

NATIONAL UNIVERSITY



Third Year Syllabus Department of Bachelor of Education (B.Ed.)

Four Year(8 Semester) B.Ed. Honours Integrated Course
Effective from the Session: 2023–2014

NATIONAL UNIVERSITY
Syllabus for Four Year(8 Semester) B.Ed. Honours Integrated Course
Subject: Bachelor of Education (B.Ed.)
Session: 2023-2014

Third Year

Paper Code	Paper Title	Marks.	Credits
	Fifth Semester		
230301	Teaching Learning Methods and Strategies	100	4
230303	Assessment and Evaluation in Education	100	4
Elective Courses (Students will choose three courses from any area of the following Five areas.)			
Area-I:			
230305	Bangla Paper-III	100×3 =300	3×4 =12
230307	English Paper-III		
230309	ICT Education Paper-III		
Area-II:			
230311	Economics Paper- III	100×3 =300	3×4 =12
230323	Political Science Paper- III		
230315	Sociology Paper- III		
230317	Geography and Environment Paper- III		
230319	History Paper- III		
230321	Or Islamic History and Culture Paper- III		
230309	ICT Education Paper- III		
Area-III:			
230323	Physics Paper- III	100×3 =300	3×4 =12
230325	Chemistry Paper- III		
230327	Geography and Environment Paper- III		
230329	Mathematics Paper- III		
230331	Botany Paper- III		
230333	Zoology Paper- III		
230335	Statistics Paper- III		
230309	ICT Education Paper- III		
Area-IV:			
230337	Accounting Paper-III	100×3 =300	3×4 =12
230339	Management Paper-III		
230341	Marketing Paper-III		
230343	Finance and Banking Paper-III		
230309	ICT Education Paper-III		
Area-V:			
230345	Information Science and Library Management Paper-III	100×3 =300	3×4 =12
230347	Home Economics Paper-III		
230309	ICT Education Paper-III		
Total =		500	20

Six Semester			
230349	Micro Teaching and Simulation	100	4
230351	Introduction to Curriculum	100	4
Elective Courses (Students will choose three courses from any area of the following Five areas.)			
Area-I:			
230353	Bangla Paper-IV	100×3 =300	3×4 =12
230355	English Paper-IV		
230357	ICT Education Paper-IV		
Area-II:			
230359	Economics Paper-IV	100×3 =300	3×4 =12
230361	Political Science Paper- IV		
230363	Sociology Paper- IV		
230365	Geography and Environment Paper- IV		
230367	History Paper- IV		
230369	Or Islamic History and Culture Paper- IV		
230357	ICT Education Paper- IV		
Area-III:			
230371	Physics Paper- IV	100×3 =300	3×4 =12
230373	Chemistry Paper- IV		
230375	Geography and Environment Paper- IV		
230377	Mathematics Paper- IV		
230379	Botany Paper- IV		
230381	Zoology Paper- IV		
230383	Statistics Paper- IV		
230357	ICT Education Paper- IV		
Area-IV:			
230385	Accounting Paper- IV	100×3 =300	3×4 =12
230387	Management Paper- IV		
230389	Marketing Paper- IV		
230391	Finance and Banking Paper- IV		
230357	ICT Education Paper- IV		
Area-V:			
230393	Information Science and Library Management Paper- IV	100×3 =300	3×4 =12
230395	Home Economics Paper- IV		
230357	ICT Education Paper- IV		
Comprehensive Viva (Satisfactory/non-satisfactory)			
Total		500	20
Grand Total=		1000	40

Detailed Syllabus

5th Semester

Course Code	230301	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Teaching Learning Methods and Strategies			

1. **Course Description:** This is the elementary course on the methods and strategies of teaching and learning. The methods and strategies are very important for effective classroom teaching. The methods and strategies are applied in the teaching activities to help learning of the students. The process of teaching learning is a two way process. Without active participation of the learners effective learning cannot happen. Learners can also learn from different instructional materials and digital sources. Therefore, this course is planned to introduce teaching- learning techniques, strategies and methods based on the pedagogical and technological point of view. All the contents of this course will be introduced through practical demonstrations by the course teachers. The experiences and information of the sessions will be useful for the learners during the teaching practice period.

2. Course Objective

Learners will be able to-

- a) Develop ideas about the importance and the role of the concept, teaching- learning methods and strategies including related terminologies.
- b) Develop the idea about facilitator and the role of the teacher as a facilitator.
- c) Develop the knowledge about different methods, techniques, and strategies practiced in the classroom situation.
- d) Internalize the fundamental features and indicators of effective instruction for effective teaching-learning activities.
- e) Acquire the communication skills (language and technology) and apply those in the classroom situation.
- f) Acquire the skills of collecting, preparing, using, preserving and sharing different instructional materials in the form of equipments, teaching aids and supplementary readers.
- g) Acquire the skills of preparing lesson plan and to facilitate learning in the classroom following the lesson plan.

3. Course Content

Unit 1: Importance and the role of the concept- teaching- learning methods and strategies.

Teaching and Learning instruction, Communication, Technology, Instructional Technology, Software, Hardware, Methods, Strategies, Approaches, Facilitate and Facilitator, Instructional Materials, Supplementary Materials, Teaching Aids/ Audio-visual teaching Aids.

Unit 2:

The role of the Facilitator for effective Teaching

- Changing perspective of teaching
- The role of teacher as a facilitator
- Phases of teaching

- Criteria/ factors of effective teaching

Unit 3:

Methods and Strategies

- Concept of methods and techniques
- Lecture method
- Guided group discussion
- Question- answer and discussion
- Role- play
- Association method
- Problem solving method
- Heuristic method
- Project method
- Assignment method
- Multiple ways of teaching and learning (MWTL)
- Child to child approach

Unit 4 : Instructional Materials

- Concepts and significance of instructional materials
- Cone of experience
- Classification of instructional materials
- Classification of teaching aids
- Criteria for selection of instructional materials
- Improvised instructional materials
- Strategies for using instructional materials
- Maintenance of instructional materials
- Techniques of using specific hardware (if available): Slide Projector, Overhead Projector, Audio Cassette, Block, Writing Board, Bulletin Board, Planned Board, Magnetic Board, Model, Maps, Radio, Television, VCD.

Unit 5 : Communication skills for effective class

- Concept and nature of classroom communication, role of communication for teaching and learning
- Criteria of effective communication
- Breakdown and failure in communication
- Verbal and non-verbal communication
- Effective teaching and communication

Unit 6: Lesson Plan to facilitate learning

- What is plan and why? The fundamental principles and characteristics of planning, objectives, the supporting activities to achieve the objectives and the evaluation of achievement.
- Yearly plan
- Unit plan
- Herbartian Procedures
- Marison Procedures

- Applied Lesson Plan : Exercise (Behavioural objectives, concepts/ contents teaching learning strategies, teaching aids, formative assessment strategies)
- Conditions of permanent learning
- Classroom management and learning environment

References:

Course Code	230303	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Assessment and Evaluation in Education			

1. Course Description

This is an introductory course on tests, assessment and evaluation including elementary. The student will be acquainted with both theoretical and practical aspect of educational assessment and evaluation and elementary statistics. On completion of this course it is expected that the students will be able to prepare various measuring instruments. They will be aware of the use of the test instruments for assessing students' progress. They will also be able apply their knowledge of elementary statistics in analyzing and interpreting the course of different types of tests. They will be able to use test results as data for educational and psychological research including standardizing tests as effective assessing instruments.

2. Objective of the course

- Provide a rational for studying the course demonstrating its specific relationship to the education context of Bangladesh.
- Help students to conceptualize the concept of test, assessment and evaluation in education.
- Assist learners to develop an understanding of educational and learning objectives, their connection to the curriculum and their role in educational evaluation/assessment.
- Help students to develop skills for writing/determining learning objectives (in behavioral terms) as a basis of preparing evaluation/assessment tools.
- Facilitate learners to develop a sound knowledge base about different methods/techniques of evaluation/assessment.
- Help students to develop an understanding and skills about different types of tests (e.g. validity, reliability, objectivity and applicability etc.) and their determining procedures.
- Acquaint them with the basic statistics which are used in statistical analysis of test results.

- (h) Help learners to develop an understanding and skills about selecting & developing statistical methods and tools for measuring interpreting students' achievement results.
- (i) Assist learners to develop necessary skill for item for analysis as a step for standardization.

3. Course Contents

Unit One: The Concept of Assessment and Evaluation

Test, assessment and evaluation – their meaning and historical perspective, difference between assessment and evaluation, various steps in evaluation, role in objectives in evaluation and writing behavioural objectives, taxonomy of educational objectives.

Unit Two: Characteristics of Measurement Tools

- Errors of assessment, characteristics of good test - validity, reliability, objectivity and standardization causes of low validity and reliability of a test.
- Types of validity: face, content, construct, predictive and concurrent, determining reliability of test; retest, parallel form, split half and rational equivalence (Kuder-Richardson's formula, methods).

Unit Three: Standardization of Tests

Standardised and teacher made test: concept, difference stages of standardization: operational definition and objectives of the new tests; preparation/selection of preliminary test items, try-out, item analysis – difficulty index, discrimination index, internal consistency, finalizing test form, validity and reliability of items, fixing norm and developing scoring key.

Unit Four: Tools and Techniques of Evaluation Tests

- Classification of Tests
- Achievement tests and its classification written test, oral test, practical tests.
- [Structured question/Creative question test, formulation of structured question/creative question and its importance for assessment.](#)
- The essay test advantages and disadvantages of essay test items, improvement of essay type questions.
- The objective test items classification, advantage and disadvantage, guidelines for constructing better objective test items.
- Development of tests – objectives, restricted essay and extended essay
- Development of tests (exercise) : objectives, restricted essay and extended essay.

Unit Five: Use of Descriptive Statistics and their Interpretation

- Meaning of statistics
- Scales of assessment/measurement : normal, ordinal, interval and ratio
- Presentation of data/score: the frequency distribution; graphic representation: histogram, frequency polygon, frequency curve, bar diagram.
- Measure of central tendency
- Measures of dispersion
- Measure of relationship
- The normal probability curve-skewness and kurtosis

Unit Six: Standardisation of Scores and Interpretation

- Rank order of scores, percentiles and percentile ranks
- Standard Scores: Z-score, T-score
- Grading and Rankin

7. Assignment/Practical Work

- Construction of an achievement test for any school subject.
- Preparation of **structured** and objective tests for any school subject

Area-I:

Course Code	230305	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Bangla Paper-III : বাংলা সাহিত্য কর্মের বিবর্তন			

1. উদ্দেশ্য

শিক্ষার্থীরা-

১. বাংলা সাহিত্যের প্রাচীন থেকে আধুনিক যুগ পর্যন্ত উলে-খযোগ্য কবি ও লেখকগণের রচনার সঙ্গে পরিচিত হবে
২. তিরিশোত্তর বাংলা সাহিত্যের এবং '৪৭- উত্তর বাংলাদেশের সাহিত্যের উলে-খযোগ্য বিশেষ কয়েকটি রচনা সম্পর্কে ধারণা লাভ

সাহিত্য পাঠ- (কবিতা)

ক. প্রাচীন যুগ ও মধ্যযুগ

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|-------------------------|---|
| --- কাহুপা | - আলি এঁ কালি এঁ |
| --- বিদ্যাপতি | - আজু রজনী হম |
| --- চণ্ডীদাস | - মরম না জানে ধরম বাখানে |
| ---বড় চণ্ডীদাস | - কে না বাঁশি বা এ বড়াই কালিনী নই কুলে |
| ---ভারত চন্দ্র রায় | - অন্নদার ভবানন্দ ভবনে যাত্রা |
| ---মুকুন্দরাম চক্রবর্তী | - বণিকসহ কালকেতুর কথোপকথন |
| ---লালন শাহ | - খাঁচার ভিতর অচিন পাখী |

খ. আধুনিক যুগ

--- মাইকেল মধুসূদন দত্ত	- আত্মবিলাপ
--- রবীন্দ্রনাথ ঠাকুর	- বলাকা
--- কাজী নজরুল ইসলাম	- বিদ্রোহী
--- জীবনানন্দ দাশ	- মাঠের গল্প
--- সুধীন্দ্রনাথ দত্ত	- শাস্ত্রী
--- জসীম উদ্দীন	- নকশী কাঁথার মাঠ (অংশ বিশেষ)
--- বিষ্ণু দে	- ঘোড়সওয়ার
--- শামসুর রাহমান	- বার বার ফিরে আসে

সাহিত্য পাঠ (গদ্য)

ক. ছোটগল্প

--- রবীন্দ্রনাথ ঠাকুর	- একরাত্রি
--- বিভূতিভূষণ বন্দ্যোপাধ্যায়	- পুঁই মাচা
--- আবুল মনসুর আহমদ	- হুয়ুর কেবলা
--- আখতার হুসাইন ইলিয়াস	- দোজখের ওম

খ. প্রবন্ধ

--- বঙ্কিম চন্দ্র চট্টোপাধ্যায়	- বাঙালা ভাষা
--- রবীন্দ্রনাথ ঠাকুর	- শিক্ষার হেরফের
--- মুনীর চৌধুরী	- বাংলা গদ্য রীতি
--- কাজী নজরুল ইসলাম	- বর্তমান বিশ্বসাহিত্য

গ. উপন্যাস

--- অদ্বৈত মল-বর্মণ	- তিতাস একটি নদীর নাম
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ঘ. নাটক

--- সৈয়দ ওয়ালীউল-হা	- বহির্পীর
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সহায়ক গ্রন্থ:

১. চর্যাপদ	: অতীন্দ্র মজুমদার
২. বঙ্কিমচন্দ্র চট্টোপাধ্যায় (১৪০১)	: বঙ্কিম রচনাবলী দ্বিতীয় খণ্ড, কলকাতা : সাহিত্য সংসদ
৩. মুহম্মদ আব্দুল হাই ও ড. আহমদ শরীফ সম্পাদিত	: মধ্যযুগের বাংলা গীতিকবিতা
৪. মুহম্মদ আব্দুল হাই ও আনোয়ার পাশা সম্পাদিত	: বড়ু চন্ডিদাসের কাব্য
৫. ক্ষেত্রগুপ্ত	: মধুসূদনের কবিআত্মা ও বাক্যশিল্প
৬. সৈয়দ আলী আহসান	: মধুসূদনের কবিকৃতি ও বাক্যদর্শন
৭. নীহাররঞ্জন রায়	: রবীন্দ্র সাহিত্যপাঠের ভূমিকা
৮. চারুচন্দ্র মজুমদার	: রবিরশ্মি
৯. আহমদ রফিক	: পদ্মা পর্বের রবীন্দ্রগল্প
১০. আব্দুল মান্নান সৈয়দ	: নজরুল ইসলাম : কবি ও কবিতা
১১. দীপ্তি ত্রিপাঠী	: আধুনিক বাংলা কাব্য পরিচয়
১২. জীবেন্দ্র সিংহ রায়	: প্রমথ চৌধুরী
১৩. অসিতকুমার বন্দ্যোপাধ্যায়	: বাংলা সাহিত্যে বিদ্যাসাগর
১৪. শ্রীকুমার বন্দ্যোপাধ্যায়	: বঙ্গ সাহিত্যে উপন্যাসের ধারা
১৫. সরোজ বন্দ্যোপাধ্যায়	: বাংলা উপন্যাসের কালান্তর
১৬. অশোককুমার শিকদার	: আধুনিকতা ও বাংলা উপন্যাস
১৭. সৈয়দ আবুল মকসুদ	: সৈয়দ ওয়ালীউল-হা জীবন ও সাহিত্য
১৮. জীনাত ইমতিয়াজ আলী	: সৈয়দ ওয়ালীউল-হা জীবনদর্শন ও সাহিত্যকর্ম

১৯. খোন্দকার আশরাফ হোসেন	: বাংলাদেশের কবিতা : অন্তরঙ্গ অবলোকন
২০. রফিকুল্লাহ খান	: বাংলাদেশের কবিতা : সমবায়ী স্বতন্ত্র স্বর
২১. সৈয়দ আকরাম হোসেন	: প্রসঙ্গ: বাংলা কথাসাহিত্য
২২. সাঈদ-উর-রহমান	: পূর্ব বাংলার রাজনীতি, সংস্কৃতি ও কবিতা
২৩. সাঈদ-উর-রহমান সম্পাদিত	: বাংলাদেশের পঁচিশ বছরের সাহিত্য
২৪. ঢাকা বিশ্ববিদ্যালয়	: কবিতা সংগ্রহ
২৫. ঢাকা বিশ্ববিদ্যালয়	: গল্প সংগ্রহ
২৬. ঢাকা বিশ্ববিদ্যালয়	: প্রবন্ধ সংগ্রহ

Course Code	230307	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	English Paper- III: Teaching 1&2			

Unit I: Types of tests: placement test, diagnostic test, progress test, summative test, formative test, continuous test

Differences between test and assessment

Classroom tests

Issues in test: Reliability, validity, , accountibiity, practicality

Ethics in language testing

Communicative language testing: test of 4 skills

Reference books

Testing for Language Teachers; Arthur Huges; Cambridge University Press; 2003

Language Assessment in Practice; Lyle Bachman and Adrian Palmer; Oxford University Press; 2010

Practical Language Testing; Glen Fulcher; Published from Routledge; 2010

Language Testing and Assessment: An advanced Resource Book; Glenn Fulcher and Fred Davidson; Taylor and Francies; 2007

Communicative Language Testing; Ceril J Weir; Prentice Hall; 1990

The Cambridge Guide to Second Language Assessment edited by Christine Coombe, Peter Davidson, Barry O'Sullivan, Stephen Stoyhoff; Cambridge University Press; 2012

Teach English; Adrian Doff; Cambridge University Press; 1988

Unit II: Roles of teachers and learners

a. What is a role?

Defining social roles

Some problems associated with roles

b. Factors influencing teacher and learner roles

Interpersonal factors

Task-related factors

Group processes

Teacher and learner roles: summary

c. Teacher and learner roles in the classroom

Teaching tasks and teaching strategies

Teaching style

Instructional tasks and instructional strategies

- Instructional materials and resources
- Learning groups and learning activities
- The individual learner
- Classroom process
- d. How to be a good teacher
- e. How to be a good learner
- f. The dilemma of teacher education in second language teaching
- g. Activities and procedures for teacher preparation
- h. Teacher development through reflective teaching

Reference books:

1. Roles of Teachers & Learners; Tony Wright; Oxford University Press, UK, 1987 (first published)
2. Understanding classroom role relationship; Tony Wright in Second Language Teacher Education edited by Jack C Richards and David Nunan; Cambridge University Press; 1990 (first published)
3. Teacher development through reflective teaching; Leo Burlett in Second Language Teacher Education edited by Jack C Richards and David Nunan; Cambridge University Press; 1990 (first published)
4. The dilemma of teacher education in second language teaching; Jack C Richards in Second Language Teacher Education edited by Jack C Richards and David Nunan; Cambridge University Press; 1990 (first published)
5. Activities and procedures for teacher preparation; Rod Ellis in Second Language Teacher Education edited by Jack C Richards and David Nunan; Cambridge University Press; 1990 (first published)
6. How to Teach English; Jeremy Harmer; Longman; 1988

Unit III: Essentials of Language Teaching

Classroom practices such as presenting vocabulary, asking questions, practicing structures, groupwork, pairwork, role play, planning teaching, using blackboard, using visual aids, planning a lesson, teaching pronunciation, correcting errors, communicative activities, using English in class, self evaluation, classroom interaction, learner motivation, young/old learners, mixed ability classes, how to teach language, how to manage teaching and learning

Reference book:

How to Teach English; Jeremy Harmer; Longman; 1988
 Essentials of English Language; Julian Edge; Longman; 1993 (first published)
 A Course in Language Teaching: Practice and Theory; Penny Ur. Cambridge University Press, UK, 1996
 Teach English: A training course for teachers; Adrian Doff; Cambridge University Press, UK 1988 (first published)

Unit 4: Teaching language through literature

Prose: Poetry in Bengali Life – A.G.Stock
 Fiction: A Service of Love – O’Henry:
 Writing activity:
 Writing critical appreciation of the reading materials

- a) Broad Question-answer
- b) Explanation

Reference:

1. Texts of the selected writers

Unit 5: Action research in Language teaching

Action research in the language classroom

Reference books

1. Investigating teacher and learner's roles Action research in the language classroom; Richard R Day in Second Language Teacher Education edited by Jack C Richards and David Nunan; Cambridge University Press, 1990
2. Best, John W.; Research in Education; Englewood Cliffs, New Jersey : Parantice Hall

Unit 6: Curriculum and Materials

- a. Developing curriculum
- b. Managing curriculum innovation
- c. Materials development
- d. Adapting materials
- e. Piloting

Reference books:

Curriculum Development in Language Teaching; Jack C Richards; Cambridge University Press; 2001 (first published)

Managing Curricular Innovation; Numa Markee; Cambridge University Press; 1997 (first published)

Course Code	230309	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper- III: Teaching Ict As Secondary Subject			

UNIT	SPECIFIC OBJECTIVES	CONTENT
UNIT 1: THE SECONDARY ICT CURRICULUM IN GRADES 6-12		The content of Secondary ICT Grades 6-12 Content analysis of the ICT curriculum documents of Grades 6-12 ○ Curriculum statements ○ syllabuses ○ textbooks ○ examination papers • structure of subject - aims - objectives - learning outcomes • identifying developmental and logical sequencing of content within a Grade across Grades 6-12 • classifying content in terms of intellectual challenge & social context • noting content for personal review

UNIT 2: EXPLORING TEACHING-LEARNING APPROACHES TO CURRICULUM TOPICS		• Creating a teaching-learning environment for ICT in a school • Drawing on ideas and skills from Professional Studies and Education Studies • Strategies, techniques and skills for participatory teaching-learning in ICT • Lesson plans and unit plans for a sequence of lessons • Planning for teaching specific Curriculum topics • Trying out learning activities and teaching approaches through microteaching, simulation and feedback • Evaluating teaching effectiveness through reflection on planning, involvement and outcomes
UNIT 3: INTEGRATING ASSESSMENT INTO TEACHING-LEARNING ACTIVITIES		• Role of assessment in teaching and learning ICT: informal and formal, formative and summative (SBA) • Developing a range of assessment tasks • Asking and writing questions that establish personal and intellectual skills, attitudes and values • Trying out assessment tasks through peer review, micro-teaching, simulation and feedback • Reviewing plans for teaching specific Curriculum topics to include assessment • Develop Creative question on ICT subject
UNIT 4 STRATEGIES FOR MEETING ALL STUDENTS' NEEDS IN ICT CLASSES		• Using formative assessment to identify and clarify students' existing ideas • Addressing difference in learning ability: group work, peer teaching, extension activities • Monitoring progress and determining achievement • Planning to capture interest and support learning of both girls and boys • Trying out plans and teaching approaches through micro-teaching, simulation and feedback
UNIT 5 PREPARING STUDENTS FOR EXAMINATIONS IN ICT		• setting and marking class and progress tests : marking criteria • setting and marking school exam questions : marking schedules, check marking and moderation • recording student results and monitoring achievement • Examining SSC ICT prescriptions, past and exemplar exams and individual questions
UNIT 6 ICT FOR TEACHING-LEARNING (SIMULATION WITH DIGITAL CONTENT)	1. Deconstruct ICT in teaching-learning (ICT -availability of changing the way one can access learning) 2. Organize learning (for self) and design learning environments for classrooms 3. Analyze curriculum to identify areas for ICT infusion (analyze and abstract, evaluate and	• Curriculum analysis to determine content (what do I need to teach and what do students' need to know) • ICT infusion and going beyond the textbook. • Determine appropriate ICT infusion and design a learning plan for a given topic. • Exploration of the world of ICT resources for teaching-learning • ICT Showcase -Educational applications of ICT • Educational tools and applications for integrating ICT into lessons. • Interacting with hardware and software.

	problem solving).	
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Area-II:

Course Code	230311	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Economics Paper- III: The Economy of Bangladesh			

1. Course Description

The course is designed to provide knowledge and understanding on various aspects of economic development, i.e. stages of economic development, features of a developed, underdeveloped and developing economy, position of Bangladesh in relation to stages of economic development, sources, initiatives and hindrances in development. Major emphasis has been given on structure of the economic activities of the country, population, labour force, financing of different national development programmes.

2. Course Objectives

The main objectives of this course are to help the students:

- a) Understand the structure of the economics of a country
- b) Identify features of a developing economic and reasons for underdeveloped of the Bangladesh economy;
- c) Acquire knowledge about the importance of natural, mineral and other resources in national development;
- d) Identify characteristics of the problem of overpopulation and strategies to attack the problems;
- e) Gain comprehensive knowledge of the economic activities such as agriculture, land tenure system and industry. Further to develop participants understanding about employment and unemployment situation obtaining in the country;
- f) Identify various sources of finance and constraints of finance in the economy;
- g) Gain insight into the developed planning process in Bangladesh.

3. Course Contents

Number of Lectures

Unit One: Structure of Bangladesh Economy and the Need for Development **08**

- Economic structure of Bangladesh

- GNP and per capita income: Contributions of agriculture, industry, commerce and services to GNP
- Standard of living and Mass poverty
- Types of economy- Free and open market, capitalist, socialist and mixed economy
- Features of a developing economy with reference to Bangladesh
- Reasons for under development of Bangladesh economy
- Need for the development of the Bangladesh economy

Unit Two: Resources and Conservation 04

- Natural resources
- Mineral resources

Unit Three: Population 04

- Concepts, Growth, Structure
- Population problem and policies
- Population education

Unit Four: Economic Activities 12

- Agricultural and its importance in the economy
- Land tenure system
- Backwardness of agriculture, food shortage
- Industry, cottage industries, large scale industry, small scale industry
- Problems of industrialization and solution
- Employment, labor force, unemployment
- Globalization and its impact on labor force
-

Unit Five: Financing in National Development 12

- Financing development- internal and external sources
- Sources of finance, internal resources
- Foreign aid, its usefulness and impact on the economy
- Planning for development in Bangladesh
- Overview of the Five year Plans and ADP in Bangladesh

3rd Incourse Examination

4. Instructional Strategies

- Lecture, Discussion
- Project work/Assessment

5. Evaluation

- Regular attendance and class participation

- Test I, II III, Semester Final
- Written Assignment

Textbooks:

১. অমর্ত্য সেন- জীবনযাত্রা ও অর্থনীতি, আনন্দ পাবলিশার্স, কলিকাতা, ১৯৯৬
২. আবু মাহমুদ- উন্নয়ন উচ্ছ্বাস ও তৃতীয় বিশ্ব, মুক্তধারা, ঢাকা, ১৯৮৪
৩. আনিসুর রহমান- উন্নয়ন জিজ্ঞাসা, ব্রাক প্রকাশনী, ঢাকা, ১৯৯২
৪. মফিজুর রহমান- বাংলাদেশের অর্থনৈতিক উন্নয়ন, বাংলাদেশ বুক কর্পোরেশন, ঢাকা, ১৯৮০
৫. মহিউদ্দিন খান আলমগীর- উন্নয়ন অর্থনীতি: সমস্যা ও সমাধান, বাংলা একাডেমী, ঢাকা, ১৯৭৬
6. Andre. G, Frank- The Sociology of under developed
7. A.R. Khan- The Economy of Bangladesh
8. B.B.S.- Statistical yearbook of Bangladesh
9. Govt. of Bangladesh, Ministry of Finance, Economic survey of Bangladesh
- 10.Planning Commission, Five Year Plans and Other Documents
- 11.The World Bank- The Development Reports
12. W.W. Rostow- The Stages of Economic Growth, Cambridge, 1950
- 13.Related Website

Course Code	230323	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Political Science Paper- III: British Rule and the Emergence of Bangladesh			

1. Course Description

The course is designed to provide the students with through understanding of political development leading to the creation of Bangladesh. After the completion of the Course the student will be able to realize the nature of political development till 1991, and understand the successes and failures.

2. Course Objectives

The main objectives of this course are:

- a) To acquire the students with the political context in the Indian sub-continent under the colonial rule

- b) To assist them to gain insight of various political reforms which influenced the political development leading to the creation of India and Pakistan as separate states,
- c) To help the students understand the factors and philosophies of the state language movement and subsequent political development leading to the War of Liberation and emergence of Bangladesh.

3. Course Contents **Number of Lectures**

Unit One: The Condition of Bengal in the Early Twentieth Century

06

- Socio-economic setting
- Hindu Muslim Relations
- Partition of Bengal 1905
- The Muslim League
- The Krishak Proja Party
- Pakistan Movement and Birth of Pakistan

Unit Two: Constitutional Reforms

06

- Morley-Minto Reform 1909
- Lucknow Pact 1916
- Working of Dyarchy
- Montagu Chelmsford Reforms 1919
- Bengal Pact 1923
- Act of 1935, Cabinet Mission, Indian Act and
- Independence Act of 1947

Unit Three: Pakistan and Internal Colonialism

12

Controversies in Constitution lacking in Pakistan

- Growth of Opposition Political parties
- 1954 Election, Martial Law and its Impact, constitution of 1956 and 1962
- Six points and Eleven points movements
- Growth and development of Bengali nationalism and national identity
- Liberation War 1971

Unit Four: Emergence of Bangladesh **06**

- Constitution making and Parliament Politics
- Awami League Government (1971-75)
- Fourth Amendments-1975
- Change of Government 1975 or
- Military Intervention of 1975

Unit Five: Dominant Political Ideologies & Forces **05**

- Political parties and Pressure groups
- Bureaucracy
- Armed Forces

Unit Six: Institutionalization of Democracy **05**

- Making of civil society and state
- Role of civil society in democracy
- Political and Economic Institution and establishing accountability

4. Assessment

As a testimony to practical work, the student will be assigned project. Inconsistence with the problems to be solved during the course period.

5. Evaluation

- a. Class attendance
- b. Class participation
- c. Tests and final examination
- d. Written class assignment

Suggested reading:

1. AB Keith, Constitutional History of India
2. BC Coupland, The India Problem
3. P. Griffith, The British Impact on India
4. Rounaq Jahan, Bangladesh Politics: Problems and Issues
5. --- Pakistan Failure in National integration
6. GW Chowdhury, the last days of United Pakistan
7. --- Constitutional Development in Pakistan

8. Talukdar Moniruzzaman, Radical Politics and Emergence of Bangladesh
9. Emajuddin Ahmed, Bangladesh Politics
10. Rangalal Sen, Political Elite of Bangladesh
11. Khalid Bin Sayeed, Pakistan: The Formative Phase
12. --- Political System of Bangladesh
13. Related Websites

Course Code	230315	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Sociology Paper- III			

Not details syllabus

Course Code	230317	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Geography and Environment Paper- III: Regional Geography			

1. Course Description

The course is design to provide students to the essentials of regional aspects of Bangladesh, Japan and USA and acquire knowledge and skills considering spatial perspectives.

2. Course Objectives

This course will enable learners-

- a) To understand the definition, scope and importance of Regional Geography.
- b) To understand the essential features of Geography of Bangladesh, Japan and USA.
- c) To understand the relationship of man, environment and economic activities among the countries.

3. Course Content

Unit One: Geography of India

Location, Physiography, rivers, Climate, causes of climate change and its impact. Soils, Forest and Fisheries. Agriculture (Rice, Wheat, Jute, Tea, Tobacco, Sugarcane), Industries (Paper, Fertilizer, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export in the context of Bangladesh), Environment and Environmental hazards.

Unit two: Geography of Japan

Location, Physiography, Climate, causes of climate Agriculture (Rice, Wheat), Industries (Iron and Steel, Electronics and electrical, Chemical, Automobiles, Medicine, textile), Power and mineral resources, Population, communication

and transport, Trade (Import, export), Environment and Environmental problems hazards.

Unit Three: Geography of Malaysia /China

Location, Physiography, Climate, causes of climate change and its impact. Soils, Forest and Fisheries. Agriculture (Rice, Wheat, Tea, palm), Industries (Rubber, automobiles, electronic and electrics, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export), Environment and Environmental problems hazards.

Unit Three: Geography of USA

Location, Physiography, Climate, causes of climate change and its impact. Soils, Forest and Fisheries. Agriculture (Rice, Wheat,), Industries (Automobiles, iron and steel, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export), Environment and Environmental problems hazards.

Unit Four: Practical Geography

- a) Elementary Cartography- Cartographical representation of economic and climatic data-Dot, Shade and Isopleths.
- b) Elementary Surveying- Simple methods of surveying including the use of chain and tape plane.
Study of Topo map

6. Instructional Strategies

Lecture (using ICT devices), Discussion, Question-Answer, Participatory Approach, Observation of real objects, Debate, Field trip.

7. Assignment

Students will submit assignments on due date based on contents by the instruction of their relevant teacher.

8. Evaluation

- a) Internal Examinations
- b) External Examination
- c) Assignments and class percentage

References:

মোয়াজ্জেম হোসেন চৌধুরী-অর্থনৈতিক ও আঞ্চলিক ভূগোল
সিরাজুল ইসলাম চৌধুরী-আর্থনীতিক ভূগোল

Course Code	230319	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	History Paper- III: History of Europe and Contemporary World			

1. Course Description

The course is designed to provide knowledge of modern Europe with a background of medieval history. History of some of the countries of contemporary world is also added so that the students have an overall understanding of contribution of these nations in shaping the modern world.

2. Course Objectives

The main objectives of this course are to:

- a. To acquaint students with the major events of medieval Europe.
- b. To help students know and understand the historical events, forces and trend in shaping Modern Europe.
- c. To help students understand the main features and characteristics of Modern Europe and its contribution.
- d. To help them know the power struggle in Europe leading to world wars.

3. Course Contents

Number of Lectures

Unit One: Emergence of Modern Europe

09

- Disintegration of the Feudal System
- The Rise of the Nation States
- The Renaissance in Italy and in Europe
- The Decline of the Medieval Church

Unit Two: Discovery, Commerce and the Age of Reason

04

- Growth of Commerce and Industry
- Beginning of Colonialism
- Science, Philosophy, Literature and Art

Unit Three: The Power Struggle in Europe (1500-1800)

06

- The English Civil Wars.
- Louis XIV and the Golden Age of France
- Rise of Russia and Prussia
- Struggle against Absolutism
- The Age of Democratic Revolution (in England, France and America)

Unit Four: Industrialization

02

- Industrialization Revolution and its consequences.

Unit Five: Nationalism and Democracy 06

- Unification of Italy.
- Germany under the Kaiser.
- Democratic Struggles in Europe

Unit Six: Socialism, Liberalism, New Imperialism 05

- Growth of Communism in Russia
- Fascism in Italy
- Nazism in Germany

Unit Seven: First and Second World War 08

- The Eastern Question
- World War I: 1914-18
- Inter-War Period
- World War II: 1939-45
- United Nations Organizations

4. Course Requirements:

- a) Class attendance
- b) Class report based on given topic
- c) Term paper
- d) Class participation and discussion
- e) Incourse examinations
- f) Semester final examination

5. Teaching Strategies

- a) Lecture
- b) Class discussion
- c) Class/home assignment

Suggested reading:

Andrews, Historical Development in Modern Europe
 C.D. Hazen. Modern European History
 C.J.H. Haves. A Political and Cultural History of Modern Europe Vol-
 31
 Denis Rechards. Illustrated History of Europe 1789-1939
 F.C. Lodge, The End of the Middle Europe

Fyffe- History of Modern Europe
 Gottschalk and Lack, The Transformation of Modern Europe Vols I & IV
 G.H. Adams. Civilization During the Middle Ages
 H.W.C Davis, Medieval Europe
 J.W. Thompson, History of the Middle Ages (300-1500)
 অতুল চন্দ্র রায়, আধুনিক ইউরোপের ইতিহাস, মৌলিক লাইব্রেরী, কলিকাতা, ১৯৯৬
 আবুল কালাম, নাপোলোঁও বোনাপার্ত রণনীতি ও কূটনীতি, বাংলা একাডেমী, ঢাকা, ১৯৮৮
 আবদুল হামিল, ইতিহাসের রূপরেখা
 নুরননহার বেগম ও আবদুল হালিম, মানুষের ইতিহাস মধ্যযুগ, আগামী প্রকাশনী, ঢাকা-১৯৯১
 নুরননহার বেগম, মানুষের ইতিহাস আধুনিক যুগ
 সৈয়দ মাহমুদ হাসান, আধুনিক ইউরোপের ইতিহাস

Course Code	230321	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Islamic History and Culture Paper- III			

Not details syllabus

Course Code	230309	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper- III: Teaching Ict As Secondary Subject			

UNIT	SPECIFIC OBJECTIVES	CONTENT
UNIT 1: THE SECONDARY ICT CURRICULUM IN GRADES 6-12		The content of Secondary ICT Grades 6-12 Content analysis of the ICT curriculum documents of Grades 6-12 ○ Curriculum statements ○ syllabuses ○ textbooks ○ examination papers • structure of subject - aims - objectives - learning outcomes • identifying developmental and logical sequencing of content - within a Grade - across Grades 6-12 • classifying content in terms of intellectual challenge & social context • noting content for personal review
UNIT 2: EXPLORING TEACHING-LEARNING APPROACHES TO CURRICULUM TOPICS		• Creating a teaching-learning environment for ICT in a school • Drawing on ideas and skills from Professional Studies and Education Studies • Strategies, techniques and skills for participatory teaching-learning in ICT • Lesson plans and unit plans for a sequence

		of lessons • Planning for teaching specific Curriculum topics • Trying out learning activities and teaching approaches through microteaching, simulation and feedback • Evaluating teaching effectiveness through reflection on planning, involvement and outcomes
UNIT 3: INTEGRATING ASSESSMENT INTO TEACHING-LEARNING ACTIVITIES		• Role of assessment in teaching and learning ICT: informal and formal, formative and summative (SBA) • Developing a range of assessment tasks • Asking and writing questions that establish personal and intellectual skills, attitudes and values • Trying out assessment tasks through peer review, micro-teaching, simulation and feedback • Reviewing plans for teaching specific Curriculum topics to include assessment • Develop Creative question on ICT subject
UNIT 4 STRATEGIES FOR MEETING ALL STUDENTS' NEEDS IN ICT CLASSES		• Using formative assessment to identify and clarify students' existing ideas • Addressing difference in learning ability: group work, peer teaching, extension activities • Monitoring progress and determining achievement • Planning to capture interest and support learning of both girls and boys • Trying out plans and teaching approaches through micro-teaching, simulation and feedback
UNIT 5 PREPARING STUDENTS FOR EXAMINATIONS IN ICT		• setting and marking class and progress tests : marking criteria • setting and marking school exam questions : marking schedules, check marking and moderation • recording student results and monitoring achievement • Examining SSC ICT prescriptions, past and exemplar exams and individual questions
UNIT 6 ICT FOR TEACHING-LEARNING (SIMULATION WITH DIGITAL CONTENT)	4. Deconstruct ICT in teaching-learning (ICT -availability of changing the way one can access learning) 5. Organize learning (for self) and design learning environments for classrooms 6. Analyze curriculum to identify areas for ICT infusion (analyze and abstract, evaluate and problem solving).	• Curriculum analysis to determine content (what do I need to teach and what do students' need to know) • ICT infusion and going beyond the textbook. • Determine appropriate ICT infusion and design a learning plan for a given topic. • Exploration of the world of ICT resources for teaching-learning • ICT Showcase -Educational applications of ICT • Educational tools and applications for integrating ICT into lessons. • Interacting with hardware and software.

Area-III:

Course Code	230323	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Physics Paper- III: Electricity and Electronics			

1. Course Description:

This course is designed to acquaint pupils with basic knowledge, concept and skills of performing experiment of Physics in the area of Electricity and Electronics,

2. Objectives:

Following are the objectives of the course. The students are expected to-

- (a) Acquire knowledge of Electricity and Electronics;
- (b) Understand and interpret the basic concepts of Electricity and Electronics;
- (c) Apply concept and principles of the above in new and unfamiliar situations; and
- (d) Demonstrate skills in practical aspects like observation, performance, recording, setting while performing the practical experiments of physics.

3. Course Content:

Unit One : Electric Charge

2 Lectures

Electromagnetism- a preview, Electric Charge, Conductors and insulators, Coulomb's Law, Charge is quantized, Charged and Matter, Charge is Conserved.

Unit Two: The Electric Field

4 Lectures

The Electric field, The electric field strength E , Electric field of a continuous charge distribution, Lines of force. Calculations of E , A point Charge in an Electric field, A Dipole in an Electric Field.

Unit Three: Gauss's Law

2 Lectures

Electric Flux, Gauss's Law, Gauss's Law and Coulomb's Law, Gauss's Law- Some Applications, An Insulated Conductor.

Unit Four: Electric Potential

4 Lectures

Potential Difference and Electric Potential, Potential and Field strength, Potential due to a Point charge, A group of point charges, Continuous Charge distribution, A Charged Disk, A dipole, Electric potential Energy, Calculation of E from V .

Unit Five: Current and Resistance

2 Lectures

Electricity, Development of Electricity, Impact of electricity on modern life, Source of electricity, Sources of Electricity in Bangladesh, Current and current density, Resistance, Resistivity and conductivity, Colour coding, Ohm's Law, Kirchhoffs Law, Circuits, Energy

Unit Six: Capacitance, Capacitors and Dielectrics

4 Lectures

Capacitance, Capacitance in AC and DC. Charging and Discharging, Dielectrics, Types of Capacitors, Calculating capacitance, parallel plate capacitors with dielectrics, Dielectric and Gauss's law, Three electric Vectors, Energy stored in electric field, RC circuit.

Unit Seven: The Magnetic Field

3 Lectures

The Magnetic Field, The Definition of B , Magnetic force on a current, Torque on a Current Loop. The Hall Effect. Circulating Charges, The cyclotron, Thomson's Experiment.

Unit Eight: Ampere's and Faraday's law

4 Lectures

Ampere's Law, B Near a Long wire, Magnetic Lines of induction, Two parallel conductors, B for a Solenoid, A toroid, The Biot-Savart law, A circular Current loop,

Faraday's Experiment. Faraday's Law of induction, Lenz's law, Induction- A quantitative study, Time -Varying Magnetic Fields.

Unit Nine: Inductance and Inductors

3 Lectures

Introduction. Inductance in AC and DC, Mutual Inductance, Calculation of Inductance, Inductor (Choke), Transformer, LR circuits, Energy and the magnetic field, Energy density and the magnetic field.

Unit Ten: Alternating current and voltages

3 Lectures

AC Generator. Average values of currents and voltage. Impedance. Phase angle. Power factor. RC, LR and LCR circuits. Resonance.

Unit Eleven: Magnetic Properties of Matter

3 Lectures

Poles and dipoles, Laws of Magnetism, Gauss's law for Magnetism, Paramagnetism, Diamagnetism. Ferromagnetism, Three Magnetic Vectors, Relay and Circuit Breaker.

Unit Twelve: Electrodynamics

4 Lectures

LC Oscillations, Oscillators-principles, Analogy to Simple Harmonic Motion, Forced Oscillations and Resonance, Electromagnetic Cavity Oscillator, Induced Magnetic Fields, Displacement Current, Maxwell's Equations, Plane wave solutions to Maxwell's Equation in conducting and non conducting media.

Unit Thirteen: Radio Transmitters and Radion Receivers

2 Lectures

Principle of Radion Transmitters and Receivers-Block Diagram. Modulation and Transducer.

Laboratory Work: Practical (At Least Six)

- a) Determination of the End Correction of a Metre bridge
- b) Determination of the value of a Galvanometer's resistance by Half deflection method.
- c) Determination of High Resistance by the method of deflection.
- d) Determination of the value of low resistance by the method of fall of potential.
- e) Verification of the laws of combination of resistance by a P.O. box.
- f) Determination of the specific resistance of a wire using a Metre Bridge.
- g) Comparison of the EMF's of two cells using a potentiometer.
- h) Determination of 'M' and 'H' by magnetometer.
- i) Determination of the capacitance of a condenser by studying the voltage current relationship of an AC capacitor circuit.

6. Tutorial/Assignment:

Students will be given home assignment/ Tutorial which they will be required to submit on due dates.

7. Instructional strategies:

Lecture Question- answer, Demonstration, Guided discussion, group discussion, Student participation, Review of books, Assignment/ tutorial, Practical work.

8. Assessment

Incourse Test, Assignment, Semester Final Test, Practical Examination

Text and References

1. Serway Raymond, *Physics for the Scientists and Engineers with Modern Physics*, 2nd
1. ed. Saunders Golden Sunburst Series, 1986.

2. Freedman Young. *University Physics*, Ninth Edition, addition-Wisely Series Publishing Company, 1996.
3. Halliday D. Resnick R., and Walker J., *Fundamentals of Physics*, Fifth ed. New York, John Wisely and Sons, 2000.
4. 4. Miller Rex and JR. Fred W. Calperpper, *Electricity and Magnetism*. 2nd ed. Glencoe/Macgraw-Hill Companies, Peorio, 1991.
5. Benson Harrish, *University Physics*, Revised Edition, Addition - Wisely, New York.
6. রেসনিক, রবার্ট হ্যালিডে ও ডেভিড, (অনুবাদ অজয় রায় প্রমুখ), *পদার্থবিদ্যা*, ১ম ও ২য় খণ্ড, ঢাকা, বাংলা একাডেমী, ১৯৮৮।
7. Ahmed Giasuddin and Shahabuddin Md., *Practical Physics*, 2nd ed. Hafiz Book House, Dhaka.
8. 8. Miller Rex and JR. Fred W. Calperpper, *Electricity and Magnetism*, 2nd
9. Theraja. B. L., *Basic Electronics- Solid State*, Revised Edition, S. Chand & Company Ltd. New Delhi.
10. Melita V. K., *Principles of Electronics*, Revised Edition, S. Chand & Company Ltd. New Delhi.
11. Tewari, K.K., *Electricity and Magnetism*, Revised Edition, S. Chand & Company Ltd. New Delhi.
12. Nooger V.V *Basic Electricity* Vol. 1, John F. Rider Publishers Inc. New York.
13. Oarash H.H. & William 6. Dugger, I.R., *Electricity and Electronics*, The Gool Heart. Willcox Company, Inc.
14. Search www.google.com with specific key word from relevant topics of physics.
15. Nave, C.R (2005), Hyperphysics-Georgia State University Retrieved July 7, 2008 from <http://hyperhysics.phy-astr.asu.edu/hbase/hframe.html>.
16. Jones, A.Z (2008): About.com:Physics Retrieved July?, 2008 from [http://physics:about.com/](http://physics.about.com/)

Course Code	230325	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Chemistry Paper-III: Inorganic Chemistry			

1. Course Description

The Course of Inorganic Chemistry will acquaint pupil with different terms, facts, concepts, principles, laws and their applications related to Inorganic Chemistry. This course includes atomic structure, periodic classification, basic principles of Inorganic Chemistry, Classification of chemical reactions, oxides and hydroxides, brief of the following groups of elements with special reference to (a) discovery, (b) occurrence, (c) preparation, (d) properties and uses of the elements and their important compounds, transition elements, elements of nuclear chemistry,

2. Course Objectives

To help the learners to:

- (a) Know the meaning of terms, specific facts and laboratory preparation and procedure of Inorganic Chemistry;
- (b) Understand concepts, principles and laws of inorganic chemistry;

- (c) Apply concepts and principles of inorganic chemistry to new situation; and
- (d) Demonstrate skills and abilities needed to conduct experiments of inorganic Chemistry Prescribed in the syllabus.

3. Course Contents

No. of Classes

Unit One : Atomic Structure

5

Modern concept of atomic structure - electron, proton and neutron. Rutherford atom model, Bohr's atom model. Quantum numbers, Pauli Exclusion Principle. Types of orbitals, electronic configuration of elements, Aufbau principle. Elementary idea about the wave nature of electrons.

Unit Two : Periodic Classification of Elements

4

History of the development of modern periodic table, Construction of the periodic table, basis of periodic classification, general survey of elements - s,p,d, and f level of elements. Variation of properties (Sizes of atoms and ions, ionization potential, electron affinity, electronegativity) along a period and down a group.

Unit Three: Chemical Bonds

4

Electronic theory of chemical bond. Bond types - ionic bond, covalent bond, co-ordination bond, metallic bond, hydrogen bond, vander waal bond. Properties associated with different bond. Hybridization of bond orbitals, hybrid bond and molecular geometry. Bond angle, bond length, bond strength. Bond Polarisation and ion polarisation, Lattice energy. Electron pair repulsion theory and shapes of molecules.

Unit Four: Chemical Reactions

3

Different Types of Chemical reactions, Oxidation and reduction reactions, oxidation state, oxidation number. Writing of equation involving oxidation-reduction reactions.

Unit Five: Acids and Bases

Modern concepts of acids and bases, classification and reactivity, Oxyacids and peracids.

Unit Six : Group Elements Chemistry

8

Brief study of the following groups of elements with special reference to (a) discovery, (b) Occurrence, (c) preparation (d) properties and uses of the elements and their important compounds

- (i) Alkali metals
- (ii) Alkaline earth metals
- (iii) Group III, particular reference to B and Al.
- (iv) Group IV, particular reference to C, Si, Sn and Pb.
- (v) Group V, particular reference to N and P.
- (vi) Group VI. particular reference to S and Cr.

Unit Seven : Transition Elements Chemistry

4

General properties of transition elements, Periodic trends in the transition elements, General Chemistry of the elements of the first transition series, co-ordination bonds.

Unit Eight: Metallurgy of some selected Elements Metallurgy of Cu, Zn, Pb, Fe, Ni, Sn, Al and Cr.

Unit Nine : Elements of Nuclearchemistry

4

Discovery of Radioactivity, concept of half life, disintegration constant of radio-element. Isotopes and their uses. Artificial radioactivity and nuclear reactions, fission and fusion, nuclear energy. Decay Series of Urenium and Thorium.

Practical

Qualitative analysis

Qualitative analysis of Inorganic mixtures containing not more than four radicals by classical or semi-micro methods. Cations: Silver, Mercury, Lead, Copper, Cadmium, Tin, Arsenic, Antimony, Bismuth, Iron, Aluminum, Chromium, Zinc, Nickel, Manganese, Cobalt, Calcium, Strontium, Barium, Magnesium, Sodium, Potassium, Ammonium, Anions: Chloride, Bromide, Iodide, Sulfide, Sulfate, Sulphite, Thiosulphate, Chromate, Carbonate, Nitrate, Orthophosphate, Borate, Soluble Silicate and Thiocyanate.

Preparation of the Following Compounds

Ferrous Sulphate, ferrous ammonium sulphate, chrome alum and Potash alum.

Inorganic Quantitative Analysis

- (i) Acidimetry and alkalimetry e.g. preparation of approx N/10 HCl, H₂SO₄ and CH₃COOH solutions and their standardisation, (ii) Preparation of standard alkali solution, (iii) Determination of Na₂CO₃ content of washing soda, (iv) Oxidation-reduction titrations involving:
- (a) Preparation and standardisation of N/10 KMnO₄ solution with sodium oxalate solution.
- (b) Determination of Ferrous iron with standard KMnO₄ solution,
- (v) Preparation of standard N/10 iodine solution and standardisation of Na₂S₂O₃ solution, (vi) Precipitation titrations involving determinations of Ag & Cl by Volhard's method.

6. Assignment: An assignment will be given by the course teacher which needs to be submitted within due date.

7. Instructional Strategies:

- Lecture
- Discussion
- Group work
- Problem solving
- Project work.

8. Assessment

- Regular attendance and participation
- Incourse examination
- Semester final examination
- Writing assignment.
- Practical Examination,

9. References

1. S. S. Zumdahl - *Chemistry*.
2. D. Ebbing - *General Chemistry*.
3. S.Z. Haider - *Modern Inorganic Chemistry*.
4. G.I. Brown - *Inorganic Chemistry*.
5. E.S. Gilreath - *Fundamental Concepts of Inorganic Chemistry*.
6. Partington - *Inorganic Chemistry*.
7. A. I. Vogel - *A Textbook of Qualitative Inorganic Analysis*

8. A.I. Vogel -A *Textbook of Quantitative Inorganic Analysis*

9. সরোজ কান্তি সিংহ হাজারী- অজৈব রসায়ন।

10. লতিফ ও সায়েন উদ্দিন- স্নাতক রসায়ন।

11. নূরুল হক ও মহির উদ্দিন- অজৈব রসায়ন পরিচিতি।

12. সরোজ কান্তি সিংহ হাজারী- নিউক্লীয় রসায়ন।

Course Code	230327	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Geography and Environment Paper- III: Regional Geography			

1. Course Description

The course is design to provide students to the essentials of regional aspects of Bangladesh, Japan and USA and acquire knowledge and skills considering spatial perspectives.

2. Course Objectives

This course will enable learners-

- d) To understand the definition, scope and importance of Regional Geography.
- e) To understand the essential features of Geography of Bangladesh, Japan and USA.
- f) To understand the relationship of man, environment and economic activities among the countries.

3. Course Content

Unit One: Geography of India

Location, Physiography, rivers, Climate, causes of climate change and its impact. Soils, Forest and Fisheries. Agriculture (Rice, Wheat, Jute, Tea, Tobacco, Sugarcane), Industries (Paper, Fertilizer, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export in the context of Bangladesh), Environment and Environmental hazards.

Unit two: Geography of Japan

Location, Physiography, Climate, causes of climate Agriculture (Rice, Wheat), Industries (Iron and Steel, Electronics and electrical, Chemical, Automobiles, Medicine, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export), Environment and Environmental problems hazards.

Unit Three: Geography of Malaysia /China

Location, Physiography, Climate, causes of climate change and its impact. Soils, Forest and Fisheries. Agriculture (Rice, Wheat, Tea, palm), Industries (Rubber, automobiles, electronic and electrics, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export), Environment and Environmental problems hazards.

Unit Three: Geography of USA

Location, Physiography, Climate, causes of climate change and its impact. Soils, Forest and Fisheries. Agriculture (Rice, Wheat,), Industries (Automobiles, iron and steel, textile), Power and mineral resources, Population, communication and transport, Trade (Import, export), Environment and Environmental problems hazards.

Unit Four: Practical Geography

- c) Elementary Cartography- Cartographical representation of economic and climatic data-Dot, Shade and Isopleths.
- d) Elementary Surveying- Simple methods of surveying including the use of chain and tape plane.
Study of Topo map

6. Instructional Strategies

Lecture (using ICT devices), Discussion, Question-Answer, Participatory Approach, Observation of real objects, Debate, Field trip.

7. Assignment

Students will submit assignments on due date based on contents by the instruction of their relevant teacher.

8. Evaluation

- a) Internal Examinations
- b) External Examination
- c) Assignments and class percentage

References:

মোয়াজ্জেম হোসেন চৌধুরী-অর্থনৈতিক ও আঞ্চলিক ভূগোল
সিরাজুল ইসলাম চৌধুরী-আর্থনীতিক ভূগোল

Course Code	230329	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Mathematics Paper- III: Differential Equations and Linear Algebra			

1. Course Description:

This course involves formulation of applied problems and their solution in terms of differential equations Laplace transform and Linear Algebra, which include.

2. Pre-requisite: Mathematics One and Two

3. Course Objectives:

This course is designed to enable the students to:

- a) formulate simple problems in terms of differential equations and to find their solution.
- b) apply the methodology in the solution of problems in the areas of physical, biological and social sciences.

- c) define describe, explain, and analyse terms, methods, concepts and principles of linear algebra.
- d) apply the principles and methodology of linear algebra for solution of relevant and related problems.

4. Course Contents: No. of Classes Unit

One: Ordinary Differential Equations 15

- Formulation of simple applied problems in terms of differential equations.
- Equation of the first order and their solutions,
- Linear equations with constant coefficients, methods of undetermined coefficients, variation of parameters and inverse differential operations, simple problems from Physical, Biological and Social science.

Unit Two: The Laplace Transform 6

Definition of the Laplace transform, Laplace Transforms of some elementary functions. Some important properties of laplace transforms methods of finding laplace transforms. Some special functions.

Unit Three: The Inverses Laplace Transform 4

Definition of inverse Laplace transform. Some inverse laplace transforms. Some important properties of inverse Laplace transforms. Methods of finding inverse Laplace transforms.

Unit Four: Systems of Liner Equation 3

- Introduction to System of Liner Equations
- Solution of a system of Liner Equation
- Solutions of a system of homogeneous Linear Equation
- Elementary transformation, system of equations in echelon form

Unit Five: Linear spaces and subspaces 4

- Review of concepts
- Vector space, sub-space and linear combination
- Linear dependence and independence
- Basis and dimension

Unit Six: Linear Transformation and its matrix representation 4

- Introduction to Linear Transformation
- Properties of Linear Transformation
- Rank and Nullity of Linear Transformation
- Singular and Non-singular Linear transformation
- Matrix Representation of a Linear Transformation
- Matrix Representation of a Linear Operator

Unit Seven: Eigenvalues and Eigenvectors 4

- Polynomials
- Definition of Eigenvalues and Eigenvectors
- Characteristics polynomials and characteristic equation
- Diagonalization
- Cayley-Hamilton Theorem

7. Evaluation

1. Examinations
2. Presence and participation

Text & Reference:

1. P.I.A. GGIO. H.T.H *Differential Equation*. CBS Publisher's and Distributor 485, Jain Bhowan Bholan Nath Nager Sharclha, Delhi 110032.
2. Seymour Lipschotz, *Linear Algebra*.
3. Grenv, R.E., *Linear Algebra*
4. Nerin E.E. *Linear Algebra and Mastrix Theory*,
5. Aulon, W. *Elementary Linear Algebra*.'
6. Rahman Abdur, *College Linear Algebra*.
7. Murphy, G.M. *Ordinary Differential Equations and their Solution*.
8. Balmax, *Differential Equations*
9. Das, B.C. Mukherjee,, *Integral Calculus Including Differential Equations*
10. Elen, L.W.F. *Differential Equations*
11. Il. Frant, Ayres, J. *Differential Eeuqfiom*
12. Murry R. Spiegel. *Laplace Transforms* (Schaum's Out line Series), Me Grow-hill, book company
13. আব্দুল মতিন এবং বিধুভূষণ চক্রবর্তী, যোগজ কলন বিদ্যা

Course Code	230331	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Botany Paper- III: Genetics, Cytology, Cytogenetics Biostatistics, Biotechnology			

1. Course Description

This Course will help Students acquire the basic knowledge of Genetics, Cytology and Cytogenetics. They will also develop skills for studying these subjects. It is expected that a positive and scientific attitude toward studying these subjects will also develop in them.

2. **Course Pre-requisite** : Should have successfully completed previous Course Botany - Two

3. Objectives

The Students will develop

- (a) Knowledge in Genetics, Cytology and Cytogenetics;
- (b) Skills for genetical, cytological and cytogenetical studies of plants in the laboratory and in the field; and
- (c) Attitude toward scientific study of plants

4. Course Contents

Unit 1: Genetics

Number of Classes

1. Mendel's law of segregation
2. Mendel's law of independent assortment
1. Modification of Mendelian ratios
2. Linkage, crossing-over and recombination map of chromosomes, Cytoplasmic Inheritance.
3. Cytoplasmic Inheritance
4. Mutation
5. Application of genetics in plant improvement

6. Chemical nature of the genetic material
7. Structure and replication of DNA
8. Gene-protein relationship
9. Function of DNA: (i) Transcription, (ii) Translation.
10. Gene regulation.

Unit Two: Cytology and Cytogenetic

05

1. Cytology the science of cell (concept of cell, protocell and eucell).
2. Cell organelles.
3. Cell division - Mitosis.
4. Cell division - Meiosis
5. Morphology of chromosome and chromosomal aberration

Unit Three: Tissue Culture

10

1. Concept of Tissue Culture
2. Role of Tissue Culture
3. Process of mass propagation in Tissue Culture
4. Economic and commercial value of Tissue Culture

Unit Four: Evaluation

10

1. Evidences of Organic evolution
2. Contributions of Lamarck, Wiseman, Wallace
3. Darwinism and development of the concept of De Vries in the organic evolution of origin of species
4. Mechanism of organic evolution
5. Molecular Evolution

7. Project/Assignment

1. Assigned class lectures ,Pot plants,Dry and wet collection

8. Practical

1. Demonstration of acetocarmine squash method and preparation of temporary slides using onion root tip cell and *Setreasea* pollen mother cells.
2. Study of Mendelian segregation using maize cob.

9. Evaluation:

Two in course tests and the Semester Final Test Practical examination

References:

1. Akhtaruzzarnan - *Cytology*, Hasan Book House, Dhaka.
6. Robertis De., *General Cytology*, 1963, W.B. Saunders Company.
7. Lerner. Michael, *Heredity Evolution and Society*, USA, 1966.
8. খান, আমজাদ আলীদ; তরিকুল ইসলাম, *উদ্ভিদবিজ্ঞান*, দ্বিতীয় খন্ড বাংলা বাজার, ঢাকা, ১৯৯৭।
9. খান, ড. মাহবুবর রহমান; মো: আবুল হাসান, *উদ্ভিদবিজ্ঞান*, হাসান প্রিন্টিং প্রেস, ঢাকা, ১৯৮৯।
10. মিত্র, দেবব্রত; জীবেশ গুহ; সলিল কুমার চৌধুরী, *উদ্ভিদবিজ্ঞান*, দ্বিতীয় খন্ড, মৌলিক লাইব্রেরী, কলিকাতা, ১৯৯৩।
11. খান, আমজাদ আলীদ; তরিকুল ইসলাম, *উদ্ভিদবিজ্ঞান*, তৃতীয় খন্ড বাংলা বাজার, ঢাকা, ১৯৯৭।

Course Code	230333	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Zoology Paper- III: Ethology, Embryology and Advanced Zoology			

1. Course Description:

This course is designed to generate knowledge of animal behaviour and embryological development of animals. They will also acquire knowledge of recent advances in zoology

2. Course Pre-requisite: The student should have successfully completed Zoology-Two Course

3. Objectives:

The students will:

- (a) Acquire knowledge of animal behaviour, embryology and recent advances in zoology
- (b) Develop skills for studying these subject matter in the laboratory and in the field
- (c) Posses positive attitude towards environment

4. Course Content:

No. of Classes

Theory

a. Ethology

16

Irritability, stimulus, reflex action, receptors, effectors, taxes, tropism. kinesis

Species-specific behaviour

The complex behaviour of honeybees: foraging by honeybees, flower recognition, navigation and communication among honeybees

Breeding behaviour of three spined stickle back fish

Instinct and parental care

Migration

Aestivation and hibernation

. Embryology

14

Development of and morphology of sperm and ovum, types of egg, fertilization, cleavage, gastrulation with special reference to human

Placentation, Problems during pregnancy

Birth control methods and principles

c. Recent advances in Zoology

04

Biotechnology and instrumentation: Principles and applications in tissue culture and genetic engineering, Single cell protein production.

Cloning. Rionics. Bio-informations

Practical

06

Students will prepare scrap book on recent advances in zoology study of permanent slides showing development of chick embryo

7. Assessment

Two in-course tests and a semester final test Assignment, Practical note book preparation Practical examination

References

1. Gunderia, H.S.. and Hare Govind Singh (1986), *Textbook of Animal Behaviour*, S Chand & Co. Ltd. India.
2. কে এম আওরঙ্গজেব (২০০১), *প্রাণি আচরণ*, কবির পাবলিকেশন্স

3. হুমায়ুন কবীর (১৯৯০), সাধারণ প্রাণিবিদ্যা, বাংলা একাডেমী, ঢাকা
4. Verma. P.S., V.K. Agarwal and B.S. Tyagi (1989), *Chordate Embryology*, S. Chand and company. India.

Course Code	230335	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Statistics Paper- III: Applied Statistics–I			

Course Description

Objectives of the Course

Contents

Unit 1 : Index number

Concept of index number, problems in the construction of index number, Construction of simple and weighted indices, cost of living index number, tests of index number.

Unit 2: Time Series Analysis

Different components of time series data, Measurement of secular trend, seasonal, cyclical and irregular components by different methods. Test of randomness of a time series data. Effect of moving average on cyclical and irregular components.

Unit 3 : Demography

Definition, nature and scope of demography. Sources of demographic data: Vital registration, Survey and Census. Rates, ratios and proportions. Age-Sex composition, Population pyramid. Concept of population change, population growth, Measurement of population growth with special reference to Bangladesh.

Unit 4 : Fertility and mortality

Concept of fertility, Reproduction. Measures of fertility and reproduction, Cohort fertility. Concepts of mortality and morbidity, Measures of mortality, Trends of mortality, measures of morbidity.

Unit 5 : Life table

Definition, use and functions of life tables, different types of life table, construction of life tables. Actuarial life table, its construction and application.

Unit 6 : Industrial and Official statistics

Nature and scope of industrial & official statistics, Concept & importance of quality control. Quality control measures. Statistical quality control techniques, its uses and usefulness. Product control and process control. Assignable and Non-assignable causes of variation. Control charts. Construction of control charts. Acceptance sampling. Sources and limitations of official statistics, Education statistics, Different types of scores, I.Q., Construction of tests.

Unit 7: Numerical Mathematics

Differences of a polynomial, finite difference operator, Factorial notation, Newton's forward and backward interpolation formula. Central difference

formula. Gauss', Stirling's, Bessel's and Lagrange's interpolation formulas. Interpolation with unequal interval of the argument. Numerical differentiation. Numerical integration by different formulae. Numerical solution of equations by various methods.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations 15+15=30

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References

Practical Paper–II: Applied Statistics

Marks: 50

Analysis of CRD, RBD & LSD. Missing plot estimation with analysis. analysis of 2^2 , 2^3 and factorial experiments. Drawing of SRS, Estimation of parameters (mean & variance).

Computing different types of index number. Cost of living index number. Determination of trend and seasonal variation by different methods from time series data. Measurement of fertility and mortality, Calculation of rates & ratios, Construction of life table.

Uses of interpolation formulae for equal and unequal interval. Use of Stirling's, Bessel's and Lagrange's interpolation formula. Numerical Solution of equation. Numerical integrations.

Course Code	230309	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper- III: Teaching Ict As Secondary Subject			

UNIT	SPECIFIC OBJECTIVES	CONTENT
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UNIT 1: THE SECONDARY ICT CURRICULUM IN GRADES 6-12		The content of Secondary ICT Grades 6-12 Content analysis of the ICT curriculum documents of Grades 6-12 ○ Curriculum statements ○ syllabuses ○ textbooks ○ examination papers • structure of subject - aims - objectives - learning outcomes • identifying developmental and logical sequencing of content - within a Grade - across Grades 6-12 • classifying content in terms of intellectual challenge & social context • noting content for personal review
UNIT 2: EXPLORING TEACHING-LEARNING APPROACHES TO CURRICULUM TOPICS		• Creating a teaching-learning environment for ICT in a school • Drawing on ideas and skills from Professional Studies and Education Studies • Strategies, techniques and skills for participatory teaching-learning in ICT • Lesson plans and unit plans for a sequence of lessons • Planning for teaching specific Curriculum topics • Trying out learning activities and teaching approaches through microteaching, simulation and feedback • Evaluating teaching effectiveness through reflection on planning, involvement and outcomes
UNIT 3: INTEGRATING ASSESSMENT INTO TEACHING-LEARNING ACTIVITIES		• Role of assessment in teaching and learning ICT: informal and formal, formative and summative (SBA) • Developing a range of assessment tasks • Asking and writing questions that establish personal and intellectual skills, attitudes and values • Trying out assessment tasks through peer review, micro-teaching, simulation and feedback • Reviewing plans for teaching specific Curriculum topics to include assessment • Develop Creative question on ICT subject
UNIT 4 STRATEGIES FOR MEETING ALL STUDENTS' NEEDS IN ICT CLASSES		• Using formative assessment to identify and clarify students' existing ideas • Addressing difference in learning ability: group work, peer teaching, extension activities • Monitoring progress and determining achievement • Planning to capture interest and support learning of both girls and boys • Trying out plans and teaching approaches through micro-teaching, simulation and feedback
UNIT 5 PREPARING STUDENTS FOR EXAMINATIONS IN ICT		• setting and marking class and progress tests : marking criteria • setting and marking school exam questions : marking schedules, check marking and moderation

		• recording student results and monitoring achievement • Examining SSC ICT prescriptions, past and exemplar exams and individual questions
UNIT 6 ICT FOR TEACHING-LEARNING (SIMULATION WITH DIGITAL CONTENT)	7. Deconstruct ICT in teaching-learning (ICT -availability of changing the way one can access learning) 8. Organize learning (for self) and design learning environments for classrooms 9. Analyze curriculum to identify areas for ICT infusion (analyze and abstract, evaluate and problem solving).	• Curriculum analysis to determine content (what do I need to teach and what do students' need to know) • ICT infusion and going beyond the textbook. • Determine appropriate ICT infusion and design a learning plan for a given topic. • Exploration of the world of ICT resources for teaching-learning • ICT Showcase -Educational applications of ICT • Educational tools and applications for integrating ICT into lessons. • Interacting with hardware and software.

Area-IV:

Course Code	230337	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Accounting Paper- III: Auditing & Income Tax			

Course Description

Objectives of the Course

Contents

Unit 1: Introduction

Definition, Objects and Advantages of auditing – Audit procedures and techniques, Audit Programme, Audit working papers, various mode of conducting Audit.

Unit 2: Errors and Frauds in Accounts:

Nature and types, Auditors Duty, Preventive Measures.

Internal control: Internal check and Internal audit.

Unit 4: Vouching

Objects and importance, Vouching of Cash Book, Cash sales, Collection from debtors, Collection of Interest & Dividend, sale of investment, Cash purchases, Payment to Creditors, Wages, Salaries, dividend, payment of Commission and Brokerage, Purchase of Land and Building.

Unit 5: Valuation & Verification of Assets & Liabilities

Goodwill, Land, Plant and Machinery, Investment, Inventory, Debtors and Cash Verification, Valuation of Liabilities, Loan on Mortgage, Bank Overdraft and Bills Payable.

Unit 6: Audit under the Companies Act 1994

Auditors Appointment, Remuneration, Rights, Duties & Liabilities of Auditors.

Unit 7: Divisible profits and Dividends

Responsibilities of an Auditor relating to Distribution of Divisible Profits and Dividends.

Group–B:IncomeTax

Marks: 60

Unit 1 : Principles of Public Finance

Objectives of Taxation – Canons of Taxation – Types of Taxes – Incidence of Tax.

Unit 2 : History of Income Tax Ordinance, 1984

Scope & Meaning of Income Tax, Definition of Income for Income tax purpose – Characteristics of Income, Capital & Revenue, Non-Assessable Income, Exemptions & Allowances from Total Income, Investment Allowance.

Classification of Assesses, Residential Status & Tax-liability of an Assesses – Assessment Procedures.

Unit 3 : Heads of Income

Computation of Total Income – Methods of Accounting.

Tax-Holiday of an Industrial undertaking.

Income tax Authorities in Bangladesh.

1. Assessment of Individuals.

4. Instructional Strategies

Lecture (using multi-media), Participatory approaches (Discussion, Question-Answer, group work, Observation, Debate, presentation, Field trip).

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations 15+15=30

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

Reference

B.N.Tandon : Practical Accounting

De Paula : Principles of Accounting

Income Tax Manual Part-1 & 2, 1984 (as amended upto date) and Finance Ordinances of Bangladesh

Course Code	230339	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Management Paper- III: Legal Environment of Business			

Unit 1 : Law of Contract-The Contract Act 1872

Definition of a contract – essential elements – offer and acceptance – consideration – void and avoidable agreements – capacity of parties to contract-free consent – contingent contract – capacity of parties to contract-free consent – contingent contract – performance of contract – breach of contract and remedies for breach – discharge of a contract – quasi contract – indemnity & guarantee – bailment & pledge.

Unit 2: Law of Agency

Test of Agency – exertion of agency – misrepresentation and frauds by agent-sub-agent-co-agent – agent's rights – personal responsibility of agents – termination of agency.

Unit 3: Sale of Goods Acts- 1930

Definition – essential elements – stipulation of sale – transfer of ownership – conditions and warranties – unpaid seller and his rights – performance of contract of sale.

Unit 4: Factories Act- 1965

Classification of workers by age-health – hygiene of workers by age-health-hygiene-safety measures and welfare of workers – working hours – employment of young persons and women – leave and holidays.

Unit 5 : Employment of Labour (Standing Order) Act 1965

Conditions of employment - Classification of workers – calculation of period for continuous period – stoppage of work, layoff, etc. Retrenchment – dismissal – punishment – termination – penalties and provident fund rules.

Unit 6 : Industrial Relation Ordinance 1969

Formation of trade unions and registration – unfair labour practice – collective bargaining agents (CBA) – strike and lockout – negotiation – conciliation and arbitration of labour disputes – labour court and Labour Appellate Tribunal.

Unit 7 : Payment of Wages Act- 1936

Definition and responsibility for payment wages – salary and wages-wages – wages calculation – deduction from wages-fines etc.

Unit 8: Worker's compensation Act, 1923

Total and period disablement, Employer's liability to pay compensation.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations 15+15=30

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References:

Course Code	230341	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Marketing Paper- III: Marketing Promotion			

Course Description

Objectives of the Course

Contents

Unit 1 : Marketing Promotion and Communication

Meaning, objectives, importance, tools of marketing promotion, characteristics of promotion tools, steps in promotion planning, setting the total promotion budget, promotion mix, factors affecting promotion mix, promotion mix at different stages of product life cycle, Marketing communication: Meaning, importance, characteristics of good communication, communication process, steps in developing effective marketing communication.

Unit 2: Advertising

Meaning, objectives, importance, Classification of advertising, Media decision: factors affecting selection of media, types of media, Advertising budget: meaning, factors affecting Advertising budget, methods of advertising budget, advertising appeals: meaning, factors affecting the advertising appeals, methods of advertising appeals, advertising copy: meaning, features, approach to writing a copy, headline: meaning, types, qualities of good headline, illustration: meaning, objectives and methods, Layout: meaning, objectives, principles and types of layout, advertising campaign: meaning, factors affecting planning of the campaign, measuring the advertising effectiveness: objectives, methods of measuring the advertising effectiveness, advertising in Bangladesh: history, importance, limitations.

Unit 3 : Personal Selling

meaning, role, the process and model of personal selling, personal selling responsibilities, measuring the performance of personal selling, knowledge about product, knowledge about company, Prospecting: importance, techniques for prospecting, need and use of prospect information, sources of prospect information, the selling process: planning the sales presentation, why people object, methods and techniques for handling objections, closing the sale, recruitment, training and motivating the sales force.

Unit 4 : Sales Promotion

Meaning, objectives, planning a sales promotion, techniques of consumer sales promotion, sales force, sales promotion and trade sales promotion, measuring the performances of sales promotion, sales promotion activities in Bangladesh.

Unit 5 : Public Relations & publicity

Meaning, characteristics, importance, functions, tools of public relations, process, measuring the effectiveness of public relations, decisions in public relations publicity: meaning, objectives, forms, publicity versus advertisement.

Unit 6 : Direct Marketing

Defining direct marketing, growth, benefits to buyers, benefits to sellers, customer data base and direct marketing, forms of direct marketing, online marketing and electronic commerce, conducting online marketing, the promise and challenges of online marketing.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

- a) Internal Examinations $15+15=30$
- b) External Examination=60
- c) Assignment/action research and class percentage, Performance =10

References:

Course Code	230343	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Finance and Banking Paper- III: Financial Markets and Fundamentals of Investment			

Course Description

Objectives of the Course

Contents

Unit 1 : Financial Market

Definition, Scope, functions, characteristics, role.

Unit 2 : Money and Capital Markets

functions, instruments, role & institutions.

Unit 3 : Securities Market

Definition, role & functions, Primary & secondary Markets, intermediation-broker, dealer, specialists, trading procedures, clearing process, underwriting.

Unit 4 : Agencies & Institution

Securities & Exchange Commission, Stock Exchange, Merchant Bank, ICB.

Unit 5 : Introduction to investment

Nature and importance of investment, financial assets, characteristics, process of investment, Factors of investment.

Unit 6 : Risk & Return

definition of risk & return, components of returns, sources and types of risk, measurement of return, total return, return relatives, cumulative wealth index, inflation adjusted return, measurement of risk-standard deviation, risk premium, realized return and risk from investment.

Unit 7 : Common Stock

Functions, characteristics, returns and value of common stocks.

Unit 8 Bond

Types, characteristics, Return and value of bond.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations $15+15=30$

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References:

Course Code	230309	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper- III: Teaching Ict As Secondary Subject			

UNIT	SPECIFIC OBJECTIVES	CONTENT
UNIT 1: THE SECONDARY ICT CURRICULUM IN GRADES 6-12		The content of Secondary ICT Grades 6-12 Content analysis of the ICT curriculum documents of Grades 6-12 - o Curriculum statements - o syllabuses - o textbooks - o examination papers • structure of subject - aims - objectives - learning outcomes • identifying developmental and logical sequencing of content - within a Grade - across Grades 6-12 • classifying content in terms of intellectual challenge & social context • noting content for personal review
UNIT 2: EXPLORING TEACHING-LEARNING APPROACHES TO CURRICULUM TOPICS		• Creating a teaching-learning environment for ICT in a school • Drawing on ideas and skills from Professional Studies and Education Studies • Strategies, techniques and skills for participatory teaching-learning in ICT • Lesson plans and unit plans for a sequence of lessons • Planning for teaching specific Curriculum topics • Trying out learning activities and teaching approaches through microteaching, simulation and feedback • Evaluating teaching effectiveness through reflection on planning, involvement and outcomes
UNIT 3: INTEGRATING ASSESSMENT INTO TEACHING-LEARNING ACTIVITIES		• Role of assessment in teaching and learning ICT: informal and formal, formative and summative (SBA) • Developing a range of assessment tasks • Asking and writing questions that establish personal and intellectual skills, attitudes and values • Trying out assessment tasks through peer review, micro-teaching, simulation and feedback • Reviewing plans for teaching specific Curriculum topics to include assessment • Develop Creative question on ICT subject
UNIT 4 STRATEGIES FOR MEETING ALL STUDENTS' NEEDS IN ICT CLASSES		• Using formative assessment to identify and clarify students' existing ideas • Addressing difference in learning ability: group work, peer teaching, extension activities • Monitoring progress and determining achievement • Planning to capture interest and support

		learning of both girls and boys • Trying out plans and teaching approaches through micro-teaching, simulation and feedback
UNIT 5 PREPARING STUDENTS FOR EXAMINATIONS IN ICT		• setting and marking class and progress tests : marking criteria • setting and marking school exam questions : marking schedules, check marking and moderation • recording student results and monitoring achievement • Examining SSC ICT prescriptions, past and exemplar exams and individual questions
UNIT 6 ICT FOR TEACHING-LEARNING (SIMULATION WITH DIGITAL CONTENT)	10. Deconstruct ICT in teaching-learning (ICT -availability of changing the way one can access learning) 11. Organize learning (for self) and design learning environments for classrooms 12. Analyze curriculum to identify areas for ICT infusion (analyze and abstract, evaluate and problem solving).	• Curriculum analysis to determine content (what do I need to teach and what do students' need to know) • ICT infusion and going beyond the textbook. • Determine appropriate ICT infusion and design a learning plan for a given topic. • Exploration of the world of ICT resources for teaching-learning • ICT Showcase -Educational applications of ICT • Educational tools and applications for integrating ICT into lessons. • Interacting with hardware and software.

Area-V:

Course Code	230345	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Information Science and Library Management Paper- III: Information Science, Information Networking and Resource Sharing			

Course Description

Objectives of the Course

Content

Group-A: Information Science

Nature, Scope and functions of information science, Documentation and Information Science, Documentation work and documentation services, Alerting services (CAS and SDI)

Group-B: Resource Sharing

Definition, origin, objectives and fields of library cooperation, networking and resource sharing, basic agreements of resource sharing, information networking and resource sharing processes, functions and activities of information resource sharing, rationale of establishment of information network in library management.

Group-C: Reference Service

Meaning of information and reference service, objectives and scope, distinction between information and reference service, referral service, kinds of information services, sources of information: documentary and non-documentary, primary, secondary, tertiary and mixed group of sources, reference materials, encyclopedias, dictionaries, almanacs, handbooks, manuals, gazetteers, biographical sources, etc.

Group-D: Bibliography, Indexing and Abstracting

1. **Bibliography** : Definition of bibliography, origin, function and importance of bibliography, types of bibliographies, compilation of bibliographies, national and trade bibliography, Bangladesh national bibliography, different methods of compilation.
2. **Indexing** : Definition of indexing, origin and development, importance, types of indexes: author index, alphabetic subject index, classified, cumulative and collective subject index.
3. **Abstracting**: definition of abstract, importance, abstracts vs. bibliographies, index vs. abstracts, abstracts vs. annotations, types of abstracts, quality of a good abstract.

References:

1. Chakrabarti, M.L. Bibliography in theory and practice.
2. Cleveland, Donald B and Cleveland Ana D. Introduction to indexing and abstracting.
3. Riaz, Muhammad. Advanced indexing and abstracting practices.
4. Chakrabarti, A.R. and Chakrabarti, B. Indexing: principles, processes and products.
5. Collison, R.L. Indexes and indexing.
6. আজিজুল হাকিম, মো: বিবলিওগ্রাফী ও ডকুমেন্টেশন, ঢাকা।
7. আবদুস সালাম, মো: গ্রন্থপঞ্জি ও তথ্যবিজ্ঞান, রাজশাহী।
8. Sengupta, Benoyendra, and Chatterjee, Mridula: Documentation and information retrieval.
9. Shaw, R. R. Documentation
10. Claire, Guinchet and Menou, Michael: General introduction to the techniques of information and documentation.
11. Kent, Allen, Resource sharing.
12. Macdougall, Alan F. and Prytherch, Ray.
13. Handbook of library cooperation.
14. Stevens, Richard W. TCP/IP illustrated: the protocols.
15. Raina, Roshan. Library resource sharing and networking.
16. Shores, Louis, Basic reference sources, an introduction to materials and methods.

17. Davinson, Donald, Bibliographical control.
18. Katz, Bill and Clifford, Anne, ed. Reference and information services a new reader.
19. Kumar, Girja and Kumar, Krishan. Bibliography.
20. Wyner, B.S. Introduction to bibliography and reference work.

Course Code	230347	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Home Economics Paper- III			

SECTION A: HOME MANAGEMENT & HOUSING

01. Home management:

a. Definition of Home Management, philosophy and objectives: b. Relation of home management to other areas of Home Economics. c. Role of successful home maker. d. Methods of home management e. Motivation for home management e.g. goals values, standards and needs.

2. Resources of home management

a. Definition, characteristics and classification of resources b. Indicators/influencing factors of using resources c. Time management, factors influencing the use of time, advantages of time management. d. Energy management, reasons of energy management. e. Money management, principles of money management f. Rules of making a family budget and factors influencing it.

3. Housing for family

a. Houses and home, types of houses, factors that affect the choice of a house, ways of acquiring a house b. Interior decoration: Wall finishing and the application of principles of art and design to-- colours,- textures,- lines and - proportions c. Furniture and furnishings in the home: Types, factors that affect choices and position d. Utilities in the Home: Water, light, fuels, airflow, drainage, sanitation, pest control etc e. Healthy environment in house, causes and prevention of environmental pollution.

SECTION B: CHILD DEVELOPMENT FAMILY RELATION AND ELDERLY CARE

01. Childs Growth and development

a. Definition of growth and development; stages of growth and development. b. Characteristics of different stages of development; infancy childhood preadolescence and adolescence. c. Developmental tasks of different stages. d. Importance and effect of maturation and learning in child's development.

02. Importance & effect of family relations in a child's development:

a. Child and parents relationships and factors influencing it. b. Principles of child's guidance; effect of discipline and care & love of parents on child's behavior. c. Juvenile delinquency and aggressive behavior: Causes and preventive measures, role of family & society in eliminating juvenile delinquency and aggressive behavior.

3. Family life cycle including elderly care

a. Stages of family life cycle-developments tasks & effects of each stages of development. b. Responsibility of family in the development of intelligence & pursuing a future career & profession of children. c. Factors that influence family relationship: Husband/wife relationship, parent/child relationship, brother / sister or sibling relationships d. Family crisis: Definition & types, Effects of family crisis on child's development, preserving family stability & resolving conflict. e. Elderly care: Meaning, importance and ways of elderly care.

04. Social offense management

- a. Drug addiction: Causes of drug addiction, prevention and remedial measures
- b. Violence against girls' / women: Causes, intervention and preventive measures
- c. Role of family and society to retard from social offense.

Practical Marks: 25 (Class work-10, Examination-15)

1. Preparing monthly budget of a family of 6 members.

Or, Field trip to an industry for observing environmental pollution and impact on society.

02. Drawing & constructing a storage unit & evaluating it. Or, Furniture Arrangement (room wise)

Note: All assignments and practical reports need to be presented both in PPT and hard copy.

Books Recommended:

- | | | |
|-----------------------------------|---|-----------------------------------|
| • Nickell, Rice and Toker | : | Management in Family Living. |
| • Gidbreeth Thomas and Clymer | : | Management in Home. |
| • Boodyear and Klobor | : | Management for Effective Living. |
| • অধ্যাপিকা মমতাজ খান | : | পারিবারিক জীবন ও গৃহ ব্যবস্থাপনা |
| ড. অধ্যাপিকা মমতাজ খান | : | পারিবারিক সম্পদের ব্যবস্থাপনা |
| ড. ড. ফিরোজা সুলতানা | : | গৃহ ব্যবস্থাপনা ও বাসস্থান |
| • Mussen P.H. Conger JJ and Kagan | : | Child Development and Personality |
| • Smart S. and Smart R.C. | : | Children Relationship and |

Development

- | | | |
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| • Crow and Crow | : | Child Development and |
|-----------------|---|-----------------------|

Adjustment

- | | | |
|-----------------------------------|---|--|
| • Strong R | : | Introduction to child study |
| • Breckendige and Smith | : | Child Study |
| • দরিয়ানূর বেগম | : | শিশুর আচরণ ও ক্রমবিকাশ, বাংলা একাডেমি, ঢাকা। |
| ড. দরিয়ানূর বেগম | : | শিশু পালন। |
| ড. মোঃ আলী আযম | : | শিশু মন। |
| ড. সুলতান সারওয়াৎআরা জামান | : | মানব বিকাশে মনোবিজ্ঞান |
| ড. শাহীন আহমেদ | : | শিশু বর্ধন বিকাশ ও পরিচালনা |
| ড. উত্তম কুমার দাস | : | মানবীয় বিকাশ আচরণ ও সামাজিক পরিবেশ |
| ড. মোঃ আতিকুর রহমান ও সালমা জোহরা | : | মানবিক বিকাশ আচরণ ও সামাজিক পরিবেশ। |

Course Code	230309	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper- III: Teaching Ict As Secondary Subject			

UNIT	SPECIFIC OBJECTIVES	CONTENT
UNIT 1: THE SECONDARY ICT CURRICULUM IN GRADES 6-12		The content of Secondary ICT Grades 6-12 Content analysis of the ICT curriculum documents of Grades 6-12 ○ Curriculum statements ○ syllabuses ○ textbooks ○ examination papers • structure of subject - aims - objectives - learning outcomes • identifying developmental and logical sequencing of content within a Grade across Grades 6-12 • classifying content in terms of intellectual challenge & social context • noting content for personal review
UNIT 2: EXPLORING TEACHING-LEARNING APPROACHES TO CURRICULUM TOPICS		• Creating a teaching-learning environment for ICT in a school • Drawing on ideas and skills from Professional Studies and Education Studies • Strategies, techniques and skills for participatory teaching-learning in ICT • Lesson plans and unit plans for a sequence of lessons • Planning for teaching specific Curriculum topics • Trying out learning activities and teaching approaches through microteaching, simulation and feedback • Evaluating teaching effectiveness through reflection on planning, involvement and outcomes
UNIT 3: INTEGRATING ASSESSMENT INTO TEACHING-LEARNING ACTIVITIES		• Role of assessment in teaching and learning ICT: informal and formal, formative and summative (SBA) • Developing a range of assessment tasks • Asking and writing questions that establish personal and intellectual skills, attitudes and values • Trying out assessment tasks through peer review, micro-teaching, simulation and feedback • Reviewing plans for teaching specific Curriculum topics to include assessment • Develop Creative question on ICT subject
UNIT 4 STRATEGIES FOR MEETING ALL STUDENTS' NEEDS IN ICT CLASSES		• Using formative assessment to identify and clarify students' existing ideas • Addressing difference in learning ability: group work, peer teaching, extension activities • Monitoring progress and determining achievement • Planning to capture interest and support learning of both girls and boys • Trying out plans and teaching approaches

		through micro-teaching, simulation and feedback
UNIT 5 PREPARING STUDENTS FOR EXAMINATIONS IN ICT		• setting and marking class and progress tests : marking criteria • setting and marking school exam questions : marking schedules, check marking and moderation • recording student results and monitoring achievement • Examining SSC ICT prescriptions, past and exemplar exams and individual questions
UNIT 6 ICT FOR TEACHING-LEARNING (SIMULATION WITH DIGITAL CONTENT)	13. Deconstruct ICT in teaching-learning (ICT -availability of changing the way one can access learning) 14. Organize learning (for self) and design learning environments for classrooms 15. Analyze curriculum to identify areas for ICT infusion (analyze and abstract, evaluate and problem solving).	• Curriculum analysis to determine content (what do I need to teach and what do students' need to know) • ICT infusion and going beyond the textbook. • Determine appropriate ICT infusion and design a learning plan for a given topic. • Exploration of the world of ICT resources for teaching-learning • ICT Showcase -Educational applications of ICT • Educational tools and applications for integrating ICT into lessons. • Interacting with hardware and software.

Detailed Syllabus

6th Semester

Course Code	230349	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Micro-Teaching and Simulation			

1. Course Description:

The course is designed to provide scope to the students to practice the pedagogies in an arranged situations. This is a preparatory course for Internship. In this course students in small group will be involved mainly in two kinds of activities: Micro-Teaching and Simulation. Under Micro-Teaching each student of a group will practice skills/components of a lesson (i.e. techniques of questioning, use of teaching aids) separately in his/her group for a short period (5 to 7 minutes) under the close supervision of the teacher. Under Simulation the student will present the whole lesson following an approved lesson plan before the group. In both cases observations and feedback from the supervisor and the peers will facilities the presenter to improve his/her skills. There will be two supervisors for each group each dealing with a specific subject.

2. Objective

- a) to familiarize students with the practical aspects of the learning environment;
- b) To enable students to plan, present and evaluate major skills/components of a lesson effectively;
- c) To assist the students to develop lesson plans and simulate the lesson before the peers;
- d) to help the students to develop and use the appropriate teaching aids effectively.

3. Content

Unit 1: Micro Teaching

Each student will participate in at least 10 Micro-Teaching sessions in each of the three subjects and demonstrate at least 5 (five) skills/components in each subject with micro lesson plans. They will also participate in discussion on others' demonstrations.

the major skills/components to be practiced and demonstrated in Micro-teaching sessions are follows-

(i) Classroom Management

- control over the whole class ,-- drawing and retaining pupils attention
- teacher-student rapport, -- Motivating the students.

- (ii) Classroom Questioning
 - use of appropriate technique,-- framing of questions.
 - fact-based/recall questions, -- reflective/thought provoking questions
- (iii) a. Use of Teaching Materials.
 - use of appropriate materials and use of appropriate techniques in using materials
- (iii) b. Use of Board (Chalk Board/Market Board)
 - Setting/placement, operating technique, techniques of use
- (iv) Communication with Pupils
 - Simply and effectively, clarity of expression
 - Understandings pupil's linguistic needs
 - Two-way communication.
- (v) Some Specific Teaching Skills
 - Stimulation
 - Elicitation of pupils interest and enthusiasm
 - relating to real life experience
 - ensuring pupils participation.
 - Adaptability to pupils needs.

Unit 2: Simulation

Each student will participate in 12 class sessions in each of the three subjects for simulation teaching. He/she will present 4 (four) lessons in each of the three subjects using appropriate methods based on specific content and ability of the pupils and providing feedback to others lessons. For each subject each student will develop at least 5 (five) lesson plans and get those approved by the respective subject supervisors.

Course Code	230351	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Introductions to Curriculum			

1.Course Description

This is an introductory course on curriculum. The course is designed to develop clear understanding in the students about the concepts of curriculum and its major components and to get an overall view of the curriculum process. The existing curricula of pre-primary, primary and secondary stages have been highlighted with the emphasis on their strengths, weakness and expectations.

2. Course Objectives

This course will help the students to

- a. Develop a clear understanding of the concepts, aims and objectives of curriculum and its fundamentals.
- b. Be familiar with major elements of curriculum, curriculum process and classification of curriculum.
- c. Be able to analyze the present and past curricula of pre-primary, primary and secondary level.
- d. Explore the major strengths and weaknesses of prevalent curricula and to propose hopeful ways of overcoming the drawbacks.

3. Course Contents

Unit one: Concepts of Curriculum

- Origin and meaning of the curriculum
- Curriculum: nature and scope from historical perspective
- Basis of curriculum: philosophical, psychological, sociological and historical

Unit two: Curriculum Related Terminologies and their Interrelationships

- curriculum and Syllabus
- Aim, objective and competency
- Competency and content based curriculum
- Hidden curriculum
- Unified and diversified curriculum
- Centralized and decentralized curriculum
- Balanced curriculum
- Integrated curriculum
- Multidisciplinary curriculum
- Co-curricular activities

Unit three: Major Elements of Curriculum

- Principles of curriculum
- Aims and objectives of curriculum
- Subjects and content: the structure of discipline
- Learning experiences and Instructional strategies
- Teaching-learning methods and techniques
- Instructional materials and teaching aids
- Supplementary materials
- Assessment and evaluation

Unit four: Curriculum Process

- Situational analysis: components of situation and task of analysis
- Formulation of educational aims and objectives
- Sources of objectives
- Classification and domains of objectives
- Selection and organization of contents
- Developments of instructional materials
- Selection and organization of teaching-learning methods and techniques
- Evaluation and assessment
- Dissemination
- Implementation and monitoring
- Curriculum as a continuous process: need for change and development of curriculum

Unit five: Curriculum for Pre-primary and Primary Education of Bangladesh

- Origin , background and present curricula of pre-primary and primary education
- Main features of the curriculum-principles, objectives and terminal competencies
Subjects, teaching-learning methods and techniques and assessment techniques
- Critical analysis of the curriculum: identification of strengths and weaknesses of the curriculum
- Possible solution and recommendations improvement

Unit six: Curriculum for secondary education of Bangladesh

- Origin and background
- Main features of the curriculum-principles, objectives and learning outcomes
Subjects, teaching-learning methods & techniques and assessment techniques
- Critical analysis of the curriculum: identification of strengths and weaknesses of the curriculum
- Possible solution and recommendations for improvement
- Madrasa and vocational curriculum-nature and characteristics
- **4. Instructional Strategies**

- Lecture (using multi-media), Participatory approaches (Discussion, Question-Answer, group work, Observation, Debate, presentation, Field trip).
- **5. Assignment/action research and class percentage**
- Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.
- **6. Evaluation**
- a) Internal Examinations 15+15=30
- a) External Examination=60
- b) Assignment/action research and class percentage, Performance =10

References:

- ইসলাম, একেএম নুরুল ও অন্যান্য (১৯৯৭), *শিক্ষাদানের মূলনীতি ও শিক্ষাদান পদ্ধতি*, স্কুল অব এডুকেশন, বাংলাদেশ উন্মুক্ত বিশ্ববিদ্যালয়, গাজীপুর।
- উদ্দীন, মুহম্মদ এলতাস ও শরীফা খাতুন (২০০২), *উচ্চশিক্ষা ব্যবস্থাপনা*, বাংলাদেশ উন্মুক্ত বিশ্ববিদ্যালয়, গাজীপুর।
- উদ্দীন, মুহম্মদ এলতাস ও অন্যান্য (১৯৯৬), *শিক্ষামূল্যায়ন ও নির্দেশনা*, ঢাকা আহছানিয়া মিশন, ঢাকা।
- এহসান, মো: আবুল (১৯৯৭) *শিক্ষাক্রম উন্নয়ন: নীতি ও পদ্ধতি*, ছাত্রবন্ধু লাইব্রেরি, ঢাকা।
- মিয়া ওহাব, এম এ (২০০৪), *শিক্ষাক্রম ও মূল্যায়ন*, বাংলা একাডেমী, ঢাকা
- কবীর, শামছুল এবং এম আবদুল ওহাব (১৯৯৭), *শিক্ষাক্রম প্রণয়ন*; স্কুল অব এডুকেশন, বাংলাদেশ উন্মুক্ত বিশ্ববিদ্যালয়, গাজীপুর।
- আবদুল মালেক ও অন্যান্য (২০১৪), *শিক্ষাবিজ্ঞান ও বাংলাদেশে শিক্ষা*, চতুর্থ সংস্করণ, বাংলাদেশ বিশ্ববিদ্যালয় মঞ্জুরী কমিশন, ঢাকা
- রায়, সুশীল (২০০৫), *শিক্ষণ ও শিক্ষা প্রসঙ্গ*, সোমা বুক এজেন্সি, কলিকাতা।
- রায়, সুশীল (২০০১), *শিক্ষাতত্ত্ব ও শিক্ষাদর্শন*, সোমা বুক এজেন্সি, ত্রয়োদশ সংস্করণ, কলিকাতা।
- প্রাক-প্রাথমিক শিক্ষাক্রম (২০১১), জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড, ঢাকা।
- প্রাথমিক শিক্ষাক্রম (২০১২), জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড, ঢাকা।
- মাধ্যমিক শিক্ষাক্রম (২০১২), জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড, ঢাকা।
- Rahman, Siddiqur (1987), *Curriculum Process*, Bishaw Parichaya, Dhaka
- Seguin, Reger (1991), *Curriculum Development and Implementation of Teaching Programmes*, Division of Higher Education and Research, UNESCO, Paris

- Sharma, D.V. (1995), *Towards Quality Secondary Education*, Vikas Publishing House Pvt Ltd, (1995), New Delhi
- Smith, O.W. Stanley and H.J. Shores, (1957) *Fundamentals of Curriculum Development*, World Book, Chicago
- Taba, Hilda, (1962) *Curriculum Development*, Harcourt, Brace and World, Inc; New York
- Allen & Unwin, (1993), *Curriculum Development and Design*
- Jon W. Wiles, Joseph C. Bondi (2010), *Curriculum Development: A Guide to Practice*, Prentice Hall,
- A V Kelly (2004), *The Curriculum: Theory and Practice*, SAGE Publications

Area-I:

Course Code	230353	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Bangla Paper-IV			

Course Number and Title: Bangla (Elective) : Four

১. উদ্দেশ্য: শিক্ষার্থীরা মাধ্যমিক শ্রেণিতে বাংলা বিষয়টির বিভিন্ন দিক পড়ানোর রীতি ও পদ্ধতি সম্পর্কে অবহিত হবে।

২. বাংলা পড়ানোর রীতি ও পদ্ধতি:

- ক. মাতৃভাষা শিক্ষাদানের নীতি ও পদ্ধতি
- খ. ভাষা ও সাহিত্য পাঠদানের আধুনিক পদ্ধতি ও কলাকৌশলসমূহ
- গ. ভাষা ও সাহিত্য পাঠদানে পাঠপরিচালনা প্রণয়ন ও শ্রেণিপাঠে তার বাস্তবায়ন/প্রয়োগ
- ঘ. গদ্য ও কবিতার পাঠন-পাঠন: বিশেষ দিকসমূহ
- ঙ. ব্যাকরণ পাঠদানের পদ্ধতি ও কৌশল
- চ. বাংলা পাঠন-পাঠনে অনুশিক্ষণ, ছদ্মশিক্ষণ, প্রতিফলন ও ফিডব্যাক অনুশীলন
- ছ. বাংলা পাঠদানের উন্নয়নে কর্মসহায়ক গবেষণা

৩. পাঠদান অনুশীলন ১ ও ২ (ব্যবহারিক: মাধ্যমিক বিদ্যালয়ের শ্রেণিকক্ষ)

Course Code	230355	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	English Paper-IV			

Practicum/Internship

Course Code	230357	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper-IV: Programming			

UNIT 1 INTRODUCTION TO WEB DESIGN AND HTML	The student will be able to: 1. Describe the concept of web designing. 2. State the structure of website. 3. Explain the concept of HTML	• Concept of web page design • Website structure • HTML Basic • Concept of HTML • Advantages of HTML • Introduction to HTML tags and syntax • HTML design and structure layout • Formatting • Hyperlink • Insert image and table • Publishing a website
UNIT 2 PROGRAMMING LANGUAGE	The student will be able to: 1. Explain the concept of programming 2. Describe the various programming languages	• Concept of program • Programming language • Machine language • Assembly language • Midlevel language • High level language • 4th Generation Language (4GL) • Translator Program • Organize a program • Algorithm • Flowchart

COMPUTER NETWORKING

UNIT 3 COMPUTER NETWORKING	The student will be able to: 1. Describe the concept, types of computer networking. 2. Identify the hardware and software required for computer networking. 3. Configure a computer network in an educational setting.	• Computer networks, concepts, types of computer networks. • Configurations, layers and protocol of computer networks. • Hardware and software for computer networks.
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COMPUTER TROUBLESHOOTING

UNIT 4 HARDWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in hardware	• Power system and power protection • Peripherals and their functionality (Printers, Monitors, Scanners, Speakers, etc.) • Basic computernetworking (LAN), Internet connection using modem and router/gateway • Computer assembly, disassembly and installations • Adding new hardware, device driver installation • common problems and solutions
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UNIT 5 SOFTWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in software.	• Operating systems basics; • BIOS setup • Operating System installation • Install and uninstall application software • Virus protection and security issues
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Area-II:

Course Code	230359	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Economics Paper-IV: Economics and Education			

1. Course Description

The course intended to introduce the concepts of Economics to education, economics contributions to education, education as investment for human resource development, human development, financing of education and educational planning, process and plans in Bangladesh.

2. Course Objectives

The students will be able:

- a) To gain knowledge of the basic concepts of Economics and its relation to education;
- b) To gain skills in applying basic concepts of Economics to education and their relevance to education;
- c) To understand education as investment for human resource development and human development;
- d) To become socially and economically procedure citizen through conceptualization of economics of education;
- e) To develop skills in assessing the economics contribution to education vis-to-vis education's contribution to the economy;
- f) To Identify sources of finance for education;
- g) To understand the educational planning concepts and process in Bangladesh.

3. Course Contents

Number of Lectures

Unit One: Concept of Economics and Education

06

- Demand and supply, investment, consumption, costs (direct, indirect opportunity cost, institutional, private, fixed), capital, profits/returns, GNP, efficiency (internal & external).

Unit Two: Education as Investment	06
- Concept, meaning, pioneers in this school of thought - Education as private investment - Education as social investment - Rates of return to education (Primary, Secondary & Higher) - Contribution of education to economical development and viz-z- viz national development	
Unit Three: Concepts of Human Development and Education	08
- Concepts of human resource development and human development - Indicators of human development - Roles of education in human resource development - Roles of education in human development	
Unit Four: Financing of Education in Bangladesh	10
- Sources of finance , revenue, tax, levy, loan, grant and foreign aid - Types of finance- public and private - Educational Budget and Annual Development Plan - Financing Constraints and its impact on educational development - Role of the donors in education - Wastage in education - Measures for improvement of the situation	
Unit Five: Educational Planning in Bangladesh	10
- Meaning, definition, components and characteristics - Types, objectives and need of planning - Pre-requisite of successful educational planning in underdeveloped countries - Role of the Ministry of Planning in Educational Planning - Role of the Ministry of Education and Ministry of Primary and Mass Education in Educational Planning - Role of the Directorates of Educational in project preparation and implementation	

- Constraints in preparation and implementation of plans

4. Instructional Strategies

- Lecture, Discussion

5. Project work/Assessment

Evaluation

- Regular attendance and class participation
- Test I, II III, Semester Final
- Written Assignment

Textbooks:

1. Aggarwal Y.P.- Education and Human Resource Development, Commonwealth Publishers, N. Delhi, 1988.
2. C.A. Anderson & Mary J. Bowman – Educational Economic Development Aldine Publishing Co., Chicago, 1963.
3. Harbison F.E. Myers C.A. – Education, Manpower Economic Growth, Strategies of Human Resource Development, McGraw Hill book Co. N.Y. 1964.
4. Gunner Myrdal, The Asian Drama, Allen Unwine Publishers, London 1968.
5. UNDP, Human Development Reports.
6. Planning Commission- Five Year Plans of Bangladesh
7. Mark Blaug- Introduction to Economics of Education, Penguin Books, 1977.
8. Richard L. Meier – Development Planning, McGraw Hill Book Co., N.Y., 1965.
9. Philip Coombs- What is Education Planning, IIEP, UNESCO, Paris.
10. The World Bank (2008), Finance and Expenditure in Education.
11. Rowshon Ara Chowdhury, Education and Economics, Dhaka, 1993
12. Sheehan, John, Economics of Education, George Allen & Unwine Ltd, London, 1993.
13. Sodhi, T.S. Education and Economic Development, New Delhi, 1984
14. Related Websites

Course Code	230361	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Political Science Paper-IV			

Not details syllabus

Course Code	230363	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Sociology Paper-IV			

Course Number and Title: AE Sociology-Four: Social Structure of Bangladesh

1. Credit Hours: 4

2. Course Description

The Course deals with the historical development of the Social Structure of Bangladesh up to 1947 and the development of social structure of Contemporary Bangladesh since 1947. Concentration has been given on the study of social structure of the period just preceding the British rule and nature of the changes brought in by the British rule in the tradition bound society. In such an analysis, particular emphasis has been given on the impact of British rule on the socio-economic system of Pre-British and Post British Bangladesh.

3. Course Objectives

The main objectives of this course are to:

- a) help students understand critical exposition of the different concepts and theories of social structure;
- b) help them comprehend methodology issues and problems relating to the analysis of different social structure;
- (c) help them make a comparison of the social structure of the orientation and occidental societies;
- (d) acquaint them with the social structures of Pre-British India (especially of Bengal);
- (e) help them comprehend the changing, pattern of the social structure in British India;
- (f) help them analysis the impact of different socio-political movements and reforms on the social structures of Bengal and of East Pakistan;
- (g) acquaint student with the nature and characteristics of the social structure of contemporary Bangladesh;
- (h) help them understand the changing pattern of the social structure of present Bangladesh.

4. Course Contents

Number of Lectures

Unit 1: Social Structure- an Introduction

06

- 1.1 Critical exposition of the different concepts and theories on structure
- 1.2 Social structure of the occidental societies
- 1.3 Social structure of the oriental societies

Unit 2: Major Feature of the Social Structure of Pre-British India (especially Bengal) 10

- 2.1 Major aspects of Indian and European Feudalism
- 2.2 Origin and Development of Bengal Village and Land Tenure System
- 2.3 Social groups and Institutions in the village community of Bengal
- 2.4 Economic and Political Structure of Village Community of Bengal
- 2.5 Towns in Pre-British India
- 2.6 Industrial and Trade Structure

1st Incourse Examination

Unit 3: Change in Social Structure During the British Rule in India 10

- 3.1 Permanent Settlement Act of 1793
- 3.2 Enactment of Different Tenancy Laws and Their Influences Upon the Present Society of Bengal
- 3.3 English Education and development of middle classes
- 3.4 Rise of Commercial and Industrial Capitalist Class
- 3.5 Socio-Political and Reform Movements

2nd Incourse Examination

Unit 4: Factors Responsible for the Change in Social Structure of East Pakistan 06

- 4.1 Peasant Movement of Bengal in 1946-1947
- 4.2 East Bengal State Acquisition and Tenancy Act of 1950
- 4.3 Language Movement of 1950's
- 4.4 Six Point Movement
- 4.5 Mass Movement of 1969
- 4.6 Rise of Economic and Intelligentsia Groups

Unit 5: Contemporary Bangladesh Society 08

- Emergence of Bangladesh
- Debate on the existing Mode of Production in Bangladesh

- Traditional and Modernity in Rural in Bangladesh
- Impact of Urbanization and Industrialization upon the Social Structure of Bangladesh
- Growth of Middle Classes
- Power Structure of Bangladesh

Unit 6: Globalization and Bangladesh

- Nature and factors of globalization in Bangladesh
- Impact of globalization on Bangladesh: economic, political and cultural changes.
- Globalization, urbanization and rural displacement.

5. Students will be given specific assignments by the instructor which they be required to submit/perform on due dates
6. Instructional Strategies
Lecture, Discussion, Question-answer, Observation, Debate, Students seminars etc.
7. Evaluation
 - b. Tests
 - c. Assignments

References:

1. Karim. A.K Nazmul (1976), Changing Society in India, Pakistan and Bangladesh, Dhaka, Nowroze, Kitabistan.
2. Karim, A.K. Nazmul (1980), The Dynamics of Bangladesh Society, New Delhi.
3. Desai, A.R. (1959), Social Background of Indian Nationalism, Bombay, Popular Book Depot.
4. Sharma, R.S (1965), Indian Feudalism, Calcutta, University of Calcutta.
5. Weber, Max (1958), The protestant Ethics and The Spirit of Capitalism, New York, Scribner's.
6. Habib, Irfan (1963), The Agrarian. System of Mughal India, New York.
7. Natarjan, S. A (1959), A Century of Social Reform in India, Calcutta, Asia Publishing House
8. Bhattacharjee, Bhabam (1980), Socio-Political Currents in Bengal: A Nineteenth Century Perspective, New Delhi, Vikas Publishing House Pvt. Ltd.

9. Basu, Aparna (1974), The Growth of Education and Political Development in India (1898-1920), Delhi, Oxford University.
10. Sen, Ranglal (1986), Political Ethics in Bangladesh, Dhaka, University Press Ltd.
11. Chawdhury, Anwarullah (1982), Agrarian Relations and Development in Bangladesh, New Delhi, Oxford & IBD.
12. Kosambi, D.D. (1975), Introduction to the Study of Indian History, Bombay, Popular Prakashan.
13. Gupta, Atl Chandra ed. (1958), Studies in the Bengal Renaissance, Calcutta, National Council of Education.
14. Mallik, Azizur Rahman (1977), British Policy and the Muslims in Bengal, 1757-1856, Dhaka, Bangla Academy.
15. Alamgir, M.K: ed. (1981), Land Reforms in Bangladesh, Dhaka Centre for Social Studies.
16. Islam, Sirajul (1992), History of Bangladesh, 1704-1971, Vols. 3, Dhaka, Asiatic Society of Bangladesh.
17. Nurullah, Syed & Naik, J.P. (1946), A students History of Education in India, London, Macmillan & Co.
18. Hunter, William Wilson (1975), The Indian Musalmans, Dhaka, W. Rahman.
19. Marx, Karl (1975), On Colonialism, Moscow, Progress Publishers.
20. Witfogel, Karl A. (1957), The Oriental Despotism, New Heaven, Yale University Press.
21. Broomfield, G.H. (1940), Twentieth Century Bengal, Calcutta.
22. Nanmer, Rachel Van M. ed. (1975), Aspects of Bengali History and Society, Hawaii, University Press of Hawaii.
২৩. সেন, রংগলাল (১৯৯৭), সমাজকাঠামো: পুঁজিবাদ ও সমাজতন্ত্র, ঢাকা নিউওজ পাবলিকেশন্স
২৪. সেন, রংগলাল (১৯৯৭), বাংলাদেশের সামাজিক স্ফুঁরবিন্যাস, ঢাকা, বাংলা একাডেমী, প্রথম পুনর্মুদ্রণ
২৫. চৌধুরী, আনোয়ার উল-হ এবং অন্যান্য (১৯৮৬), সমাজবিজ্ঞান শব্দকোষ, ঢাকা, বাংলা একাডেমী।
২৬. উমর, বদরুদ্দিন (১৯৭৪), চিরস্থায়ী বন্দোবস্তে বাংলাদেশের কৃষক, ঢাকা, সুবর্ণ প্রকাশ
২৭. ওহমান, আতিউর (১৯৯৫), ভাষা আন্দোলনের পটভূমি, ঢাকা, ইউনিভার্সিটি প্রেস লি:

২৮. আহমদ, ওয়াকিল (১৯৯৭), উনিশ শতকে মুসলমানের চিন্তা ও চেতনার ধারা, ঢাকা, বাংলা একাডেমী।
২৯. ইসরাম, সিরাজুল সম্পা: (১৯৯৩), বাংলাদেশের ইতিহাস, ৩ খণ্ড, ঢাকা এশিয়াটিক সোসাইটি অব বাংলাদেশ
৩০. ঘোষ, বিনয় (১৯৭৮), বাংলার বিদ্যুৎসমাজ, কলিকাতা, প্রকাশ ভবন।

Course Code	230365	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Geography and Environment Paper-IV: Geography of Bangladesh			

1. Course Description

The course is design to provide students to the essentials aspects of Bangladesh. They know Location, population, physical and economical aspects and acquire knowledge and skills considering spatial perspectives.

2. Course Objectives

This course will enable learners to-

- Understand the important of physical features of Bangladesh.
- Acquire knowledge and understanding of Geography of Bangladesh from a regional point of view
- understand the important of economical features of Bangladesh.
- identify the relationship among man, environment and economic activities considering the context of Bangladesh.
- Developing skills in preparation maps, charts, graphs related to the country

Contents-

Unit one : Geographic description of bangladesh

Location, Physiographic division, Population, settlement

Major rivers of Bangladesh, river erosion and its Impact on economy and Social Life.

Environment pollution

Unit Two: Climate of Bangladesh

Climate, Its types, causes of climate change and its impact, remedies

Soils and its classification, losses of top soil, Soil pollution, remedies

Unit Three: Physical resources of Bangladesh

Forest of Bangladesh, types of forest, impact of deforestation on economy and environment. Fisheries- inland and sea

Agriculture of Bangladesh (Rice, Wheat, Jute, Tea, Tobacco, Sugarcane, Fruits)

Unit Four : Industrial Recourses

Industries (Paper, Fertilizer, textile , garments,)

Power and mineral resources (Coal, Natural Gas, hard rock, oil, limestone)

Unit Five: Transport System and Trade of Bangladesh

Communication and transport system of Bangladesh(Road, Raiway, Waterways, airway)

Trade of Bangladesh (Import, export, internal and foreign trade),

Unit Six: Disaster of Bangladesh

Disasters and Hazards, Disasters of Bangladesh- flood, cyclone, drought, river erosion, land slide, earthquake, remedies. Disaster management

Practical Geography

Field trip and report writing (Students must attain (mandatory) the field trip and write a report on basis of field trip)

6. Instructional Strategies

Lecture (using ICT devices), Discussion, Question-Answer, Participatory Approach, Observation of real objects, Debate, Field trip.

7. Assignment

Students will submit assignments on due date based on contents by the instruction of their relevant teacher.

8. Evaluation

a)Internal Examinations b) External Examination c) Assignments and class percentage

References

Practical Geography

3. Course Description

The course is design to provide students to the essential knowledge and skills on Cartography, a special branch of geography. They know and do how to read and drawing map considering map projection and other cartographical skills from this course.

4. Course Objectives

This course will enable learners-

- a) To acquire essential skills on cartography.
- b) Able to drawing different scales.
- c) To familiar with map projections and contours
- d) To develop representation skills of practical Geography.

Student will do and practice practical geography each year (1st Year- 4th year) and a final examination will held on 4th year in 100 marks.

6. Instructional Strategies

Lecture (using ICT devices), hands-on work, Debate, Field trip.

7. Preparing practical Katha

Students will submit a self drawing katha on the basis on their practical activities directed by teachers.

Marks Distribution

- a) Field trip and report submit (Term Paper) -20
- b) External Examination-50 c) Viva-15 d) Practical Khata-15

References:

মোয়াজ্জেম হোসেন চৌধুরী- ব্যবহারিক ভূগোল

রউফ ও হালিম - ব্যবহারিক ভূগোল

ড. ডি.এম. ফিরোজ শাহ- ভূগোল শিক্ষণ

Raghnandas Singh and Lekh Singh-Map Work and Practical

R. N Singh Kanaja and P. K Datta-Elements of Practical Geography

Graphosman- Atlas

Course Code	230367	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	History Paper-IV: History of Education			

1. Course Description

The course is designed to provide knowledge and understanding of the historical development of education in Indian Sub-continent. Focus has been put on the trends of development of modern education in the subcontinent especially in Bangladesh. Attempts have also been made to bring into focus the major endeavors and factors that contributed to change in education sectors in different periods.

2. Course Objectives

The main objectives of this course are to:

- b. To acquaint with historical development of education in the subcontinent
- c. To understand the trends in the development of modern education in Bangladesh
- d. To develop attitudes and ability of analyzing critical aspects of education system of Bangladesh in the context of its history.
- e. To help them identify the major endeavors and factors that contributed to the major change in education.

3. Course Contents**Number of Lectures****Unit One: Education in the Ancient Period****02**

1. Education in the Vedic Age
2. Education in the Aryan Period
3. Buddhist Education System

Unit Two: Education System in the Medieval Period**02**

4. Education in the Pre-Mughal Period

5. Education in the Mughal Period

Unit Three: Education in the British East India Company 10

6. The Missionaries and their Attitudes Towards Western Education and Indigenous Education
7. Educational Activities of the East India Company During 1600 to 1765
8. Educational Policy of the East India Company between 1765-1823
9. The Charter Act of 1823
10. The Educational works of the Serampore Thio and others their in Bengal (1758-1823)
11. Official Experiments in Education (1823-1853)
12. Official Educational Policies in Indian Sub-Continent
13. Missionary Educational Enterprise (1823-53)
14. Private Enterprise in Education (1823-53)
15. Wood's Education Despatch of 1854
16. The University Act of 1857

Unit Four: The Role of British Government in Education Since 1858 to 1919 Main Documents of the period: 07

17. Despatch of Lord Ellenborough, 1858
18. Lord Stanley's Despatch of 1859
19. Indian Education Commission of 1882
20. Educational Reforms of Lord Curzon
21. The Indian University Commission (1902)
22. The Indian University Act, 1904
23. Government Resolution on Educational Policy (1923)
24. The Calcutta University Commission (1917-1919)

Unit Five: Education Under Diarchy (1919-1947) 05

25. Mont. Ford Reformation (1919) and Education
26. Hartog Committee Report (1929)
27. Wood-Abbot Report (1937)
28. Wardha Scheme (1937)

29.Sargent's Scheme (1944)

Unit Six: National Education Movement in the British Period 04

- 30.Growth of National Consciousness in Education
- 31.Development of National Consciousness in Education
- 32.A New Outlook and New Wave in National Education Movement under Diarchy
- 33.Results of Movement

Unit Seven: Education in Pakistan Period 04

- 34.Report of the Fast Bengal Educational System Reconstruction Committee, 1952
- 35.Report of the Educational Reforms Commission, East Pakistan, 1957
- 36.Report of the Commission on National Education, 1960
- 37.National Curriculum and Syllabus Committee Report, 1960

Unit Eight: Education in Bangladesh 06

- 38.Bangladesh Education Commission Report, 1974
- 39.Bangladesh National Curriculum and Syllabus committee, 1977
- 40.Bangladesh National Education Commission Report 1988
- 41.Competency Based Curriculum, 1991
- 42.Curriculum and Syllabus Report, 1995
- 43.National Education Policy, 2000

ii. Instructional Strategies:

- a. Lecture
- b. Group Discussion
- c. Reading
- d. Library work and students' participation in the classes

iii. Course Requirements:

- a) Class attendance
- b) Assignment
- c) Incourse examinations
- d) Semester final examination

Suggested reading

A.K. Jalaluddin and A. Mustaque R. Chowdhury (editors), Getting Started: Universalizing Quality Primary Education in Bangladesh, The University Press Limited, 1997.

Mazharul Haque and Others, The Education in East Pakistan Research Project, Research Services Centre, Institute of Education and Research, University of Dhaka, Dhaka, 1970.

National Curriculum and Syllabus Committee Report 1960

Report of the East Bengal Educational System Reconstruction Committee, Government of East Bengal Government Press, 1952

Report of the Educational Reforms Commission, Chief Minister's Secretariat, Government of East Pakistan, Dacca, East Pakistan Government Press, 1957

Report of the Commission on National Education, Ministry of Education, Government of Pakistan, Government of Pakistan Press, 1960

Syed Nurullah and Naik., A Students' History of Education in India, Macmillan & Co. Ltd., Bombay, 1964.

অরুণ ঘোষ, শিক্ষার ভাবধারা পদ্ধতি ও সমস্যার ইতিহাস, এডুকেশনাল এন্টারপ্রাইজার্স, কলিকাতা, ১৯৮৮

মো: আজহার আলী, শিক্ষার সংক্ষিপ্ত ইতিহাস, বাংলা একাডেমী, ঢাকা, ১৯৮৬

আ. খা. আবদুল মান্নান ও অন্যান্য, শিক্ষার ইতিহাস, খান বাহাদুর আহছানউল্লা টিচার্স ট্রেনিং কলেজ, ঢাকা আহছানিয়া মিশন, ঢাকা, ১৯৯৬

রঞ্জিত ঘোষ, শিক্ষাদর্শ পদ্ধতি ও সমস্যার ইতিহাস, সোমা বুক এজেন্সি, কলিকাতা, ১৯৮৬

কামরুন্নেসা বেগম ও সালমা আখতার, প্রাথমিক শিক্ষা: বাংলাদেশ, ইউনিক প্রেস ও এন্ড পাবলিকেশন্স, ঢাকা, ২০০০

বাংলাদেশ শিক্ষা কমিশন রিপোর্ট, গণপ্রজাতন্ত্রী বাংলাদেশ সরকার, ১৯৭৪

বাংলাদেশ জাতীয় শিক্ষাক্রম ও পাঠ্যসূচী প্রণয়ন কমিটি, জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড, ঢাকা, ১৯৭৭

বাংলাদেশ শিক্ষা কমিশন রিপোর্ট, গণপ্রজাতন্ত্রী বাংলাদেশ সরকার, ১৯৮৮

শিক্ষাক্রম ও পাঠ্যসূচী রিপোর্ট, জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড, ঢাকা, ১৯৯৫

বাংলাদেশ জাতীয় শিক্ষানীতি প্রণয়ন কমিটি রিপোর্ট, গণপ্রজাতন্ত্রী বাংলাদেশ সরকার, ১৯৯৭

জাতীয় প্রাথমিক শিক্ষা বিষয়ক কমিটি (১৯৯৭) প্রতিবেদন, প্রাথমিক ও গণশিক্ষা বিভাগ, গণপ্রজাতন্ত্রী
বাংলাদেশ সরকার, ১৯৯৭

Course Code	230369	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Islamic History and Culture Paper-IV			

Not submitted syllabus

Course Code	230357	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper-IV: Programming			

UNIT 1 INTRODUCTION TO WEB DESIGN AND HTML	The student will be able to: - Describe the concept of web designing. - State the structure of website. - Explain the concept of HTML	- Concept of web page design - Website structure - HTML Basic - Concept of HTML - Advantages of HTML - Introduction to HTML tags and syntax - HTML design and structure layout - Formatting - Hyperlink - Insert image and table - Publishing a website
UNIT 2 PROGRAMMING LANGUAGE	The student will be able to: - Explain the concept of programming - Describe the various programming languages	- Concept of program - Programming language - Machine language - Assembly language - Midlevel language - High level language 4th Generation Language (4GL) - Translator Program - Organize a program - Algorithm - Flowchart

COMPUTER NETWORKING

UNIT 3 COMPUTER NETWORKING	The student will be able to: - Describe the concept, types of computer networking. - Identify the hardware and software required for computer networking. - Configure a computer network in an educational setting.	- Computer networks, concepts, types of computer networks. - Configurations, layers and protocol of computer networks. - Hardware and software for computer networks.
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COMPUTER TROUBLESHOOTING

UNIT 4 HARDWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in hardware	• Power system and power protection • Peripherals and their functionality (Printers, Monitors, Scanners, Speakers, etc.) • Basic computer networking (LAN), Internet connection using modem and router/gateway • Computer assembly, disassembly and installations • Adding new hardware, device driver installation • common problems and solutions
UNIT 5 SOFTWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in software.	• Operating systems basics; • BIOS setup • Operating System installation • Install and uninstall application software • Virus protection and security issues

Area-III:

Course Code	230371	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Physics Paper-IV: Modern Physics			

1. Course Description:

This course is designed to acquaint students with Perspectives of Modern Physics. It helps students to understand basic laws, application of Perspectives of Modern Physics.

2. Objectives:

Following are the objectives of the course. The students are expected to-

- (a) Know meaning of terms, specific facts and laboratory procedures related Perspectives of Modern Physics.
- (b) Understand the basic concepts and principles of Modern Physics;
- (c) Apply concepts and principles of Modern Physics in new and unfamiliar situations; and
- (d) Demonstrate skills and abilities needed to conduct experiment related to Modern Physics

3. Course Content:

No. of Classes

Unit One: Relativity

6 Lectures

Background of the Theory of Relativity. The Galilean Transformation. Frame of reference, Inertial Frame of reference, Newtonian Relativity. Michelson-Morely Experiment, Postulate of special theory of relativity, Einstein and the origin of Relativity Theory. The Lorentz Transformation, Length contraction, Time dilation, Twin paradox, The relativistic addition of Velocities. The Relativity of mass, Mass and Energy, Massless particle, Energy momentum relation, Minkowski's space, Space rocket, General relativity-an introduction.

Unit Two: Particle properties of waves**4 Lectures**

Blackbody Radiation, Plank Radiation Formula, Photoelectric Effect and its experimental results. Limitation of classical theory, Einstein Photon theory, The Compton Effect, pair production and pair annihilation, Photon and Gravity.

Unit Three: Wave properties of Particles**3 Lectures**

De Broglie Waves, Wave function, Waves of what?, The Wave -Particle Duality, Describing a Wave. Phase and Group velocities, The Uncertainty Principle - Applications.

Unit Four: Atomic structure**4 Lectures**

Atomic Model, The Thomson model, Alpha- particle Scattering, The Rutherford Scattering Formula, Electron orbits, Failure of Classical physics, Atomic spectra, The Bohr Atom Model, The Franck-Hertz Experiment. The Correspondence Principle.

Unit Five: Quantum Mechanics**4 Lectures**

Quantum Mechanics, The Wave Equation, Schrodinger's Equation, Orthogonal Normalised and Orthonormal Functions, Probability, Expectation Values, Operators, Eigenvalues and Eigenfunctions, Particle in a box, Hydrogen Atom. Simple Harmonic Oscillator.

Unit Six: Atomic Nucleus**3 Lectures**

Objectives of studying Nuclear Physics, Basic Nuclear Properties, Properties of Nucleon, Atomic Number, Atomic Masses, Nuclear size and radius, Nuclear density, mass defect, Binding Energy, Binding Energy per Nucleon, Stable Nuclei, Separation Energy, Properties of Nuclear force, Nuclear Electrons, Saturation of Nuclear Force, Packing fraction.

Unit Seven: Radioactive Decay**3 Lectures**

Radioactivity, Activity. Activity Law: Decay Constant, Half-Life, Relation between half life and Decay constant. Radioactive decay law, Mean life, Relation between half -life and Mean life, radioactive decay, Kinds of Radioactive decay, Radioactive series, Artificial Radioactivity, Carbon dating. Elementary ideas of Nuclear Fission, Nuclear Fusion and Nuclear Reactor, Thermonuclear Energy.

Unit Eight: Elementary Particle Physics**3 Lectures**

Elementary Particle, Characteristics of Elementary Particle, Classification- Massless Boson Leptons. Mesons. Baryon: Elementary Particle Quantum Number, Strangeness Number Hypercharge, Symmetries and Conservation Principles, Parity, CPT conservation, Quarks Fundamental Interactions- Unification of Force. Elementary ideas about Cosmology.

Unit Nine: Solid State Physics**3 Lectures**

Bravais Lattice and Crystal structures, Atomic Radii, Point Defects, Dislocations, Thermal Vibrations, Specific Heats of Solids, The Einstein Theory and The Debye Theory, The Fermi Energy, Electron-Energy Distribution. Band theory of Solid. Conductor, Semiconductor and Insulator.

Unit Ten: Electronics**4 Lectures**

Introduction, How it differs with Electricity. Vacuum Tubes- The Early stage of Electronic Basic Concepts of Semiconductor. Types of semiconductor. PN junction and its properties Semiconductor Diode. Biasing of a diode and its I-V Characteristics. Diode as a Rectifier Unregulated and Regulated power supply. Steady and pulsating DC voltages. Rectifiers-Half Waves, Full Waves. Filters Circuits. Zener Diode, Uses of LED. Transistor, Transistor as an Amplifier. Transistor Connections-CB. CC, CE

arrangement. FET. Integrated Circuits (IC). Computer and Impact of Electronics on Modern life.

Unit Nine: Superconductivity

3 Lectures

Superconductivity, Experimental Survey, Destruction of Superconductivity by Magnetic Fields, Meissner Effect, Classification of Superconductor-Type I & II, BCS Theory of Superconductivity, High T_c Superconductor, Similarities and Dissimilarities with Conventional Superconductor. Application of Superconductivity.

Laboratory Work: Practical (At Least Six)

1. Study of exponential relaxation time constant of an RC circuit.
2. To study the frequency response characteristics of an RC low pass, RC high pass filter.
3. Study of oscillation dampening in an RLC circuit using an oscilloscope.
4. To design and construct a half-wave rectified power supply and to study its characteristics.
5. To design and construct a full-wave rectified power supply and to study its characteristics.
6. To design and construct a transistorized stabilized power supply and study its output characteristics.
7. Design and then draw the characteristics curve of a PN junction (semi-conductor) diode.
8. Study of the Zener Diode Voltage regulation.
9. To study the characteristic of a field effect transistor (FET)
10. Study of the static characteristic of a NPN transistor.'

6. Tutorial/ Assignment:

Students will be given home assignment/ Tutorial which they will be required to Submit on due dates.

7. Instructional strategies,:

Lecture. Question- answer. Demonstration, Guided discussion, group discussion, Student participation, Review of books, Assignment/ tutorial, Practical work.

8. Assessment

In-course Test, Semester Final Test, Practical Examination

Text and References:

1. Serway Raymond, *Physics for the Scientists and Engineers with Modern Physics*, 2nd ed. Saunders Golden Sunburst Series, 1986.
2. Freedman Young, *University Physics*, Ninth Edition, Addison-Wisely Series Publishing Company, 1996.
3. Halliday D., Resnick R., and Walker I, *Fundamentals of Physics*, Fifth ed. New York. John Wiley and Sons, 2000.
4. Benson Harrish. *University Physics*, Revised Edition, Addison - Wisely, New York.
5. রেসনিক, রবার্ট হ্যালিডে ও ডেভিড, (অনুবাদ অজয় রায় প্রমুখ), *পদার্থবিদ্যা*, ১ম ও ২য় খণ্ড, ঢাকা, বাংলা একাডেমী, ১৯৮৮।
6. Besier Arthur, *Concept of Modern Physics*, Fifth Edition, McGraw-Hill, Inc., New York 1995.
7. Besier Arthur. *Perspectives of Modern Physics*. Fifth Edition, McGraw-Hill, Inc., New York.

8. Mehta V.K. *Principles of Electronics*, S. Chand and Company (Ltd.), New Delhi.
9. ড. শাহজাহান তপন, *আধুনিক পদার্থবিজ্ঞান ও ইলেকট্রনিক্স*, হাসান বুক হাউস, বাংলা বাজার, ঢাকা।
10. Ahmed Giasuddin and Shahabuddin Md., *Practical Physics*, 2nd ed. Hafiz Book House, Dhaka.
11. Kittel, *Introduction to Solid State Physics*, New York.
12. Search www.google.com with specific key word from relevant topics of physics.
13. Nave, C.R (2005), Hyperphysics-Georgia State University Retrieved July 7, 2008 from <http://hyperphysics.phy-astr.asu.edu/hbase/hframe.html>.
14. Jones, A.Z (2008): About.conr.Physics Retrieved July7, 2008 from [http://physics:about.com/](http://physics.about.com/)

Course Code	230373	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Chemistry Paper-IV: Industrial and Environmental Chemistry			

1. Course Description:

This course on Industrial and Environmental Chemistry includes two important fields. Industrial Chemistry and Environmental Chemistry. Industrial chemistry section includes detailed discussion on some selected industries such as Glass and Ceramic, Fertilizer, Cement, Acids, Soaps and Detergents, Sugar and Fermentation industries.

Environmental chemistry section includes concepts of environment and environmental pollution; water; soil and atmospheric pollution, causes, mechanism, effects of Pollution and preventive measures etc.

2. Course Objectives

To help the learners to:

- a) Know Fundamentals to develop a chemical industry
- b) Understand basic principle and production process of industrial products.
- c) Know the concept of environmental pollution.
- d) Know and understand the mechanism, causes, effects and preventive measures taken to control pollution like air, water, soil etc.
- e) Demonstrate skills and abilities needed to conduct environmental and industrial experiments.

3. Course Contents

No. of Classes

Section-1: Industrial Chemistry

Unit-1: Fundamentals in the Development of Chemical Industries.

2

Raw materials, Process design, Commercial energy sources, Human resource Development, Unit process and unit operations, Catalysts, Water as the process fluid, Heat Transfer, Mass Transfer, Concepts of Consumption, Production and market evaluation, Safety and environmental analysis.

Unit-2: Fuel.

4

Concepts of fuel, classification of fuels, methods of processing various fuels. Fossil fuels - coal, petroleum and natural gases, nuclear power, pollution due to uses of fossil fuels and nuclear power, energy conservation, Looking for alternative sources of energy - solar energy, energy from wastes, biogas, photovoltaic energy, Environmental freindly fuels, CNG, hydropower, wind energy, Geothermal, Tidal and wave energy.

Unit-3 Glass and Ceramic Industries

4

Raw materials and fundamentals of glass and ceramic industries, Methods of manufacture, Special glasses. White wares, Refractories.

Unit-4 : Cement Industries **2**

Raw materials, Constituents of cement, Manufacture of Portland cement, Special cement, Dry Lime manufacture, Gypsum, Plaster of Paris

Unit-5 : Fertilizer Industries **3**

Nitrogen fixation, Types of nitrogen and phosphate based fertilizer, Functions of nitrogen and phosphorous in growing up of plants, Raw materials and manufacture of ammonia and urea, Manufacture of phosphate fertilizer.

Unit-6 : Sugar and Fermentation **2**

Industrial production of Sugar, Inversion of sugar, Refining of sugar, by products of Sugar industries, Manufacture of industrial and absolute alcohol, Enzyme.

Unit-7 : Soaps and Detergents **3**

Methods of fat splitting Manufacture of Laundry and toilet soaps, Manufacture of detergents, Comparison of soaps with detergent, Biodegradability of detergents, Principle of shampoo production.

Unit-8 : Sulfuric Acid Industries **2**

Sulfuric Acid-Importance, properties, production processes, chamber process principle and production process, purification and concentration of the chamber acid. Contact process-principle and production- Oleum manufacture, grades of acids.

Section-2: Environmental Chemistry Unit-1: Concept of Environment and Environmental Pollution **3**

Environment, Components of environment and their natural composition, Concept of pollution, Classification of pollutants, Natural and manmade, Biological, chemical and physical pollutants.

Unit-2: Water Pollution **5**

Water a unique substance, water cycle, Definition of water pollution, Classification of water Pollutants, Heavy metals as water pollutants, Soap, detergent and pesticides in water, Alkalinity and salinity of water, Arsenic Pollution, Biochemical effects, Industrial waste, Sewage and water pollution. Water pollution control. Water quality standards for drinking water, water treatment, Removal of Hardness, Removal of iron, Removal of solids, organic matters and heavy metals. Total waste water treatment system.

Unit-3 : Pollution in Atmosphere **8**

Composition and importance of atmosphere, Major regions of the atmosphere, Chemical and photochemical reactions in atmosphere, The greenhouse effect: Causes, mechanism and effects. Ozone layer depletion, Causes, mechanism and effects. Smog formation: causes, mechanism and effects, NO_x SO_x. CH₄. and CO as pollutants, Acid rain-mechanism, causes and effects. Dust, Black carbon and other Suspended particulate matters, prevention of air pollution.

Unit-4 : Pollution in Soil **4**

The nature of soil, Water and air in soil, Organic matters in soil, Inorganic components of soil, Acid, Base and ion exchange reactions in soil, Nitrogen in soil, Phosphorous in soil, micro nutrients in soil fertilizers, waste and pollutants in soil, Soil corrosion, Agriculture and health.

Unit-5: Waste and Waste Disposal **4**

Waste, The waste stream, waste disposal methods, open dumping, Ocean dumping, landfills, Exporting waste, Incineration and Resource recovery, Shrinking the waste

stream- Recycling, composting, Energy from waste, Demanufacturing, Reuse, Producing less waste, Hazardous and Toxic waste, Hazardous and Toxic waste disposal.

6. Practical

1. Analysis of water for (i) total suspended solids (b) temporary hardness (c) Permanent hardness (d) chloride.
2. Analysis of water for dissolved Oxygen.
3. Analysis of fats and oils for (a) saponification value (b) iodine value (c) acid value,
4. Analysis of soap for acid and alkali.
5. Analysis of cane sugar for glucose by fehling's and Benedict solution methods.
7. **Assignment:** Student will be given an assignment by the course teacher which needs to be submitted within due date.

8. Instructional strategies

- lecture.- discussion - group work - problem solving - project work.

9. Assessment

- Regular attendance and participation,- Incourse examinations
- Semester final examination ,- Writing assignment.

Reference:

1. B.K, Sharma - *Industrial chemistry* (God publications.)
2. A.K.De. - *Environmental chemistry*
3. G.T. Austin Edited- *Shreve's chemical Process Industries* (MaGraw Hill)
4. S.E. Jorgensen and J. Johnson - *Principles of Environmental Science and Technology*
5. William P. Cunningham- Mary Ann Cunningham - *Princeples of Environmental Science* Tata-McGrawHill Publishing Company Limited-Tata McGraw-Hill Edition, 2002.
6. এ. এস. এম নূরুল হক ভূইয়া- *শিল্প রসায়ন ও রাসায়নিক প্রযুক্তি*, ইউনিভার্সিটি বুক পাবলিশার্স।

Course Code	230375	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Geography and Environment Paper-IV: Geography of Bangladesh			

1. Course Description

The course is design to provide students to the essentials aspects of Bangladesh. They know Location, population, physical and economical aspects and acquire knowledge and skills considering spatial perspectives.

2. Course Objectives

This course will enable learners to-

- f) Understand the important of physical features of Bangladesh.
- g) Acquire knowledge and understanding of Geography of Bangladesh from a regional point of view
- h) understand the important of economical features of Bangladesh.

- i) identify the relationship among man, environment and economic activities considering the context of Bangladesh.
- j) Developing skills in preparation maps, charts, graphs related to the country

Contents-

Unit one : Geographic description of bangladesh

Location, Physiographic division, Population, settlement

Major rivers of Bangladesh, river erosion and its Impact on economy and Social Life.

Environment pollution

Unit Two: Climate of Bangladesh

Climate, Its types, causes of climate change and its impact, remedies

Soils and its classification, losses of top soil, Soil pollution, remedies

Unit Three: Physical resources of Bangladesh

Forest of Bangladesh, types of forest, impact of deforestation on economy and environment. Fisheries- inland and sea

Agriculture of Bangladesh (Rice, Wheat, Jute, Tea, Tobacco, Sugarcane, Fruits)

Unit Four : Industrial Recourses

Industries (Paper, Fertilizer, textile , garments,),

Power and mineral resources (Coal, Natural Gas, hard rock, oil, limestone)

Unit Five: Transport System and Trade of Bangladesh

Communication and transport system of Bangladesh(Road, Raiway, Waterways, airway)

Trade of Bangladesh (Import, export, internal and foreign trade),

Unit Six: Disaster of Bangladesh

Disasters and Hazards, Disasters of Bangladesh- flood, cyclone, drought, river erosion, land slide, earthquake, remedies. Disaster management

Practical Geography

Field trip and report writing (Students must attain (mandatory) the field trip and write a report on basis of field trip)

6. Instructional Strategies

Lecture (using ICT devices), Discussion, Question-Answer, Participatory Approach, Observation of real objects, Debate, Field trip.

7. Assignment

Students will submit assignments on due date based on contents by the instruction of their relevant teacher.

8. Evaluation

a)Internal Examinations b) External Examination c) Assignments and class percentage

References

Practical Geography

3. Course Description

The course is design to provide students to the essential knowledge and skills on Cartography, a special branch of geography. They know and do how to read and drawing map considering map projection and other cartographical skills from this course.

4. Course Objectives

This course will enable learners-

- e) To acquire essential skills on cartography.
- f) Able to drawing different scales.
- g) To familiar with map projections and contours
- h) To develop representation skills of practical Geography.

Student will do and practice practical geography each year (1st Year- 4th year) and a final examination will held on 4th year in 100 marks.

6. Instructional Strategies

Lecture (using ICT devices), hands-on work, Debate, Field trip.

7. Preparing practical Katha

Students will submit a self drawing katha on the basis on their practical activities directed by teachers.

Marks Distribution

- a) Field trip and report submit (Term Paper) -20
- b) External Examination-50 c) Viva-15 d) Practical Khata-15

References

মোয়াজ্জেম হোসেন চৌধুরী- ব্যবহারিক ভূগোল

রউফ ও হালিম - ব্যবহারিক ভূগোল

ড. ডি.এম. ফিরোজ শাহ- ভূগোল শিক্ষণ

Raghnandas Singh and Lekh Singh-Map Work and Practical

R. N Singh Kanaja and P. K Datta-Elements of Practical Geography

Graphosman- Atlas

Course Code	230377	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Mathematics Paper-IV: School Mathematics (Methods of Applied Mathematics)			

1. Course Description

This course is designed to serve the dual purpose of acquainting the students with a number of important and special topics in calculus (as aspect of higher mathematics) with their applications and some basic mathematical methods, principles, laws, approaches, and operations that provide the foundation for proper, sound, and better understanding.

2. Course Pre-requisite: Mathematics Three

3. Objectives of the Course

The course is designed to acquaint the student with some of the special topics in Calculus as detailed in the course contents on the one hand and some basic Mathematics process that tend to provide a foundation for better understanding Mathematics, so that he should be able.

- a) to solve theoretical as well as practical problems relating both aspects of the course content.
- b) to demonstrate a deeper understanding of the topics.

4. Course Contents	No of Classes
Unit One: Beta and Gamma Functions	04
• Definition of Beta and Gamma functions, relation between Beta and Gamma functions, different forms of Beta functions, reduced formula in the value of 5 and graph of Gamma function, transformation of Gamma functions, reduction of definite integral to Beta and Gamma functions.	
Unit Two: Power series	03
• Differentiation and Integration of power series, The Taylor, polynomial of degree, Taylor and Maclaurin series. Taylor's theorem of formula with a remainder.	
Unit Three: Power Series Solution	05
• Solution in series (Method of Frobenius) • Ordinary and singular point of a differential equation • Solution in series of the different form of differential equation.	
Unit Four: Legendre's differential equation	06
• Legendre's differential equation • Legendre polynomial • Rodrigue's Formula • Generation function for Legendre polynomial • Orthogonality of Legendre Polynomial	
Unit Five: Bessel's Differential equation	04
• Bessel's Function • Orthogonality of Bessel functions • Some special functions	
Unit Six: Vector Calculus	05
• Definition of gradient, divergence and curl and their physical significance	
Unit Seven: Fourier Series and Fourier's Integrals	06
• Definition of Fourier series, process of determining the Fourier coefficients. Fourier cosine and sine series, Half range Fourier cosine and sine series, Dirichlet's condition, change of interval conditions for the convergence of Fourier series, Differentiation and integration of Fourier series. Complex form of the Fourier series, Parseval's formula, Fourier transformation, Some physical application of Fourier series.	
Unit Eight: Complex variable	04
• Complex variable, function & classification of complex form of function. Limit at finite point, limit at infinity, Continuity, Continuity in a region, Uniform continuity, Complex sequence.	
Unit Nine: Analytic Functions	04

- Derivative in a domain, Z§ definition, Analytic function, Entire Function, Cauchy -Riemann equations, Necessary and Sufficient Condition for analytic function, Laplace's equation, harmonic function, conjugate harmonic function.

7. Examination

Presence and Participation

Text & References

1. Murphy, G.M. *Ordinary Differential Equation and Their Solution*
2. Churchill, R.V., *Fourier Series and bounder Value Problem 3rd ed.i*
3. Bahmer; *Differential Equation*
4. Sanlinager, *Vector Algebra*
5. Das, B.C. Mutherjee, *Integral Calculus Including Deferential Equation.*
6. Elen, L.W.F. *Deferential Equation*
7. Spiegel M.R. *Vector Analysis*
8. PJA GGIO, H.P.H. *Differential Equations.* C.B.S. Publisher's and Distributers, 485, Jain Bhowan Bhola Nath Nagar, Shandha, Delhi-110032
9. Rahman, Abdur, *Mathematical Methods*, Nahar Book Depot, and Publications, 38/4 Bangla Bazar, Dhaka-1100.
10. S.L. Ross, John Wiley & Sons, *Theory of Ordinary Differential Equations*, McGraw Hill Book Company

Course Code	230379	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Botany Paper-IV: Environmental Science, Plant Ecology, Plant Physiology, Plant taxonomy, Biodiversity and Conservation			

1. Course Description

This course will introduce students to plant Ecology, Plant Taxonomy and Plant Physiology. They will develop necessary skills for studying these subjects in the laboratory and in the field. It is expected that students will develop rational attitude toward plants and environment.

2. **Course Pre-requisite** : Should have successfully completed course AES - 343: Botany Three.

3. Objectives

The Students will develop-

- (a) Knowledge of Plant Ecology, Plant Physiology and Plant Taxonomy;
- (b) Skills for Studying Plant Ecology, Plant Physiology and Plant Taxonomy in the laboratory and in the field;
- (c) Scientific attitude towards study of these subjects.

4. Course Contents

Theory

Number of Classes

Unit One: Ecology : Synecology

08

1. History, definition, scope and sub-division of Ecology.
2. Ecological adaptations of plants to their environments as illustrated by hydrophytes, mesophytes, xerophytes and halophytes.
3. Plant Succession : hydrosere and xerosere, their similarities and dissimilarities.

4. Methods of studying vegetation : Quadrat, Transect Bisect, Ring count, Point, frame quadrat.
5. Ecosystem : Definition components of ecosystem, trophic levels, food chain and food webs. Pond ecosystem. Energy flow in the ecosystem.

Unit Two: Autecology

08

1. The role of green plants in nature with reference to
 - (i) The sum a thermonuclear energy Sources
 - (ii) Radiant energy and
 - (iii) Human population and food supply
2. Soil environment: Physical and chemical aspects
3. Sampling Tests of comparison and application of Qiiardrate measures
4. Forest types of Bangladesh. Dominant plants of Sundarban mangrove forest and Modhupur sal forest.

Unit Three: Plant Physiology

14

1. Water relations in plants
 - (a) Imbibition osmosis, diffusion
 - (b) Absorption of water and mineral nutrients
2. Mineral nutrition and deficiency disease in plants
- 3 Photosynthesis**
 - (a) Role of light and chlorophyll in photosynthesis.
 - (b) Light and dark reactions of photosynthesis
 - (c) Factor affecting the rate of photosynthesis
- 4. Respiration:**
 - (a) General aspects of aerobic and anaerobic respiration
 - (b) Mechanism of carbohydrate breakdown via glycolytic and TCAC
 - (c) The rate of high energy compounds formed during respiration
 - (d) Factors affecting rate of respiration

5. Enzymes:

- (a) Definition (b) Nomenclature (c) Classification (d) Properties

6. Growth and development:

- (a) Physiological and biochemical properties of the growth promoting Substances, auxins, gibberellins and kinins. (b) Measurement of growth of plants

7. The effect of light and temperature of flowering

8. Plant movements:

- (a) Classification (b) Nature and physiological basis

9. Nitrogen and carbon cycles in nature.

Unit Four: Taxonomy of Angiosperms

10

Characteristics and size of Angiosperms- morphological and anatomical characters of typical dieot and monocot plants. Taxonomy - Need for classification : taxonomic structure. Ralanian and Englerian concepts on the origin of Angiosperms, elementary knowledge on knowledge on nomenclature, common and botanical names, author citation synonyms. Detailed study Of Leguminosae, Palmae, Gramineae, Nymphaeaceae, Tiliaceae, Rutaceae, Cucurbitaceae, Umbelliferae, Compositae, Euphorbiaceae.

7. Projects/Assignment

1. Assigned class lectures
2. Pot plants

3. Dry and wet collection

8. Practical Ecology :

1. Morphological and anatomical adaptations of the following groups of plants
2. Study of vegetation : Quadrant and transect methods, frequency of occurrence, relative cover, relative density, relative dominance, community co-efficient and sociability of vegetation.
3. Determination of salinity, dissolved oxygen, free carbon dioxide, temporary and permanent hardness of water
4. Determination of primary productivity of a pond or a lake in terms of oxygen
5. Determination of salinity, pH value, carbonate, nitrate % of organic carbon, moisture and texture of soil samples.

Plant Physiology :

1. To demonstrate that oxygen is evolved during photosynthesis
2. To demonstrate that chlorophyll is essential for photosynthesis
3. To demonstrate that heat is evolved during respiration
4. To demonstrate osmosis by potato osmoscope
5. To demonstrate osmosis by egg osmoscope.
6. Demonstration of inorganic waste products

Taxonomy :

Examination of plants in the laboratory for writing technical description and identification of families by the help of a key,

9. Evaluation :

Same as two incourse tests and the semester final test Practical examination

Textbooks:

1. Devlin. R.M - *Plant Physiology*, PWS Publishers, USA. 1986
2. মো: আবুল হাসান, *উদ্ভিদবিজ্ঞান*, তৃতীয় খন্ড, হাসান প্রিন্টিং প্রেস, ঢাকা, ১৯৮৯
3. মিত্র, দেবব্রত; জীবেশ গুহ; সলিল কুমার চৌধুরী, *উদ্ভিদবিজ্ঞান*, তৃতীয় খন্ড, মৌলিক লাইব্রেরী, কলিকাতা, ১৯৯৩।
4. খান, আমজাদ আলী; তরিকুল ইসলাম, *উদ্ভিদবিজ্ঞান*, তৃতীয় খন্ড বাংলা বাজার, ঢাকা, ১৯৯৭।
5. শর্মা, দ্বিজেন, *সপুষ্পক উদ্ভিদের শ্রেণীবিন্যাসতত্ত্ব*, বাংলা একাডেমী, ঢাকা ১৯৮০।
6. হাসান, আবুল; খায়রুল আলম, *উদ্ভিদ শ্রেণীবিন্যাসতত্ত্ব*, হাসান বুক হাউজ, ঢাকা, ১৯৯০।
7. শর্মা, দ্বিজেন, *সপুষ্পক উদ্ভিদের শ্রেণীবিন্যাসতত্ত্ব*, বাংলা একাডেমী, ঢাকা ১৯৮০।

Course Code	230381	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Zoology Paper-IV: Ecology, Wildlife and Economic Zoology			

1. Course Description

This Course is designed to generate knowledge of Ecology. Wildlife Biology and Economic Zoology. The students will acquire necessary skills for studying these subjects. They will also develop a positive attitude towards wildlife and environment.

2. **Course Pre-requisites:** Should have successfully completed AES 353 course Zoology Three: Ethology. Embryology and Advanced Zoology

3. Objectives

To help the students develop:

- (a) Knowledge of Ecology, Wildlife Biology and Economic Zoology
- (b) Skills for studying these subjects in the laboratory and in the field
- (c) Positive attitude towards wildlife and environment

4. Course Contents

Number of classes

Theory

18

Ecology: Introduction

Terminology: Ecology. Wildlife Biology and Economic Zoology

Ecological Principles: Ecosystem, Food chain, Energy transfer in the ecosystem

Habital Ecology : Major biomes of the world, terrestrial, freshwater and marine ecology

Applied Ecology : Environmental pollution and Radiation.

Wildlife Biology : Introduction to the wildlife of Bangladesh.

Importance of wildlife preservation. Wildlife Preservation Order of 1973) and its salient features.

Economic Zoology: Outline of economic importance of different groups of animals with reference to Bangladesh. Fisheries resources of Bangladesh. Carp Culture, shrimp Culture, animal farming, Poultry, silk and lac Culture. Pests of rice, jute, Sugarcane and Pulses. Methods of controlling insect pests. Name and disease relationship of major parasites man and domestic animal.

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7. Practical

Students will visit ponds to Study freshwater ecosystems.

Students will visit some terrestrial area to Study land ecosystem and food chains.

Project work

8. Evaluation

Two ill-course tests and a semester final test. Practical examination.

Textbooks:

1. Hosanna, I. Z., (1974). *An Introduction to the Wildlife of Bangladesh*,
2. Odum, P.P. (1971), *Fundamentals of Ecology*. W.B. Saunders Company, Philadelphia London, Toronto
3. Verma, V.S. and V.K. Agarwal (1995), *Environmental Biology (Principle of Ecology}*, S. Chand & Company Ltd., India.
4. কে এম আওরঙ্গজেব (২০০২), *প্রাণী পরিবেশতত্ত্ব*, কবির পাবলিকেশন্স, ঢাকা

Course Code	230383	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Statistics Paper-IV			

Subject Code–614 (Paper–IV): Applied Statistics–II

Marks: 75

Course Description

Objectives of the Course

Contents

Unit 1 : Analysis of Variance

Concepts, Definition & assumptions. One way, Two way & Three way classifications, Experimental Design & Sample Design, Principles of design. Basic designs: CRD, RBD, LSD, their relative efficiency, Analysis with missing values, ANOVA in different designs. Basic concepts of factorial experiments, 2^2 , 2^3 , Analysis, interpretation and uses of above mentioned factorial experiments.

Unit 2 : Sample Survey

Basic concepts of sample survey, relative advantages, disadvantages and suitability of complete and sample enumeration. Uses of sample survey, Role of sampling theory. Requirements of a good sample design. Population, sampling units Sampling frame and related problems. Basic principles of sample survey. Various steps involved in a sample survey. Pilot survey. Random or probability sampling and Non-random or purposive sampling. Mixed sampling.

Different types of errors associated with sampling such as sampling errors & Non sampling errors and complete enumeration. Various methods of data collection, Questionnaire and schedule. Preparation of questionnaire. Different types of random sampling. Details study of Simple random sampling, Stratified random sampling and Systematic Sampling.

Unit 3 : Advanced Linear Algebra

Vector space, Subspace, Linear independence, Basis & Dimension, Inner product, Length, Orthogonal Length, Orthogonal basis, Orthogonalisation Process, Matrices & their properties, Matrix operations and their uses in Statistics. Inverse of matrices and their properties. Orthogonal, Idempotent, Patterned matrices and their properties and uses in Statistics.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

- a) Internal Examinations 15+15=30
- b) External Examination=60
- c) Assignment/action research and class percentage, Performance =10

References

Practical Paper–II: Applied Statistics

Marks:

50

Analysis of CRD, RBD & LSD. Missing plot estimation with analysis. analysis of 2^2 , 2^3 and factorial experiments. Drawing of SRS, Estimation of parameters (mean & variance).

Computing different types of index number. Cost of living index number. Determination of trend and seasonal variation by different methods from time series data. Measurement of fertility and mortality, Calculation of rates & ratios, Construction of life table.

Uses of interpolation formulae for equal and unequal interval. Use of Stirling's, Bassel's and Langrange's interpolation formula. Numerical Solution if equation. Numerical integrations.

Course Code	230357	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper-IV: Programming			

UNIT 1 INTRODUCTION TO WEB DESIGN AND HTML	The student will be able to: 7. Describe the concept of web designing. 8. State the structure of website. 9. Explain the concept of HTML	• Concept of web page design • Website structure • HTML Basic • Concept of HTML • Advantages of HTML • Introduction to HTML tags and syntax • HTML design and structure layout • Formatting • Hyperlink • Insert image and table • Publishing a website
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UNIT 2 PROGRAMMING LANGUAGE	The student will be able to: 5. Explain the concept of programming 6. Describe the various programming languages	• Concept of program • Programming language • Machine language • Assembly language • Midlevel language • High level language • 4th Generation Language (4GL) • Translator Program • Organize a program • Algorithm • Flowchart
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COMPUTER NETWORKING

UNIT 3 COMPUTER NETWORKING	The student will be able to: 7. Describe the concept, types of computer networking. 8. Identify the hardware and software required for computer networking. 9. Configure a computer network in an educational setting.	• Computer networks, concepts, types of computer networks. • Configurations, layers and protocol of computer networks. • Hardware and software for computer networks.
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COMPUTER TROUBLESHOOTING

UNIT 4 HARDWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in hardware	• Power system and power protection • Peripherals and their functionality (Printers, Monitors, Scanners, Speakers, etc.) • Basic computernetworking (LAN), Internet connection using modem and router/gateway • Computer assembly, disassembly and installations • Adding new hardware, device driver installation • common problems and solutions
UNIT 5 SOFTWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in software.	• Operating systems basics; • BIOS setup • Operating System installation • Install and uninstall application software • Virus protection and security issues

Area-IV:

Course Code	230385	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Accounting Paper-IV: Cost Accounting			

Unit 1: Introduction

Nature of Cost Accounting, Meaning, Objects, Importance and Advantages of Cost Accounting – Essentials of a Cost Accounting System – Relationship

between Cost Accounting and Financial Accounting – Methods of Costing – Limitations of Cost Accounting.

Unit 2 : Cost Concepts:

Cost terms – Expenses – Elements of Cost – Classification of Cost – Preparation of Cost Sheet.

Unit 3 : Materials

Direct and Indirect Materials – Procurements of Materials – Storage of Materials – Materials Record – Methods of valuing Material Issues – Planning Material requirements – Stock Levels – EOQ – Safety Stock – Preparation of stores Ledger.

Unit 4 : Labour

Labour Cost control – Recording of time – Methods of Remuneration – Incentive plans – Wages Calculation – Payment of Wages – Wages Abstract.

Unit 5 : Overhead

Planning and Control of Overhead – Predetermined Factory Overhead Rate – Preparation of Departmental Distribution Summary, Machine Hour Rate.

Unit 6 : Job and Batch Costing

Preparation of Job Cost Sheet – Batch Costing Procedures.

Unit 7 : Contract Costing

Nature and Procedure – Contract account – National Profit – Determination of Profits or losses on incomplete contracts.

Unit 8 : Double entry system in Cost Accounting:

Cost Ledger Control Account – Reconciliation of Cost and Financial Statements.

Unit 9: Process Costing

Definition, Features, Objects, Importance – General Process & Inter Process Profit.

Unit 10 : Operating Costing

Nature and Procedure – Preparation of Operating Cost Sheet.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations $15+15=30$

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References:

Matz and Usry : Cost Accounting

Basn and Das : Cost Accounting

Weldon : Cost Accounting

M.C Shukla, T.S Grewal & M.P Gupta : Cost Accounting

Course Code	230387	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Management Paper-IV: Business Communication			

Course Description**Objectives of the Course****Contents****Unit 1 : Introduction**

Meaning of communication and business communication – Scope – Purpose – Process – Principles – Functions – Importance and models of communication – Barriers to effective communication and improvements of communication – Communication Problems in Bangladesh.

Unit 2 : Types of Communication

Written – Oral – Nonverbal – Downward – Upward – Formal – Informal – Horizontal.

Unit 3 : Major Media of Written Communication

Letters-memos – Style and structure – Advantages and disadvantages of different media of written communication.

Unit 4: Major Media of Oral Communication

Speech-Face to face conversation – interviews – Meetings - Advantages and disadvantages of different media of good communication – Mass communication.

Unit 5: Non-Verbal Communication

Symbols – Gesture – Body Language – Visual communication.

Unit 6: Internal Communication

Communication within organization and small groups – Office memos.

Unit 7: Technology in Modern Communication

Electronic media in oral and written communication- Telephone-FAX-ISD - Computer-Internet-E-mail-Multimedia and business related software.

Unit 8: Report Writing

Types of report – Characteristics and importance of different types of report- Purpose-Scope-Different styles of writing reports – preparation of report.

Unit 9: Employment Communication

Application and resumes- Employment letters – Interviews and joining.

Unit 10: Letter Writing

Drafting business letters – Selecting formats – Characteristics of business letter – Functions of a first middle and last paragraph – Types of letter – official letter – Circular letter – Letter of inquiry – Letter of order – Letter of complaints – Dunning letter – Letter of adjustment Letters Banking and Insurance company.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations 15+15=30

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References

Course Code	230389	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Marketing Paper-IV: Marketing Management			

Course Description

Objectives of the Course

Contents

Unit 1: Introduction

Definition, tasks, marketing management process, marketing challenges in the new millennium.

Unit 2 : Strategic Planning

Meaning, steps in corporate and division strategic planning, business unit strategic planning, marketing planning, implementation and control.

Unit 3: Product Strategy

Individual product / service decision, product line decisions, product mix decisions, new product development, strategies at different stages of product life-cycle.

Unit 4: Pricing Strategy

Steps in setting the price, new product price strategies, product mix pricing strategies, price adjustment strategies and price changes.

Unit 5 : Distribution Strategy

Channel design decisions, channel management decisions, channel dynamics, channel conflict, co-operation and competition, physical distribution and logistics management.

Unit 6 : Promotion Strategy

Advertising- meaning, importance, major decisions, personal selling- definition, personal selling process, sales promotion- objectives, tools, public relations- major tools and decisions, direct marketing- growth and benefits, forms, online marketing.

Unit 7 : Dealing with the Competition

Steps of competitor analysis, market leader, challenger, follower, and nicher strategies.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations $15+15=30$

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References

Course Code	230391	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Finance and Banking Paper-IV: Financial Management			

Course Description

Objectives of the Course

Contents

Unit 1 : Introduction

definition and Importance of financial management, Functions of financial manager, Goals of financial management, organization of financial management.

1. **Capital budgeting under Uncertainty:** Techniques and applications of capital budgeting, Risk and capital budgeting, Cash flow adjustment and expected cash flow.

Unit 2 : Financial Statement Analysis

Definition and Importance, Principal tools of financial analysis, Ratio analysis, Major Users of Financial Analysis.

Unit 3 : Cost of capital: Significance of cost of capital, Meaning of opportunity cost, Different sources of capital and its cost, Weighted average cost of capital and marginal cost of capital.

Unit 4 : Capital structure: Definition, Characteristics and factor influencing capital structure, Theories of capital structure.

Unit 5 : Dividend policy

Introduction and factor influencing dividend policy, Types of dividend policy – cash dividend versus stock dividend, stock split; relationship between dividend policy and method of financing.

Unit 6 : Working capital management

need for working capital, Determinates of working capital, working capital financing, working capital cycle and estimating working capital requirements.

2. Management of cash and inventories.

3. Financial management in Bangladesh.

5. Assignment/action research and class percentage

Students will submit assignment/action research on due date based on contents by the instruction of their relevant teacher. Assignment and class percentage belongs to 10 marks.

6. Evaluation

a) Internal Examinations $15+15=30$

b) External Examination=60

c) Assignment/action research and class percentage, Performance =10

References

Course Code	230357	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper-IV: Programming			

UNIT 1 INTRODUCTION TO WEB DESIGN AND HTML	The student will be able to: 10. Describe the concept of web designing. 11. State the structure of website. 12. Explain the concept of HTML	• Concept of web page design • Website structure • HTML Basic • Concept of HTML • Advantages of HTML • Introduction to HTML tags and syntax • HTML design and structure layout • Formatting • Hyperlink • Insert image and table • Publishing a website
UNIT 2 PROGRAMMING LANGUAGE	The student will be able to: 7. Explain the concept of programming 8. Describe the various programming languages	• Concept of program • Programming language • Machine language • Assembly language • Midlevel language • High level language • 4th Generation Language (4GL) • Translator Program • Organize a program • Algorithm • Flowchart

COMPUTER NETWORKING

UNIT 3 COMPUTER NETWORKING	The student will be able to: 10. Describe the concept, types of computer networking. 11. Identify the hardware and software required for computer networking. 12. Configure a computer network in an educational setting.	• Computer networks, concepts, types of computer networks. • Configurations, layers and protocol of computer networks. • Hardware and software for computer networks.
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COMPUTER TROUBLESHOOTING

UNIT 4 HARDWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in hardware	• Power system and power protection • Peripherals and their functionality (Printers, Monitors, Scanners, Speakers, etc.) • Basic computer networking (LAN), Internet connection using modem and router/gateway • Computer assembly, disassembly and installations • Adding new hardware, device driver installation • common problems and solutions
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UNIT 5 SOFTWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in software.	• Operating systems basics; • BIOS setup • Operating System installation • Install and uninstall application software • Virus protection and security issues
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Area-V:

Course Code	230393	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Information Science and Library Management Paper- IV			

Course Code	230395	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	Home Economics Paper- IV			

Course Code	230357	Marks: 100	Credits: 4	Class Hours: 60
Course Title:	ICT Education Paper-IV: Programming			

UNIT 1 INTRODUCTION TO WEB DESIGN AND HTML	The student will be able to: 13. Describe the concept of web designing. 14. State the structure of website. 15. Explain the concept of HTML	• Concept of web page design • Website structure • HTML Basic • Concept of HTML • Advantages of HTML • Introduction to HTML tags and syntax • HTML design and structure layout • Formatting • Hyperlink • Insert image and table • Publishing a website
UNIT 2 PROGRAMMING LANGUAGE	The student will be able to: 9. Explain the concept of programming 10. Describe the various programming languages	• Concept of program • Programming language • Machine language • Assembly language • Midlevel language • High level language • 4th Generation Language (4GL) • Translator Program • Organize a program • Algorithm • Flowchart

COMPUTER NETWORKING

UNIT 3 COMPUTER NETWORKING	The student will be able to: 13. Describe the concept, types of computer networking. 14. Identify the hardware and	• Computer networks, concepts, types of computer networks. • Configurations, layers and protocol of computer networks. • Hardware and software for
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	software required for computer networking. 15. Configure a computer network in an educational setting.	computer networks.
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COMPUTER TROUBLESHOOTING

UNIT 4 HARDWARE TROUBLESHOOTING	Student will be able to: Understand the operations of basic trouble shooting in hardware	• Power system and power protection • Peripherals and their functionality (Printers, Monitors, Scanners, Speakers, etc.) • Basic computer networking (LAN), Internet connection using modem and router/gateway • Computer assembly, disassembly and installations • Adding new hardware, device driver installation • common problems and solutions
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