SYLLABUS OF COURSES WITH EXPERIMENTAL LEARNING (PROJECT WORK/FIELD WORK/INTERNSHIP)

Principal
A.D.P. College
Nagaon (Assam)

Syllabus for B.Sc. (Honors) Chemistry

Choice Based Credit System (CBCS)

Course effective from academic year 2019-20

This is approved in the Academic Council held on 08/11/2019

Gauhati University

Guwahati::Assam

Contents

laboratory waste, disposal of chemicals in the sanitary sewer system, incineration and transportation of hazardous chemicals.

(12 Lectures)

Data Analysis

The Investigative Approach: Making and Recording Measurements. SI Units and their use.Scientific method and design of experiments.

Analysis and Presentation of Data: Descriptive statistics. Choosing and using statistical tests.Chemometrics. Analysis of variance (ANOVA), Correlation and regression, Curve fitting,fitting of linear equations, simple linear cases, weighted linear case, analysis of residuals, General polynomial fitting, linearizing transformations, exponential function fit, r and its abuse. Basic aspects of multiple linear regression analysis.

(13 Lectures)

Electronics

Basic fundamentals of electronic circuits and their components used in circuits of common instruments like spectrophotometers, typical circuits involving operational amplifiers for electrochemical instruments. Elementary aspects of digital electronics.

(10 Lectures)

Recommended Books

1. Dean, J. R., Jones, A. M., Holmes, D., Reed, R., Weyers, J. & Jones, A. (2011) *Practical skills in chemistry.* 2nd Ed. Prentice-Hall, Harlow.
2. Hibbert, D. B. & Gooding, J. J. (2006) *Data analysis for chemistry.* Oxford University Press.
3. Topping, J. (1984) *Errors of observation and their treatment.* Fourth Ed., Chapman Hall, London.
4. Harris, D. C. *Quantitative chemical analysis.* 6th Ed., Freeman (2007) Chapters 3-5.
5. Levie, R. de, *How to use Excel in analytical chemistry and in general scientific data analysis.* Cambridge Univ. Press (2001) 487 pages.
6. Chemical safety matters – IUPAC – IPCS, Cambridge University Press, 1992.
7. OSU safety manual 1.01.

CHE-HE-6056: DISSERTATION

Student will complete a project work and then prepare a report on that.

Skill Enhancement Courses

CHE-SE-3024: IT SKILLS FOR CHEMISTS

(Credits: 04)

60 Lectures

CHOICE BASED CREDIT SYSTEM

Syllabus

For

B.Sc. BOTANY HONOURS

DEPARTMENT OF BOTANY
GAUHATI UNIVERSITY
GUWAHATI-781014

Effective from Academic Session 2019-2020

Scheme for Choice Based Credit System in B. Sc. Botany Honours

Semester		CORE COURSE(14)	Ability Enhancement Compulsory Course(AEC)(2)	Skill Enhancement Course (SEC) (2)	Discipline Specific Elective (DSE) (4)	Generic Elective: (GE) (4)
I	Core Course I	Phycology and Microbiology	English Communication			GE-1
	Core Course II	Biomolecules and Cell Biology				
II	Core Course III	Mycology and Phytopathology	Environmental Studies			GE-2
	Core Course IV	Archegoniate				
III	Core Course V	Morphology and Anatomy of Angiosperm		SEC -1		GE-3
	Core Course VI	Economic Botany				
	Core Course VII	Genetics				
IV	Core Course VIII	Molecular Biology		SEC -2		GE-4
	Core Course IX	Plant Ecology and Phytogeography				
	Core Course X	Plant Systematics				
V	Core Course XI	Reproductive Biology of Angiosperms			DSE-1	
	Core Course XII	Plant Physiology			DSE-2	
VI	Core Course XIII	Plant Metabolism			DSE -3	
	Core Course XIV	Plant Biotechnology			DSE-4	

VI	BOT-HC-6016	Plant Metabolism	4	6
	BOT-HC-6016 (**Practical**)	Plant Metabolism- Practical	2	
	BOT-HC-6026	Plant Biotechnology	4	
	BOT-HC-6026 (**Practical**)	Plant Biotechnology- Practical	2	
	BOT-HE-6016	DSE-3 Industrial and Environmental Microbiology	4	
	BOT-HE-6016 (**Practical**)	DSE-3 Industrial and Environmental Microbiology-Practical	2	
	Discipline Centric Elective-4 (Theory & practical / Project Work)	Either 1 or 2 below		
	1.BOT-HE-6026	DSE-4 1.Analytical Techniques in Plant Sciences	4	
	1.BOT-HE-6026 (**Practical**)	DSE-4 1.Analytical Techniques in Plant Sciences-Practical	2	
	2.BOT-HE-6036	DSE-4 2. Project Work/ Dissertation	6	
Total Credits in B. Sc. Botany Honours: 116				

List of Papers
B. Sc Honours Botany Under CBCS

Core Papers

1	BOT-HC-1016	: Phycology and Microbiology
2	BOT-HC-1026	: Biomolecules and Cell Biology
3	BOT-HC-2016	: Mycology and Phytopathology
4	BOT-HC-2026	: Archegoniate
5	BOT-HC-3016	: Morphology and Anatomy of Angiosperm
6	BOT-HC-3026	: Economic Botany
7	BOT-HC-3036	: Genetics
8	BOT-HC-4016	: Molecular Biology
9	BOT-HC-4026	: Plant Ecology and Phytogeography
10	BOT-HC-4036	: Plant Systematics
11	BOT-HC-5016	: Reproductive Biology of Angiosperms
12	BOT-HC-5026	: Plant Physiology
13	BOT-HC-6016	: Plant Metabolism
14	BOT-HC-6026	: Plant Biotechnology

Discipline Specific Elective (DSE) Papers

1	BOT-HE-5016	: Natural Resource Management
2	BOT-HE-5026	: Horticultural Practices and Post-Harvest Technology
3	BOT-HE-6016	: Industrial and Environmental Microbiology
4	BOT-HE-6026	: Analytical Techniques in Plant Sciences
5	BOT-HE-6036	: Project work/Dissertation

Generic Elective (GE)

1	BOT-HG-1016	: Biodiversity (Microbes, Algae, Fungi and Archegoniate)
2	BOT-HG-2016	: Plant Ecology and Taxonomy
3	BOT-HG-3016	: Plant Physiology and Metabolism
4	BOT-HG-3026	: Environmental Biotechnology
5	BOT-HG-4016	: Plant Anatomy and Embryology
6	BOT-HG-4026	: Economic Botany and Plant Biotechnology

CO2. Classification of horticultural crops, identification of potential horticultural crops – their cultivation, production, management and commercialization
CO3. Knowledge on horticultural techniques, landscaping and gardening
CO4. Overall knowledge on post-harvest technology, disease management, and germplasm management for horticulture
CO5. Field knowledge of gardening, nurseries, standing crops of horticultural importance

BOT-HE-6016: Industrial and Environmental Microbiology

CO1. Understanding the roles of microbes in industries and environment
CO2. Basic knowledge of different kinds of bioreactors and fermentation processes
CO3. Knowledge on production processes of some microbial products in industries through site visits
CO4. Knowledge on application of enzymes in industries
CO5. Diversity and distribution of microbes in air, water and soil
CO6. Basic understandings on water microbiology and water analysis methods
CO7. Usefulness of microbes in agriculture and bioremediation of contaminated soils
CO8. Practical experiences on basic microbiological techniques and handlings

BOT-HE-6026: Analytical Techniques in Plant Sciences

CO1. Knowledge on microscopy and imaging in plant science
CO2. Principles and application of centrifuge, spectroscopy and chromatography in biology
CO3. Basic knowledge on biostatistics including measures of central tendency and dispersions, statistical data analysis and representations
CO4. Practical knowledge on microscopy, chromatography, centrifugation and spectroscopy

BOT-HE-6036: Project Work/Dissertation

CO1. Practical knowledge on addressing relevant scientific questions through experimentation

Generic Elective Courses

BOT-HG-1016: Biodiversity (Microbes, Algae, Fungi and Archegoniate)

CO1. Knowledge on structure and reproduction of viruses and bacteria, and their economic importance
CO2. Describe general characteristics, morphological diversity, thallus organization, life cycles, ecological and economic importance of algae
CO3. Describe general characteristics, morphological diversity, thallus organization, life cycles, ecological and economic importance of fungi
CO4. General characteristics, classification, morphological diversity and evolutionary significance of bryophytes
CO5. General characteristics and classification of pteridophytes; evolution of stele, heterospory and seed habit in pteridophytes
CO6. Classify gymnosperms, and describe their general characteristics and economic importance
CO7. Practical knowledge on staining and slide preparation to study bacteria, algae and fungi under the microscope
CO8. Practical knowledge on vegetative and reproductive structures of some representative bryophytes, pteridophytes and gymnosperms

BOT-HG-2016: Plant Ecology and Taxonomy

CO1. Understanding soil, water, light and temperature as ecological factors

BCA-HE-5016: PROJECT WORK/DEISSERTATION (Credit: 6)

The students will be allowed to work on any project based on the concepts studied in core / elective or skill based elective courses. The objective of the project is to train the student to independently search, identify and study real-life important topics in CS/IT; to develop skills among students in a particular field of CS/IT; and to expose students to the world of technology, innovation, and research. The problem should be such that the students get a chance to explore one or two technologies in depth and grab good command over those technologies after successful completion of the project. Application problems, if found interesting and arisen at the demand of a particular situation, may also be assigned; but typical information management systems with just two or three simple database tables and/or data- entry forms are to be discouraged.

The group size should be maximum three (03) students. Each group will be assigned a teacher as a supervisor who will handle both their theory as well lab classes. The work will have to be submitted in the form of a dissertation.

A maximum of Four (04) projects would be assigned to one teacher.

HIN-HC-6026
Hindi Pariyojana Karya (Hindi Project Work)
Full Marks: 100
Dissertation: 80
Viva: 20
Credits: 6

A student will have to undertake a small academic project on literature survey on life and literary works of a Hindi Literary Genius (Hindi Sahityik Vibhuti) under a guide. The topic of project work (from the list given below) and the guide/supervisor will be allotted to the student at the beginning of the semester by the concerned department of the college. The student will have to submit the project work of about 50 typed pages prepared in the format of an M.Phil dissertation (in spiral binding form) one week ahead of the commencement of the end-semester examination. The student will have to defend the work before an External Examiner and Internal board comprising of 3 teachers including the guide/supervisor. The External Examiner (appointed by G.U.) will evaluate out of 60 marks and the Internal Board will evaluate out of 40 marks. The capability of critical appreciation on the part of the student will be taken into account amng other things while evaluating the project work.

Hindi Literary Genius :

Chand Vardayi, Vidyapati, Kabirdas, Malik Muhammad Jaisi, Surdas, Miranbai, Goswami Tulsidas, Rahim, Raskhan, Keshavdas, Biharilal, Dev, Bhushan, Ghananand, Bharatendu Harishchandra, Hariaudh, Maithilisharan Gupt, Makhanlal Chaturvedi, Jayshankar Prasad, Suryakant Tripathi 'Nirala', Sumitranandan Pant, Mahadevi Verma, Bhagwati Charan Verma, Subhadra Kumari Chauhan, Chandradhar Sharma 'Guleri', Harivansh Rai Bachchan, Munshi Premchand, Ramdhari Singh 'Dinkar', Acharya Ramchandra Shukla, Ajneya, Jainendra Kumar, Yashpal, Lakshminarayan Mishra, Dharmveer Bharti, Nagarjun, Muktibodh, Phanishwar Nath Renu, Mohan Rakesh, Sudama Pandeya 'Dhumil' and Usha Priyamvada.

6076

MAT-HE-~~6436~~: Mathematical Finance

Total Marks: 100 (Theory: 80, Internal Assessment: 20)
Per week: 5 Lectures, 1 Tutorial Credits: 6, *Each unit carry equal credit*

Unit 1: Interest Rates: Types of rates, Measuring interest rates, Zero rates, Bond pricing, Forward rate, Duration, Convexity, Exchange traded markets and OTC markets, Derivatives--Forward contracts, Futures contract, Options, Types of traders, Hedging, Speculation, Arbitrage.
[1] Chapter 4 (Section 4.1 to 4.4, 4.6, 4.8, and 4.9) Chapter 1 (Sections 1.1 to 1.9)

Unit 2: Mechanics and Properties of Options: No Arbitrage principle, Short selling, Forward price for an investment asset, Types of Options, Option positions, Underlying assets, Factors affecting option prices, Bounds on option prices, Put-call parity, Early exercise, Effect of dividends.

[1] Chapter 5 (Sections 5.2 to 5.4) Chapter 8 (Sections 8.1 to 8.3), and Chapter 9 (Section 9.1, Sections 9.2 to 9.7)

Unit 3: Stochastic Analysis of Stock Prices and Black-Scholes Model
Binomial option pricing model, Risk neutral valuation (for European and American options on assets following binomial tree model), Lognormal property of stock prices, Distribution of rate of return, expected return, Volatility, estimating volatility from historical data, Extension of risk neutral valuation to assets following GBM, Black-Scholes formula for European options.

[1] Chapter 11 (Sections 11.1 to 11.5) Chapter 13 (Sections 13.1 to 13.4, 13.7, and 13.8)

Unit 4: Hedging Parameters, Trading Strategies and Swaps
Hedging parameters (the Greeks: Delta, Gamma, Theta, Rho and Vega), Trading strategies involving options, Swaps, Mechanics of interest rate swaps, Comparative advantage argument, Valuation of interest rate swaps, Currency swaps, Valuation of currency swaps.

[1] Chapter 17 (Sections 17.1 to 17.9) Chapter 10 (except box spreads, calendar spreads and diagonal spreads) Chapter 7 (Sections 7.1 to 7.4, and 7.7 to 7.9)

Text Book:

1. Hull, J. C., & Basu, S. (2010). *Options, Futures and Other Derivatives* (7th ed.). Pearson Education. New Delhi.

Reference Books:

1. Luenberger, David G. (1998). *Investment Science*, Oxford University Press. Delhi.

ZOO-HE-6056

DISSERTATION

Dissertation of Zoology Specific subject

GENERIC ELECTIVE COURSES

CODE: ZOO-HG-1016

ANIMAL DIVERSITY

THEORY **(CREDITS 4)**

Unit 1:Kingdom Protista 4

General characters and classification up to classes; Locomotory Organelles and locomotion in Protozoa

Unit 2: Phylum Porifera 3

General characters and classification up to classes; Canal System in *Sycon*

Unit 3: Phylum Cnidaria 3

General characters and classification up to classes; Polymorphism in Hydrozoa

Unit 4:Phylum Platyhelminthes 3

General characters and classification up to classes; Life history of *Taenia solium*

Unit 5: Phylum Nemathelminthes 5

General characters and classification up to classes; Life history of *Ascaris lumbricoides* and its parasitic adaptations

Unit 6:Phylum Annelida 3

General characters and classification up to classes; Metamerism in Annelida

Unit 7:Phylum Arthropoda 5

General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects

CBCS-basedU.G. Course in Geography, 2019

Syllabus of Honours Core Course

Course Name: Research Methods in Geography and Project Work

Paper Code: GGY-HC-6026

Total Credit: 6 (4+2)

Total Marks: 100

(Theory: 60, Practical: 20 and Internal Assessment: 20)

Course Objectives:

The paper on Research Methods will enable the students:

- To understand how to approach a research problem and to formulate research objectives and research questions in proper perspective. In addition, knowledge of formulation of hypothesis and testing, framing of questionnaires, techniques of collection of both qualitative and quantitative data and their analysis.
- To develop understanding of the basics and utility of review of literature and preparation of research report.

Course Outcomes:

- This course will help the students to proceed with a research problem and the steps she/he should adopt and the tools and craft to be employed while doing quality research.

Part I: Theory

Credit: 4 (60 Marks)

(40 Classes of 1 hour each)

1. Meaning and significance of research; types of research; Basics of research methodology; Review of literature and its need; Ethics of research. (6 Classes)

2. Geographic Research: Meaning and Characteristics; Formulation of research problem. (4 Classes)

3. Research Design: Statement of the problem, Review of research works, Objectives, Research questions, Hypotheses, Database and methodology, Significance, Organization of the Work and Referencing. (10 Classes)

4. Data Collection: Types and Sources of Data; Methods of primary data collection (both qualitative and quantitative, and physical and human geographic data); Concept of sample survey; Pilot survey; Data processing (Manual and computerised). (10 Classes)

5. Statistical Analysis of Data: Qualitative data analysis; Quantitative data analysis; Data representation (Manual and computerised). (5 Classes)

6. Structure of a Research Report: Preliminaries; Text; Tables, Figures and Appendices; Citations, References and Bibliography; Research/Project Report Writing; Executive Summary.

(5 Classes)

Part II: Project Report
Credit: 2 (20 Marks)

(21 classes of two hour duration each)

Project Report Preparation and Evaluation (20 Marks)

1. Each student will have to prepare a Project Report on a suitable geographical problem under the guidance of respective teacher following appropriate methodology, data base and literature review.
2. Length of the Report: 30-40 printed A4 size pages (font size 12 in Times New Roman with 1.5 spacing) including text, tables, figures, references, etc.
3. The project report in binding form (Kutcha or Spiral binding) duly signed by the guide concerned has to be submitted to the department at least 3 days before the scheduled date of examination.
4. The marks distribution of the Project Report in the final semester examination is as follows:
   (i) Total marks: 20
   (ii) Evaluation of Content: 15 (average between external examiner and internal teacher guide)
   (iii) Viva-voce: 5 (exclusively by the external examiner)

Reading List:

1. Creswell J., 1994: *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
4. Kothari, C. R., 1993: *Research Methodology: Methods and Techniques*, 2nd ed., Wiley Eastern Ltd., New Delhi.
5. Misra, H.N. and Singh, V.P., 1998: *Research Methodology in Geography*, Concept Publishing Company, New Delhi.
6. Misra, R.P. (2002) Research Methodology, Concept Publications, New Delhi.
7. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
8. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi

EDU-HC-6026
PROJECT
Total Marks: 100 (External: 80 and Internal: 20)
Credit-6

Course Objectives:

After completion of this course the learner will be able to:

- Explain the process of conducting a Project.
- Prepare a Project Report.

Guideline:

Each student is required to complete anyone project related to any area of the syllabus to be evaluated by Internal and External Examiners jointly through viva-voce test. The project work will be completed according to following heads:

- Title of the Project
- Introduction
- Importance of the Study
- Objectives of the Study
- Review of related literature (if any)
- Methods and Procedure
- Data Analysis and Discussion
- Conclusion

Internal Assessment (20 Marks):

Home Assignment/Group Discussion related to Project: 10 Marks

Library Works: 6 Marks

Attendance: 4 Marks

External Assessment (80 Marks):

Project Report: 60 Marks

Viva Voce: 20 Marks

GAUHATI UNIVERSITY

UGCBCS

B.A HONS. & REGULAR COURSE IN BENGALI

2019

ইউ.জি.সি নির্দেশিত সিবিসিএস অনুসারে

স্নাতক বাংলা পাঠক্রম

সাম্মানিক ও সাধারণ

২০১৯

UGCCS BENGALI DEPARTMENT, G.U

ইউজিসিসিএস, বাংলা বিভাগ

গৌহাটি বিশ্ববিদ্যালয়, গুয়াহাটি

This is approved in the Academic Council held on 08/11/2019

3. BEN-DSE (for Honours Course)

BEN-HE-5016	শিশু ও কিশোর সাহিত্য
BEN-HE 5026	জীবনী সাহিত্য ও স্মৃতিকথা
BEN-HE 6016	উত্তরপূর্বের বাংলা সাহিত্য
BEN-HE 6026	প্রতিবেশী সাহিত্য
BEN-HE 6036	গবেষণামূলক সন্দর্ভ লিখন

Students will have to select either HE-6026 or HE-6036 in 6th Semester.

4. BEN-DSE (for Regular Course)

BEN-RE-5016	অনুবাদ সাহিত্য
BEN-RE-6016	কল্পবিজ্ঞান ও ফ্যান্টাসি
BEN-RE 6026	গবেষণামূলক সন্দর্ভ লিখন

Students will have to select either BEN-RE 6016 or BEN-RE-6026.

5. BEN-AECC (Both for Honours and Regular)

BEN- AE1014	ব্যবহারিক বাংলা

6. BEN-SEC (Skill Enhancement Course)

BEN-SE-3014	(Honours and Regular)	পাণ্ডুলিপি প্রস্তুতি
BEN-SE-4014	(-do-)	প্রুফ সংশোধন
BEN-SE-5014	(Regular Course)	চিত্রনাট্য রচনা ও বাংলা সাহিত্য
BEN-SE-6014	(-do-)	অনুবাদ চর্চা

7. BEN-GENERIC (for Regular Course)

BEN-RG-5016	কিশোর সাহিত্য
BEN-RG-6016	পূর্বোত্তরের বাংলা সাহিত্য

8. BEN- MIL (Core Course for Regular Course)

BEN-CC-3016	উনিশ ও কুড়ি শতকের বাংলা সাহিত্য-১
BEN-CC-4016	উনিশ ও কুড়ি শতকের বাংলা সাহিত্য-২

Syllabus for B.Sc.(Honors) Zoology

Choice Based Credit System (CBCS)

Course effective from academic year 2019-20

This is approved in the Academic Council on 08//11/2019

Gauhati University

Guwahati::Assam

ZOO-HE-6056

DISSERTATION

Dissertation of Zoology Specific subject

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GENERIC ELECTIVE COURSES

CODE: ZOO-HG-1016

ANIMAL DIVERSITY

THEORY **(CREDITS 4)**

Unit 1:Kingdom Protista **4**

General characters and classification up to classes; Locomotory Organelles and locomotion in Protozoa

Unit 2: Phylum Porifera **3**

General characters and classification up to classes; Canal System in *Sycon*

Unit 3: Phylum Cnidaria **3**

General characters and classification up to classes; Polymorphism in Hydrozoa

Unit 4:Phylum Platyhelminthes **3**

General characters and classification up to classes; Life history of *Taenia solium*

Unit 5: Phylum Nemathelminthes **5**

General characters and classification up to classes; Life history of *Ascaris lumbricoides* and its parasitic adaptations

Unit 6:Phylum Annelida **3**

General characters and classification up to classes; Metamerism in Annelida

Unit 7:Phylum Arthropoda **5**

General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects

GAUHATI UNIVERSITY

Syllabus

on

M. Sc. in Herbal Science and Technology (CBCS)

(Total credits: 120, Total Marks: 2000)

Duration: Two years

Modified in 2020

	/Graded					
	Elective (Practical) /Graded	HST- 3064	Practicals- HERBAL BIOTECHNOLOGY LAB	80	4	P-8
	Elective (Practical) /Graded	HST-3074	Practicals- QUALITY ASSURANCE AND QUALITY CONTROL	80	4	P-8
	Core /Graded	HST-3082	VISIT TO HERBAL INDUSTRY	32+8=40	2	FW-4
			Semester Total	500	28	L-15,T-3 P-15,FW-4
FOURTH	Core (Theory)/ Graded	HST-4016	GENOMICS AND PROTEOMICS	80+20= 100	6	L-5, T-1
	Elective (Theory)/ Graded	HST-4026	HERBAL BIOTECHNOLOGY-II	80+20= 100	6	L-5, T-1
	Elective (Theory)/ Graded	HST- 4036	QUALITY ASSURANCE AND QUALITY CONTROL-II	80+20= 100	6	L-5, T-1
	Open (Theory)/ Graded	HST-4046	INDUSTRIAL HERBAL TECHNOLOGY	80+20= 100	6	L-5, T-1
	Core /Graded	HST-4052	JOURNAL CLUB AND ASSIGNMENT	32+8=40	2	T-2, H-2
	Core (Project)/ Graded	HST-4069	DISSERTATION	130+30= 160	9	P-18
			Semester Total	500	29	L-15, T-5, H-2, P-18
			Total	2000	113	

Note:

1. Theory examination will constitute 80 marks for end semester exams and 20 marks as Internal assessment mark to be assessed from 2 internal tests (10marks), one seminar (4 marks), one assignment (4 marks), and attendance (2 marks). Total marks (Theory)= 100
2. For, **HST-1062** and **HST- 3082**, the evaluation will be done based on the report submitted by each student who took part in the academic tours to the Faculty member who guided the tour.
3. For, **HST-4052**, the evaluation will be done based on the presentations given by students on weekly basis.
4. For, **HST- 4069** (DISSERTATION Evaluation), the evaluation will be based on quality of the project and Viva Voice/Presentation. (Project Assesment=130, Viva Voice/Presentation= 30.)

Herbal Cosmetics: General method of preparation and evaluation of Herbal Cosmetics such as a) Skin care products and b) Hair care preparations with examples. A brief account of following Herbals or Herb extracts or Herbal products of cosmetic importance such as Aloe vera, Neem, Henna, Acacia concinna pods, Citrus aurantium peel, Liquorice, Sandal wood, Olive oil, Wheat germ oil, Almond oil and Tea – tree oil with special emphasis on their source, active principles and cosmetic properties.

UNIT: 3

Aromatic plant resources in India, Natural Excipients. Natural sweetners. Determination of shelf life of raw drugs, Extracts. Preservatives used for Herbal Products and extracts. Utilization of waste product of herbal industries.

UNIT: 4

Herbal Based Nutraceuticals- A modern Approach, Definition of Functional foods and Neutraceuticals. Classification of Neutraceuticals, Biological Source, name of marker compounds and their chemical nature, medicinal uses and health benefits of following used as Neutraceuticals/ Functional foods. i) Spirulina ii) Soya bean iii) Ginseng iv) Garlic v) Broccoli vi) Ginkgo vii) Flax seeds viii) Black cohosh ix) Turmeric x) Tea

Paper Code: HST- 4052 **Core /Graded** **JOURNAL CLUB AND ASSIGNMENT**	**Marks: (32+08)=40** **Credit: 2** **Contact Hours/week-T2**

Discussion on different modes of Scientific Communication, details of Research paper writing, proposal writing, Thesis writing, ethics of Scientific publications.

Mode of assessment: Each 4 students will present and lead a discussion of one peer reviewed article from Biological or Life sciences or an allied discipline.

Paper Code: HST- 4069 **Core (Project) /Graded** **DISSERTATION**	**Marks: (130+30)=160** **Credit: 9** **Contact Hours/week: 18**

This course will be project work during the whole semester. Every student has to plan an investigation and evaluate a chosen research topic relevant to Biological Science and Society. A faculty member will supervise the students in the project work. AT the end of their project, Dissertation has to be written giving all the details such as aim and objectives, Literature survey, methodology, results, discussion, references and future work related to the project. Students may aim to get their Research Findings published in a Peer-reviewed journal.

Mode of Assessment: assessment may be done by thesis evaluation and Viva Voice and Presentation. (Quality of Project= 130 and Viva voice and Presentation=30.

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