



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

Sl. No.	Subject	Sl. No.	Subject
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


 (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:<ol 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.

BEd: SCHOOL INTERNSHIP SYLLABUS

**CURRICULUM STRUCTURE FOR
TWO-YEAR B.Ed. PROGRAMME
IN WEST BENGAL
FOLLOWING
NCTE REGULATIONS, 2014**

**Prepared by the Curriculum Committee
Constituted by the**

**Higher Education Department
Government of West Bengal
BikashBhavan, Salt Lake, Kolkata – 700091**

admission is based on the total score obtained from his/her Secondary, H.S, Graduation and Post-Graduation.

Relaxation of the percentage of marks for reserved category candidate will be as per State Govt. rules. Intake capacity is as per NCTE, State Govt. & other statutory bodies.

3. Registration:

As per University guidelines.

UNIFORM CURRICULUM STRUCTURE AND EXAMINATION PATTERN FOR 2 YEAR B.ED. PROGRAMME IN WEST BENGAL FOLLOWING NCTE REGULATIONS, 2014

COURSE & CODE	COURSE NAME	MARKS			Class Teaching Hour
		Theory	Engagements with the Field	Marks(Credit)	
SEMESTER-I					
Course-I (1.1.1)	Childhood and Growing Up (1 st &2 nd half)	50+50	25	100+25 (4+1)	64+32
Course-II (1.1.2)	Contemporary India and Education (1 st &2 nd half)	50+50	25	100+25 (4+1)	64+32
Course-IV (1.1.4)	Language across the Curriculum	50	50	50+50 (2+2)	32+64
Course-V (1.1.5)	Understanding Discipline and Subjects	50	50	50+50 (2+2)	32+64
CourseEPC-1 (1.1EPC1)	Reading and Reflecting on Texts	25	25	25+25 (1+1)	16+32
TOTAL		325	175	500(13+7)	208+224
Full Marks: 500 (Credit : 20)					
SEMESTER-II					
Course-III (1.2.3)	Learning and Teaching (1 st & 2 nd half)	50+50	25	100+25 (4+1)	64+32
Course-VII-(A) (1.2.7A)	Pedagogy of a School Subject Part-I	50	50	50+50 (2+2)	32+64
Course-VIII-(A) (1.2.8A)	Knowledge and Curriculum- Part-I	50	25	50+25 (2+1)	32+32
Course-IX (1.2.9)	Assessment for Learning (1 st & 2 nd half)	50+50	50	100+50 (4+2)	64+64
CourseEPC-2 (1.2EPC2)	Drama and Arts in Education	25	25	25+25 (1+1)	16+32
TOTAL		325	175	500(13+7)	208+224
Full Marks: 500 (Credit : 20)					
SEMESTER-III					
Course-VII-(B) (1.3.7B)	Pedagogy of a School Subject- Part-II	50	100	50+100 (2+4)	32+128
School Internship			350	350 (14)	448
TOTAL		50	450	500(2+18)	32+576
Full Marks: 500 (Credit : 20)					
SEMESTER-IV					
Course-VI (1.4.6)	Gender, School and Society	50	25	50+25 (2+1)	32+32
Course-VIII(B)(1.4.8B)	Knowledge and Curriculum- Part-II	50	25	50+25 (2+1)	32+32
Course-X (1.4.10)	Creating an Inclusive School	50	25	50+25 (2+1)	32+32
Course-XI (1.4.11) Optional	Vocational/Work Education	50	25	50+25 (2+1)	32+32
Course-XI (1.4.11) Optional	Health and Physical Education	50	25	50+25 (2+1)	32+32
Course-XI (1.4.11) Optional	Peace Education	50	25	50+25 (2+1)	32+32
Course-XI (1.4.11) Optional	Guidance and Counselling	50	25	50+25 (2+1)	32+32
Course-XI (1.4.11) Optional	Environmental and Population Education	50	25	50+25 (2+1)	32+32
Course-XI (1.4.11) Optional	Yoga Education	50	25	50+25 (2+1)	32+32
CourseEPC-3 (1.4EPC3)	Critical Understanding of ICT	50	50	50+50 (2+2)	32+64
CourseEPC-4(1.4EPC4)	Yoga Education: Self Understanding and Development	50	50	50+50 (2+2)	32+64
TOTAL		300	200	500(12+8)	192+256
Full Marks: 500 (Credit : 20)					
Total Marks: 2000 (Credit : 80)					

Note:

a) *Optional Courses can be from among the following-Vocational/Work Education, Health and Physical Education, Peace Education, Guidance and Counselling, and Environmental and Population Education, Yoga Education.

**Uniform Curriculum Structure
for
Two-Year B.Ed. Programme
in West Bengal**

**following
NCTE Regulations, 2014**

Examined and Recommended

*(Sd/-)
28/7/2015
Prof. S.K. Yadav
Former Head, Dept of Teacher Education
NCTE, New Delhi
& Presently Academic Council
on NCTE New Delhi*

The Curriculum Committee

Prepared by
Constituted by the

HIGHER EDUCATION DEPARTMENT

Government of West Bengal

Bikash Bhavan, Salt Lake, Kolkata - 700091

*28/7/15
(Sd/-)
Academic Council
NCTE*

SEMESTER-III	School Internship	Theory	Engagement With the Field	Credit	14
		-	350	Class Hours	448
<ul style="list-style-type: none"> ● At least 60 learning designs should be delivered (duly prepared and approved learning designs by the Teacher Educators) ● During this semester the student teachers are acquainted with the overall conduct of the school activities and record keeping. It may include morning assembly, class time table, attendance register, stock register, mid-day meal, conduct of periodical meetings, purchase and consumption and co-curricular activities. ● Student teachers will be able to recognize the needs of In-Service Programme. ● Internship, as such, orients and acquaints the student teachers with the overall working of the school to make him/her fit to conduct himself/ herself in all activities of the school. 					
School Internship (*Community –based activities shall consist of the following)					
<ul style="list-style-type: none"> • Organization of a rally or campaign on any social issue e.g. Polio, HIV, Electoral Rights, Gender sensitization etc. • Gardening. • Cleanliness of the campus and beautification • Cleaning of furniture • Assembly • Community Games • Cultural Programmes • SUPW • Scout & Guide /NSS • Celebration of National Festivals, Teachers Day etc. • First Aid • Aesthetic development activities- decoration of classroom etc. 					

SEMESTER - IV

Course-VI (1.4.6)	Gender, School and Society	Theory	Engagement With the Field	Credit	2+1
		50	25	Class Hours	32+32
Objectives	The student teachers will be able to :- 1. Develop gender sensitivity among the student teachers. 2. Understand the gender issues faced by the schools. 3. Understand the paradigm shift with reference to gender studies. 4. Understand how gender, power and sexuality relate to education (in terms of access, curriculum and pedagogy).				
COURSE CONTENT /SYLLABUS					
Unit I	Gender issues: key concepts: <ul style="list-style-type: none"> ● Definition of gender. ● Difference between gender and sex. ● Social construction of gender. ● Gender including transgender and third gender, sex, patriarchy. ● Gender bias, gender stereotyping, and empowerment ● Equity and equality in relation with caste, class, religion, ethnicity, disability and region. 				6 hrs.
Unit II	Gender studies: paradigm shifts: <ul style="list-style-type: none"> ● Paradigm shift from women's studies ● Historical backdrop: some landmarks on social reform movements of the 19th and 20th centuries with focus on women's experiences of education (with special reference to Raja Rammohan Roy, Pandit Iswar Chandra Vidyasagar, Swami Vivekananda, Rabindranath Tagore and Begam 				7 hrs.

2nd Year

Semester- III: Full Marks: 500 (Credit: 20)

Course Code	Course Name	Marks	Credit	Class Teaching Hours		Internship	Internal Assessment Weightage (in %)	External Assessment Weightage (in %)
1.3.7b	Pedagogy of a School Subject –II	50	2	32			30	70
	School Internship	350	14	-	448		50	50
Practicum/Hands on Experience/ Students Activity /Seminar/Workshop etc. Engagement with the Field (Credits-4) (Marks = 100) (128 Hours) Pedagogy of a school Subject (Credit-1 = Marks 25) Community-based Activities (Credit-3 = Marks 75)								
NOTE: All practical activities will have both Internal as well as External Assessment (Internal-60%, External-40%)								

Semester- IV: Full Marks: 500 (Credit: 20)

Course Code	Course Name	Marks	Credit	Class Teaching Hours		Internship	Internal Assessment Weightage (in %)	External Assessment Weightage (in %)
1.4.6	Gender School and Society	50	2	32		-	30	70
1.4.8b	Knowledge and Curriculum –II	50	2	32		-	30	70
1.4.10	Creating an Inclusive School	50	2	32		-	30	70
1.4.11	Optional Course*	50	2	32		-	30	70
1.4. EPC3	Critical Understanding of ICT	50	2	32		-	30	70
1.4. EPC4	Understanding the Self	50	2	32		-	30	70
Practicum/Hands on Experience/ Students Activity /Seminar/Workshop etc. Engagement with Field (Credit8) (Marks = 200) (256 Hours) Gender School and Society (Credit 1= Marks 25) Knowledge and Curriculum –II (Credit 1 = Marks 25) Creating an Inclusive School (Credit 1= Marks 25) Optional Course* (Credit 1 = Marks 25) Critical Understanding of ICT (Credit 2 = Marks 50) Understanding the Self (Credit 2= Marks 50)								
NOTE: All practical activities will have both Internal as well as External Assessment (Internal-60%, External-40%)								
*The Optional Courses are : 1. Vocational/Work Education 2. Health and Physical Education 3. Peace Education 4. Guidance and Counselling 5. Environmental and Population Education 6. Yoga Education								

4. Examination policy:

a. Pattern of questions for theoretical examination:

(For 50 marks)

2 marks X 5 Objective type questions (Out of 7) = 10 marks

5 marks X 6 Short type/Short note questions (Out of 8) = 30 marks

10 marks X 1 Essay type question (Out of 3) = 10 marks

(For 25 Marks)

2 marks X 5 Objective type questions (Out of 7) = 10 marks

5 marks X 3 Short type/Short note questions (Out of 5) = 15 marks

- b. The Semester examination will be conducted in the combination of Semester I/III along with Semester II/IV (Supplementary) in December and Semester II/IV along with Semester I/III (Supplementary) in June of the year.

PG CHEMISTRY PROJECT WORK SYLLABUS



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 68 /18

It is notified for information of all concerned that the Syndicate in its meeting held on 13.07.2018 (vide Item No.11) approved the Syllabus of Two-Year (Four-Semester) M.Sc. Course of Study in Chemistry under CBCS in the Post-Graduate Departments of the University and in the affiliated Colleges offering Post-Graduate Courses under this University, as laid down in the accompanying pamphlet.

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

SENATE HOUSE
KOLKATA-700073
The 17th August, 2018


(Debabrata Manna)

Deputy Registrar (Acting)

SYLLABUS

FOR

TWO-YEAR FOUR-SEMESTER COURSE IN

CHEMISTRY

2018

UNIVERSITY OF CALCUTTA

DEPARTMENT OF CHEMISTRY

UNIVERSITY OF CALCUTTA

TWO YEAR FOUR-SEMESTER M.Sc. COURSE IN CHEMISTRY

COURSE STRUCTURE

DURATION	SEMESTER				TOTAL MARKS
	I JULY-DEC	II JAN-JULY	III JULY-DEC	IV JAN-JUNE	
MARKS	250	250	250	250	1000
COURSE TYPE	THEO PRACT	THEO PRACT	THEO PRACT	THEO PRACT	
GENERAL (G)	150 100	150 100	50		650
CREDIT POINTS	(12) (8)	(12) (8)	(4)		(52)
CBCS			100		
CREDIT POINTS			(8)		

SPECIAL (S)			100	150 100	350
CREDIT POINTS			(8)	(12) (8)	(28)
Total Marks	150 100	150 100	150 100	150 100	1000 (80)

Total credit points: **80**

Special Courses (S) in Four Branches of Chemistry are

(i) Analytical Special (SA)

(ii) Inorganic Special (SI)

(iii) Organic Special (SO)

(iv) Physical Special (SP)

SEMESTER – I (Marks – 250)

Course ID	Marks/Credit			
	Theo	Credit	Pract	Credit
CHEM – G11	50	4	-	-
CHEM – G12	50	4	-	-
CHEM – G13	50	4	-	-
CHEM – G14	-	-	100	8
Total	150	12	100	8

SEMESTER –II (Marks – 250)

Course ID	Marks/Credit			
	Theo	Credit	Practical	Credit
CHEM – G21	50	4	-	-
CHEM – G22	50	4	-	-
CHEM – G23	50	4	-	-
CHEM – G24	-	-	100	8
Total	150	12	100	8

SEMESTER –III (Marks – 250)

Course ID	Marks/Credit			
	Theo	Credit	Practical	Credit
CHEM – G31	50	4	-	-
CBCC-A	50	4	-	-

CBCC-B	50	4	-	-
CHEM–SA31/SI31/SO31/SP31	-	-	100	8
Total	150	12	100	8

SEMESTER –IV (Marks – 250)

Course ID	Marks/Credit			
	Theo	Credit	Practical	Credit
**CHEM – SA41/SI41/SO41/SP41	50	4	-	-
**CHEM – SA42/SI42/SO42/SP42	50	4	-	-
**CHEM – SA43/SI43/SO43/SP43	50	4	-	-
*CHEM – SA44/SI44/SO44/SP44	-	-	100	8
Total	150	12	100	8

* Review and project work

** One special course to be opted and continued systematically

Course Structure and marks distribution

1. Theoretical papers

Full marks: 50, each paper

Each unit 10 marks, two questions per unit to be set and any one to be answered

2. Practical Papers

Full Marks: 100, each paper

Course ID	Experiment	General Laboratory performance	*Seminar
CHEM-G14	45	45	10
CHEM-G24	45	45	10
CHEM – SA31/SI31/SO31/SP31	50	50	-

- Topic should be outside the UG curriculum of CU; use of overhead/LCD projector is mandatory ; time 10m, followed by discussion

Course ID	*Continuous assessment	Review	Project	Grand Viva
CHEM – SA44/SI44/SO441/SP44	10	25	40	25

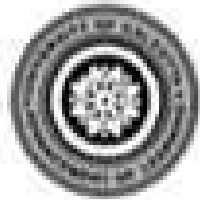
*Continuous assessment to be assessed by the guide

Review (maximum 3000 words excluding references and figures) and Project to be assessed by External Expert

Grand Viva to be taken by Sectional Faculty members and assessed by them

SYLLABUS

PG BOTANY PROJECT WORK SYLLABUS



**M.Sc. Syllabus
In BOTANY**

**University of Calcutta
2018**

The Regulations for two years M.Sc. course in Botany, Calcutta University

1. The University of Calcutta shall provide instructions leading towards course for M.Sc degree in Botany. A candidate who has passed the three year B.Sc. examination with Honours (Major) in Botany will be eligible for admission to this course on the basis of merit.
2. The duration of the course shall be two academic years and the examination for the M.Sc degree in Botany shall be held in four semesters over a total of 1000 marks. The duration of the semester shall be as follows:

1st Semester July - December

2nd Semester January -May

3rd Semester July - December

4th Semester January -May

3. The course shall comprise a total credit of 72 (seventy two), evenly distributed over the four semesters. The courses shall be grouped as core and optional and will carry credits according to the number of theoretical classes required, study hours and laboratory hours.

Semester wise distribution of courses:

	Courses	No. of courses	Marks	Credits
1 st Semester	Core courses	4	260	20
2 nd Semester	Core Courses	4	260	20
3 rd Semester	Core Courses	2	130	10
	Optional Course	1	20	1.5
	Choice based Courses	2	100	08
4 th Semester	Core Courses	2	130	10
	Optional Course	1	20	1.5
	Supportive	1	20	1.5
	Dissertation	1	60	7.5
TOTAL			1000	80

6. Grading of students' performance (as per CU rules)

Marks	Numerical grade points	Grades
75-100	5.00-6.00	Outstanding (O)
65-74	4.50-4.99	Excellent (A+)
60-64	4.00-4.49	Very Good (A)
55-59	3.75-3.99	Good (B+)
50-54	3.50-3.74	Fair (B)
40-49	3.00- 3.49	Satisfactory (C)
00-39	****	Fail (F)

Orientation of Courses in Four Semesters for M.Sc. in Botany

<u>1st Semester</u>			
<i>Core courses</i>	<i>Marks(Theo.+Prac.)</i>	<i>Credit</i>	
Bot C11	Microbiology	40+ 25	2.5+2.5
Bot C12	Physiology	40 + 25	2.5+2.5
Bot C13	Bryophytes, Pteridophytes and Gymnosperms	40 + 25	2.5+2.5
Bot C14	Cell Biology	40 + 25	2.5+2.5
	Total	160 (Theoretical) + 100 (Practical)	10 (Theoretical) + 10 (Practical)
		- 260	- 20
<u>2nd Semester</u>			
<i>Core courses</i>	<i>Marks(Theo.+Prac.)</i>	<i>Credit</i>	
Bot C21	Palaeobotany and Palynology	40 + 25	2.5+2.5
Bot C22	Taxonomy of Angiosperms	40 + 25	2.5+2.5
Bot C23	Phytochemistry and Pharmacognosy	40 + 25	2.5+2.5
Bot C24	Genetics and Genomics	40 + 25	2.5+2.5
	Total	160 (Theoretical) + 100 (Practical)	10 (Theoretical) + 10 (Practical)
		- 260	- 20
<u>3rd Semester</u>			
<i>Core & other courses</i>	<i>Marks(Theo.+Prac.)</i>	<i>Credits</i>	
Bot C31	Mycology and Plant pathology	40+ 25	2.5+2.5
Bot C32	Plant Physiology and Biochemistry	40+25	2.5+2.5
Bot-O-I	Optional Paper I	20 + 0	1.5+0
OA	Choice based credit course (CBCS 1)	50+0	4+0
OB	Choice based credit course (CBCS 2)	50+0	4+0
	Total	200 (Theoretical) + 50 (Practical)	14.5 (Theoretical) + 5 (Practical)
		- 250	-19.5
	Dissertation (To be Contd. in Sem IV)		
<u>4th Semester</u>			
<i>Optional & other courses</i>	<i>Marks(Theo.+Prac.)</i>	<i>Credit</i>	
Bot C41	Plant Anatomy and Developmental Biology	40 + 25	2.5+2.5
Bot C42	Plant Biotechnology	40 + 25	2.5+2.5
Bot C 43	Ecology	20 + 0	1.5+0
Bot-O-II	Optional Paper II	20+0	1.5+0
	Dissertation (Contd. from Sem III)	60	7.5

M.Sc. Syllabus-Botany, University of Calcutta, 2018

	Total:	120 (Theoretical) + 50 (Practical)+60 (Dissertation)	8 (Theoretical) + 5 (Practical) +7.5(Dissertation)
		= 230	= 20.5
	Grand Total Marks/Credits	640 (Theoretical) +300 (Practical)+60 (Dissertation)	42.5 (Theoretical) +30 (Practical) +7.5 (Dissertation)
		= 1000	=80

C – Core course; O – Optional course; S – Supportive course

Optional Papers Bot OP:

Optional Paper I (any 1 of the following)

1. O-I-A: Applied Virology
2. O-I-B: Molecular and Applied Phycology
3. O-I-C: Molecular and Applied Mycology
4. O-I -D: Molecular Plant Physiology
5. O- I -E: Advanced Cell Biology
6. O- I -F: Advanced Paleobotany and Palynology
7. O- I -G: Advanced Phytochemistry and Pharmacognosy
8. O- I-H: Taxonomy and Biosystematics

Optional Papers II (any 1 of the following)

1. O-II-A: Microbial Biotechnology
2. O-II-B: Plant protection
3. O-II-C: Green Nanotechnology
4. O-II-D: Plant Molecular genetics
5. O-II-E: Plant Molecular Biology
6. O-II-F: Molecular stress biology
7. O-II-G: Immunology
8. O-II-H: Instrumentation and Biostatistics



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>
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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/ LCCI/ LCC2/AECC1)	41	Statistics (Honours / General)
14	Environmental Science (Honours / General)	42	Urdu (Honours / General /LCC2 /AECC1)
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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

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

UNIVERSITY OF CALCUTTA

**CBCS SYLLABUS OF ZOOLOGY
2018**

**F
O
R**

**THREE-YEAR HONOURS
DEGREE COURSE OF STUDIES**



Unit 4: Ecosystem	8
Types of ecosystem with an example in detail, Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow, Ecological pyramids and Ecological efficiencies; Nitrogen cycle.	
Unit 5: Applied Ecology	7
Types & level of biodiversity Mega-diversity countries, Biodiversity Hot spot, Flagship species, Keystone species, Wildlife Conservation (<i>in situ</i> and <i>ex situ</i> conservation), concept of protected areas. Red data book, Indian wild life act & Schedule. Concept of corridor, advantages and problem of corridor. Threats to survival and conservation strategies for Tiger, Olive ridley, White Rumped Vulture.	

Ecology Lab, ZOOA-CC5-11-P

Full Marks 30	60 Hours	2 Credits
List of Practical		
<ol style="list-style-type: none"> Determination of population density in a natural/hypothetical community by quadrat method and calculation of Shannon-Weiner diversity index for the same community Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature, salinity, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO₂ Report on a visit to National Park/Biodiversity Park/Wild life sanctuary/ any place of ecological interest/ ecological uniqueness/ Zoological garden 		

PART III: SEMESTER 5

CORE COURSE 12.Principle of Genetics

ZOOA-CC5-12-TH

Full Marks 50	4 Credits	Class
Unit 1: Mendelian Genetics and its Extension	12	
Principles of inheritance, Incomplete dominance and co-dominance, Epistasis, Multiple alleles, Isoallele (White eye mutations), Pseudoallele (Lozenge Locus) & Cis-trans test for allelism, Lethal alleles, Pleiotropy, Penetrance & Expressivity		
Unit 2: Linkage, Crossing Over and Linkage Mapping	8	
Linkage and Crossing, Complete & Incomplete Linkage, Measuring Recombination frequency and linkage map construction using three factor crosses, Interference and coincidence Sex linkage in <i>Drosophila</i> (White eye locus) & Human (Haemophilia).		

BCOM PROJECT WORK SYLLABUS



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 26 /17

It is notified for information of all concerned that the Syndicate in its meeting dated 23.05.2017 (vide Item No.46) resolved to approve the **New Course Structure & Syllabi and revised Admission Regulations for the B.Com. (Honours and General)** courses of study under this University as laid down in the accompanying pamphlet.

The above shall be effective for the students getting admission to the 3-year 6-Semester B.Com. (Honours and General) courses of study under CBCS, from the academic session 2017-2018 and onwards.

SENATE HOUSE
KOLKATA-700073
The 26th May, 2017


(Prof. Dr. Rajagopal Dhar Chakraborti)

Registrar

Year 3: Semester VI

		Marks	Credit Hours	
AECC 6.1Chg	Environmental Studies	100	2	
SEC 6.1Chg	Computerised Accounting and e-Filing of Tax Returns	100	4	
CC 6.1 Ch	Project Work	100	6	
DSE 6.1 A**	Financial Reporting and Financial Statement Analysis	100	6	
DSE 6.2 A**	Financial Management	100	6	

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Chg: Common for Honours and General; **Ch:** Core Course for Honours

Options:

**Or DSE 6.1 M (Retail Management and Marketing of Services (50+50)
& DSE 6.2 M (Rural Marketing and International Marketing (50+50)

**Or DSE 6.1 T (Indirect Tax: Laws and Practices)
& DSE 6.2 T (Tax Procedures and Planning)

**Or DSE 6.1 e-B (Internet & WWW and Functional e-Business System (50+50)
& DSE 6.2 e-B(Computer Applications and e-Business Applications – Practical (50+50)

Summary for B.Com. Hons.

		Marks	Credit Hours	
Ability Enhancement Compulsory Course (AECC)	Two Papers	200	2 x 2 = 4	
Skill Enhancement Elective Course (SEC)	Two Papers	200	2x4 = 8	
Generic Elective (GE)	Four Papers	400	4 x 6 = 24	
CORE COURSE (CC)	Fourteen Papers	1400	14x 6 = 84	
Discipline Specific Elective (DSE)	Four Papers	400	4 x 6 = 24	
		2600	Total 144	

diagrams. (L10 /M10)

Unit 4. System design: Process descriptions, Input/output controls, object modeling, Database design, User Interface design, Documentation, Data Dictionary, Development methodologies: Top down, bottom up, structured chart, decision table, decision tree. (L10 /M10)

Unit 5. Testing – Unit, integration, system, Acceptance, regression, Test Case generation. (L6 /M6)

Suggested Reading:

- Parthasarathi, System Analysis & Design, EPH
- Raja Raman, Analysis & Design of Information Systems, PHI

Year 3: Semester VI

		Marks	Credit Hours	
AECC 6.1Chg	Environmental Studies	100	2	
SEC 6.1Chg	Computerised Accounting and e-Filing of Tax Returns (70+30)	100	4	
CC 6.1 Ch	Project Work	100	6	
DSE 6.1 A**	Financial Reporting and Financial Statement Analysis	100	6	
DSE 6.2 A**	Financial Management	100	6	

24

SEC 6.1Chg

COMPUTERISED ACCOUNTING SYSTEM and E-FILING OF TAX RETURN

Full Marks 100

Internal Assessment: 20 marks

Semester-end Examinations: 80 marks

Total 100 marks

Marks shown against the units indicate marks for Semester–end Examinations

Unit-1: Computerized Accounting Package: Using Generic Software [40 Marks, Class: 40]

- Company creation, ledger creation, order processing, accounting voucher, inventory voucher, memorandum voucher, invoicing, multiple godown handling, Transfer of materials across godowns, Bank Reconciliation,
- Cost Centre, Cost Category, Bill of Material (BoM), Budget and Controls
- Payroll Accounting
- TDS, GST
- Back up & Restore, Export and Import data

Unit 2: Designing Computerized Accounting System**[15 Marks, Class:15]**

- (a) Introduction to DBMS Package – Table, Query, Form and Report
- (b) Designing Computerized Accounting System using DBMS Package
Creating a voucher entry Form, Preparing ledgers, trial balance, profit & loss a/c, and balance sheet with Form wizard and Report
- (c) Designing Payroll System for Accounting using Form, Query, and Report

Unit-3: E-filing of Tax return [25 Marks, Class: 25]

- (a) Preparation and submission of the Income Tax Return (ITR) offline/online for individual taxpayer [e-filing without using DSC and with using DSC, EVC]
- (b) View form 26AS, Upload return, View e-file returns, e-verification
- (c) Use of e-tax calculator (including interest calculation u/s 234A, 234B, 234C)
- (d) E-Pay tax (Challan No./ITNS 280, ITNS 281)
- (e) Preparation and submission online form 10E [Relief u/s 89(1)]

Project Work: Assignment based for each and every topic should be prepared

- Software: Singhania, V.K., E-Filing of Income Tax Returns and Computations of Tax, Taxmann
- Software: “Excel Utility”, incometaxindiaefiling.gov.in

CC 6.1 Ch**Project Work (Project Report - 50 + Viva-Voce Examination - 50)****Full Marks 100****DSE 6.1 A****FINANCIAL REPORTING AND FINANCIAL STATEMENT ANALYSIS****Full Marks 100****Internal Assessment: 20 marks****Semester-end Examinations: 80 marks****Total 100 marks**

Marks shown against the units indicate marks for Semester–end Examinations

FINANCIAL REPORTING AND FINANCIAL STATEMENT ANALYSIS

Unit	Topic	Details	Marks allotted	No. of lectures
1	Holding Company	Meaning of Holding Company & Subsidiary Company; relevant standard; Consolidation of Balance Sheets of Parent & Subsidiary (only one); Minority Interest – Basic principles and preparation of CBS; CBS with loss balance of Subsidiary Treatment for: Revaluation of Assets of Subsidiary, Intra-	15	15

HISTORY CBCS SYLLABUS



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 12 /18

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SENATE HOUSE
KOLKATA-700073
The 4th June, 2018

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

CBCS SYLLABUS
IN
HISTORY (HONOURS)

CALCUTTA UNIVERSITY

2018

University of Calcutta

HIS – A

The Three - year B.A. Honours in History will comprise 6 Semesters. The curriculum will consist of 14 Core Courses (CC), 4 Discipline Specific Elective (DSE) courses, 2 Ability Enhancement Compulsory Courses (AECC), 2 Skill Enhancement Courses (SEC) Each course will be of 100 Marks. Attendance: 10 marks per Paper, Internal Assessment: 10 marks per paper.

➤ **Core Courses CC**

[Fourteen courses. Each course: 6 credits (5 theoretical segments TH+ 1 for tutorial related segment TU). Total: 84 credits.

- Each course carries 80 marks. Teaching time: 6x14 = 84 hrs
Minimum 60 classes
- 65 marks for theoretical segment.
- Question Pattern for subjective/descriptive segment of 65 marks: 3 questions out of 6 (within 500 words) (10 x3 = 30) + 4 questions out of 8 within 250 words; 5x4 =20) + 15 objective type questions carrying 1 mark each (15 x 1 = 15).
- 15 marks for tutorial - related segments as suggested below (any one from each mode):
- **Any one of the following modes: upto 1000 words for one Term Paper/upto 500 words for each of the two Term Papers/ equivalent Book Review/ --based on syllabus -related and/or current topics .[The modes and themes and/or topics are be decided by the concerned faculty of respective colleges.]**
- Core courses: 2 each in Semesters 1 and 2; three each in Semesters 3 and 4; 2 each in Semesters 5 and 6.
- **IMPORTANT NOTES:**
The Readings provided below include many of those of the UGC Model CBCS Syllabus in History. For further details of Course Objectives and additional references it is advised that the UGC model CBCS syllabus concerning relevant courses and topics should be given due importance and primarily consulted.
- Cited advanced texts in Bengali are not necessarily substitutes, but supplementary to the English books.

- The format is subject to the common structural CBCS format of the University.

➤ **Discipline- specific Elective Courses DSE**

Each course: 6 credits 5 for theoretical segment + 1 for tutorial-related segment. (TH -5 TU-1)

DSE-A for Semester -5/6, DSE-B for Semester 5/6

- Each course carries 80 marks. Minimum 60 classes.
 - 65 marks for theoretical segment.
 - Question Pattern for subjective/descriptive segment of 65 marks: 3 questions out of 6 (within 500 words; $(10 \times 3 = 30)$ + 4 questions out of 8 (within 250 words; $5 \times 4 = 20$) and 15 objective type questions carrying 1 mark each ($15 \times 1 = 15$).
 - 15 marks for tutorial-related segments as suggested below (any one from each mode): Any one of the following modes: upto 1000 words for one Term Paper/upto 500 words for each of the two Term Papers/ equivalent Book Review/ based on syllabus related and/or current topics [The modes and themes and/or topics of a. and b. to be decided by the concerned faculty of respective colleges.]
- **HIS-A: Skill Enhancement/Skill-based Courses SEC** Each Course: 2 credits . (Only theoretical.)
- #### **SEC –A in Semester 3, SEC –B in Semester 4.**
- Each course carries 80 marks. Teaching time: 2 hrs per week or $2 \times 14 = 28$ hrs
 - 80 marks for theoretical segment.
 - Question Pattern for subjective/descriptive segment of 80 marks: 4 questions out of 8 (within 500 words; $(10 \times 4 = 40)$ + 5 questions out of 10 (within 250 words; $5 \times 5 = 25$) and 15 objective type questions carrying 1 mark each ($15 \times 1 = 15$).
- **HIS-A: Ability Enhancement Compulsory Courses (AECC)** Each Course 2 credits
- AECC -1** : Communicative English/ MIL
 - AECC-2** : Environmental Studies
 - AECC -1 in Semester 1, AECC -2 in Semester 2**

IMPORTANT NOTES: