones.	

Animal Cell Biotechnology Lab, ZOOA-DSE(A)-6-1-P

Full Marks 50	60 Hours	2 Credits
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List of Practical
<ol style="list-style-type: none"> 1. Packing and sterilization of glass and plastic wares for cell culture. 2. Preparation of culture media. 3. Preparation of genomic DNA from E. coli/animals/ human. 4. Plasmid DNA isolation (pUC 18/19) and DNA quantitation using agarose gel electrophoresis (by using lambda DNA as standard). 5. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays (By Photograph).

PART III: SEMESTER 6

DSE2. Animal Biotechnology

ZOOA-DSE(A)-6-2-TH

Full Marks 50	4 Credits	Class
Unit 1: Introduction		5
Organization of <i>E.coli</i> and <i>Drosophila</i> genome.		
Unit 2: Molecular Techniques in Gene manipulation		23
Recombinant DNA technology, Restriction endonucleases. Cloning Vectors & their features: Plasmids, Phage vectors, Cosmids, Phagemids, BAC, YAC, and HAC. Shuttle and Expression Vectors. Construction of Genomic libraries and cDNA libraries Transformation techniques: Cloning in bacteria and detection technique of clone Agarose and Polyacrylamide Gel Electrophoresis, Southern, Northern and Western blotting, Polymerase chain reaction: Allele specific, RAPD & RT PCR, DNA Fingerprinting		
Unit 3: Genetically Modified Organisms		12
Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection. Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock-out mice.		
Unit 4: Culture Techniques and Applications		10
Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of		

genetic diseases (Cystic fibrosis, Sickle cell anaemia, Thalassemia).
 Dolly & Polly cloning
 Genetically modified economically important animal
 Gene Therapy

Animal Biotechnology Lab, ZOOA-DSE(A)-6-2-P

Full Marks 30	60 Hours	2 Credits
List of Practical		
<ol style="list-style-type: none"> 1. Genomic DNA isolation from <i>E. coli</i> and Plasmid DNA isolation (pUC 18/19) from <i>E. coli</i> 2. To study following techniques through photographs - Southern Blotting, Northern Blotting, Western Blotting, PCR, DNA fingerprinting 3. Project report on animal cloning & Application & ethical Issues. 		

Students will choice either of ZOOA-DSE(B)-6-1-TH or ZOOA-DSE(B)-6-2-TH

PART III: SEMESTER 6

Animal Behaviour and Chronobiology Lab, ZOOA-DSE(B)-6-1-P

Full Marks 50	60 Hours	2 Credits
List of Practical		
<ol style="list-style-type: none"> 1. To study nests and nesting habits of the birds and social insects. 2. To study the behavioural responses of wood lice to dry and humid conditions(demonstration only). 3. To study geotaxis behaviour in earthworm. 4. To study the phototaxis behaviour in insect larvae. 5. Visit to Forest/ Wild life Sanctuary/Biodiversity Park/Zoological Park to study behavioural activities of animals and prepare a short report. 6. Study of circadian functions in humans (daily eating, sleep and temperature patterns). 		

JOURNALISM & MASS COMMUNICATION

For Semester-6 (Any One)

JORA-DSE-A-6-3-TH+TU: Dissertation with Presentation Marks=100(6 Credits)

Total Classes: TH: 5hrs + TU1hr. Per Week

- Students will do a micro research project(7000 to 8000 words) on any topic of social, political, cultural interest. The dissertation must include proper reference, bibliography.
- Students getting the project accomplished have to prepare a suitable presentation (of 10 minutes) strictly on the topic for Viva-Voce.

Paper-IV Practical 100 Marks

Written Segment 30 Marks

Book Review, Film Review, Review of Television Programmes, Writing an Editorial, Writing Anchor Story, Writing Interviewed Copy with headline, Lead or Intro Writing, Editing Agency Creed.

Project and Presentation 20+20=40

Dissertation Project on topics of social interest (within four thousand words) and Slide Presentation on the dissertation topic.

Computer 30 Marks

Advanced Page Designing of a broadsheet using Page making software and photo editing software; Candidates are expected to know various elements of page design that includes slug, info-graphics, blurbs, shoulder, reverse etc.

Designing Web Page of a Newspaper using Page Making Software.

***Installation of Bangla Software mandatory for page make-up.**

****Candidates failing to appear in any of the segment of Practical Examination shall be treated absent for the whole paper.**

*****Candidates failing to appear any half of the practical paper or viva-voce or non-exhibition of dissertation project (duly signed by the college authority) on the day of examination will be treated absent for the whole paper**