BHADRAK AUTONOMOUS COLLEGE

BHADRAK- 756100, ODISHA

COURSES OF STUDIES

FOR

THREE- YEARS DEGREE COURSE

IN

SCIENCE

First Semester Examination - 2017

Second Semester Examination- 2018

Third Semester Examination- 2018

Fourth Semester Examination - 2019

Fifth Semester Examination - 2019

Six Semester Examination- 2020

SYLLABUS STRUCTURE FOR B.Sc. (CORE COURSE)

FIRST SEMESTER (WITH PRACTICAL)

SUBJECT	PAPER		FULL MARK		CREDIT		MID SEMESTER	END SEMESTER
	TH	PR	TH	PR	TH	PR		
AECC(ES)			50		2		10	40
CORE COURSE	C.C-1	C.C-1	60	25	5	1	15	60
	C.C-2	C.C-2	60	25	5	1	15	60
GENERIC ELECTIVE	G.E-1	G.E-1	60	25	5	1	15	60
TOTAL MARKS			230	75	17	3	55	220

SECOND SEMESTER (WITH PRACTICAL)

SUBJECT	PAPER		FULL MARK		CREDIT		MID SEMESTER	END SEMESTER
	TH	PR	TH	PR	TH	PR		
AECC(ES) (Eng/od/Hn/ur			50		2		10	40
CORE COURSE	C.C-3	C.C-3	60	25	5	1	15	60
	C.C-4	C.C-4	60	25	5	1	15	60
GENERIC ELECTIVE	G.E-2	G.E-2	60	25	5	1	15	60
TOTAL MARKS			230	75	17	3	55	220

THIRD SEMESTER (WITH PRACTICAL)

SUBJECT	PAPER		FULL MARK		CREDIT		MID SEMESTER	MID SEMESTER
	TH	PR	TH	PR	TH	PR		
CORE COURSE	C.C-5	C.C-5	60	25	5	1	15	60
	C.C-6	C.C-6	60	25	5	1	15	60
	C.C-7	C.C-7	60	25	5	1	15	60
SEC	P-1		50		2		10	40
GENERIC ELECTIVE	G.E-3	G.E-3	60	25	5	1	15	60

TOTAL MARKS			290	100	22	4	70	280

FOURTH SEMESTER (WITH PRACTICAL)

SUBJECT	PAPER		FULL MARK		CREDIT		MID SEMESTER	MID SEMESTER
	TH	PR	TH	PR	TH	PR		
CORE COURSE	C.C-8	C.C-8	50	25	5	1	15	60
	C.C-9	C.C-9	60	25	5	1	15	60
	C.C-10	C.C-10	60	25	5	1	15	60
SEC	P-2		50		2		10	40
GENERIC ELECTIVE	G.E-4	G.E-4	60	25	5	1	15	60
TOTAL MARKS			290	100	22	4	70	280

FIFTH SEMESTER (WITH PRACTICAL)

SUBJECT	PAPER		FULL MARK		CREDIT		MID SEMESTER	MID SEMESTER
	TH	PR	TH	PR	TH	PR		
CORE COURSE	C.C-11	C.C-11	60	25	5	1	15	60
	C.C-10	C.C-10	60	25	5	1	15	60
DSE	DSE-1	DSE-1	60	25	5	1	15	60
	DSE-2	DSE-2	60	25	5	1	15	60
TOTAL MARKS			240	100	22	4	60	240

SIXTH SEMESTER (WITH PRACTICAL)

SUBJECT	PAPER		FULL MARK		CREDIT		MID SEMESTER	MID SEMESTER
	TH	PR	TH	PR	TH	PR		
CORE COURSE	C.C-13	C.C-13	60	25	5	1	15	60
	C.C-14	C.C-14	60	25	5	1	15	60

DSE	DSE-3	DSE-3	60	25	5	1	15	60
		DSE-4		100		6		100
TOTAL MARKS			180	75	15	9	45	280

ENVIRONMENT STUDIES

SEMESTER-1

Ability Enhancement Compulsory Course (AECC)

(2 CREDIT) F.M-50(40+10)

Question must be set from all units with alternatives and each question will be both long and short answer type

UNIT-1 Introduction to environmental studies and ecosystem

- Scope and importance of environmental studies.
- What is ecosystem? Structure and function of ecosystem;
  Energy flow in an ecosystem; Food webs and ecological succession study of the ecosystem (forest ecosystem, pond ecosystem)

UNIT-2 Natural Resources: Renewable and Non-Renewable Resources.

- Land resources and land use change; Lavel degradation and soil erosion.
- Reforestation: causes and impacts due to mining, dam building on
- Environment. Forests, biodiversity and tribal population.
- Water use and over –exploitation of surface and grand water, draughts.
- Energy recourses: Renewable and non-renewable energy sources, use of alternate energy source.

UNIT-3 Biodiversity conservation and Environmental issues.

- Level of biology diversity: genetic, species and ecosystem diversity; Bio geographic zones of India; Biodiversity patterns and global biodiversity hot sports.
- India as a Mega-biodiversity nation; Endangered and endemic species of India.
- Threats to biodiversity. Habital-loss, poaching of wildlife, Man wild life conflicts; conservation of biodiversity: In sity and Ex-sity conservation of biodiversity.

- Human population growth: Impact on environment, disaster management(Food , Cyclone, Earthquake) Environmental Movements (Chipko, Silent-valley, Bis-nois of Rajasthan)

UNIT-4 Environmental pollution and policies.

- Environmental pollution: Traps, causes, effects and controls; Air, water, soil and noise pollution.
- Solid waste management control measures of urban and industrial waste.
- Climate change, global warming, ozone layer depletion acid main and impacts on human communities and agriculture.
  Environmental laws: Environment pollution Act; Air (prevention and control of pollution) Act; Forest conservation Act.

Suggested Readings:-

1. Sharma, P.D Ecology & Environmental Biology
2. Dash, M.C. Fundamental of Ecology
3. Rana, S.V.S Environmental Studies

Semester-II

Paper-2. 1: Ability Enhancement Compulsory Course (AECC)

(In English/Odia /Hindi/Urdu)

Duration -2 hour, Mid sem-10, End Sem-49, F.M-50

Question must be set from all units with alternatives and each question will be both long and short answer type

English

This course at enhancing the English Language proficiency of undergraduate student in Human and preparing them for the academic, social and professional expectation during and after the course. The course will help develop academic and social English competencies in speaking, listening, reading, writing, grammar and usage.

The course will have 2 credits (50 marks), Mid-Sem (Internal Assessment)-10 Marks at End Sem -40 Marks. These shall be 3 units.

Unit-I : Reading skills, summary, paraphrasing. Analysis, interpretation, knowledge, literary texts. Candidates shall have to answer 3 questions carrying 5 marks each from the prescribed text.

Text prescribed: Forms of English Prose (OUP)

Pieces to be studied:
1. The Lament – Anton Chekov
2. The Umbrella- G.D Maupassant
3. The barber's Trade Union –M.R. Anand
4. The Axe – R.K. Narayan

Unit2: Writing Skill- Report, making Notes, Explain an idea / paragraph/CV/Resume information Transfer and Business Communication. The candidates shall have to answer questions carrying 7.5 marks each.

Unit-3 Grammar and usage: Sentence (Simple, Complex, Compound) , Clause (Noun Adjective, Adverb), Phrasal verb , models, Preposition, Subject- Verb Agreement , Common Error, Candidates shall have to answer 10 objective questions carrying 1 mark each.

ODIA

Ability Enhancement Compulsory Course (AECC)

Duration -2 Hours, Mid Sem -10, End emester-40, F.M-50

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ଓଡିଆ (AECC)

ଯେକୌଣଶୀ ୨ଟି ପାଠ ବାଛ

ପାଠ୍ୟ – ୧ : ଯୋଗାଯୋଗ ଅନୁବିଧି

୧ ମ ଏକକ : ଯୋଗାଯୋଗର ଭିତ୍ତି ପରିଭାଷା , ଅନୁବିଧି ଓ ପରିସର

୨ ୟ ଏକକ : ଯୋଗାଯୋଗର ପ୍ରକାରଭେଦ : କଥିତ, ଲିଖିତ, ବ୍ୟକ୍ତିଗତ – ସାମାଜିକ – ସାଂସ୍କୃତିକ ବ୍ୟବସାୟୀକ- ସାହିତ୍ୟିକ।

୩ ୟ ଏକକ : ଯୋଗାଯୋଗର ବାଧକ ଓ ସଫଳ ସାଧନାର ଦିଗ ।

୪ର୍ଥ ଏକକ : ଯୋଗାଯୋଗର ସାହିତ୍ୟର ଭୂମିକା ।

୫ମ ଏକକ : ସରଳ ଯୋଗାଯୋଗର ଭାଷା ।

Hindi

Ability Enhancement Compulsory Course (AECC)

Duration-2 Hours, Mid Sem-10, End Sem-40, F.M-50

Unit-1

हिंन्दी भाषा संम्प्रोषण

(१) भाषा को परिभाषा, प्रकृति एबं विविध रुप (मौखिक, लिखित,राष्ट्रभाषा,राजभाषा)

Unit-2

(२) हिंन्दी की वर्ण ब्यवस्था-स्वर एबं ब्यंजन-प्रकारभेद स्वर- (ह्रस्ब,दीर्घ,और संयु
ब्यंजन- (स्बर्ष,अंतस्थ, उष्म, अल्पप्राण, घोष तथा अघोष)

Unit-3

हिंन्दी ब्यकरण और संम्प्रेषण

१. पर्यायवाची शब्द, बिलोम, अनेक शब्दों के लिए एक शब्द

Unit-4

(१.)शब्द शुदि, मुहाबरें और लोकोवितयाँ

Unit-5

हिंन्दि संम्प्रषण की अवधारणा और महत्व

<u>Mark Distribution</u>:

Unit-1 से mid Sem Exam. के सवाल –(10 Marks)

Unit-2, 3, 4, 5& 6 से –End Sem Exam 08 x 5=(40 Marks)

<u>Book for Referance:</u>

(१) आधुनिक हिन्दी ब्यकरण और रचना- बसुदेव नंदन प्रसाद

(२) प्रयेगिक हिन्दी – डा.गु.म. खान् –सबनम् बुक् ष्टीर, कटक

(३) प्रयोजन मूलक हिन्दी – कैलास चंद भाटिया

URDU

Internal Assessment: Time 1 Hr. Full Marks-10

Semester Assessment: Time-2 Hr. Full Marks-40

Unit-1 PROSE (12)

1. Mujhe mera Dost se Bachao- Sajjad Haider
2. Chema ka Ishq – Pitras Bukhari
3. Haj-e-Akbar-Prem Chand
4. Aakhri Qudam –Zakir Hussain

There shall be one long wuestion with alternative carrying 12 marks.

Unit-2: POETRY (12)

1. Naya Shewala- Mohmmad Iqbal
2. Aasmi Nama-Nazir Akbar Aabadi
3. Kashmir- Durga Sahy Suroor
4. Nasha-re-Ummid – Altaf Hussain Hali

There shall be one long question with alternative carrying 12 marks.

Unit-3: GRAMMAR (8)

Ism, Sifat, Fail, Wahid-o-Jama, Mutazad Alfaz, Mutashabeh Alfaz, Tazkeer-o-Tanees.

There shall be one question with alternative carrying 8 marks.

Unit-4: RHETORIC (8)

Tashbeeh, Istear, Kenaya, Majaz-e-Mursal, Tazad, ham, Maratun Nazir.

There shall be one question with alternative carrying 8 marks.

SUGGESTED READING:

1. URDU ZABAN-O-QAWAID-PART (I)- SHAFA AHMED SIDDIQI
2. IL MUL BALAGHAT – ABDUL MAJID

SEMESTER-III

SEC-I

Question must be set from all units with alternatives and each question will be both long and short answer type

Duration- 2 Hrs, Mid Sem -10, End Sem-40, Total Marks-50

Communicative English

There shall be one paper in communicative English of skill enhancement course of Arts/Science students of +3 2nd Yr. 3rd Semester carrying 40 marks and will be of 2 hours duration.

Paper-I: Skill Enhancement Course of Arts/Science and Commerce students

This course aims at enhancing the English Language of Arts/ Science / Commerce proficiency of undergraduate students of ARTS, SCIENCE and COMMERCE in humanity and preparing them for the academic, social and professional expectations during and after the course. The course will help to enhance communicative skill and social English competencies in speaking , listening, reading, writing, Grammar ad Usage.

The course will have 2 credits (50 Marks)

Mid semester-10 marks Time, 1 Hour End Sem 40 marks Time 2 hours (there Shall be 3 units)

Candidates shall have to attempt one long answer type question carrying 4 marks from each until. Alternative questions will be set (from each) against each question.

Unit-1 Communication: The concept, purpose of communication,

Types of Communication, Verbal Communication,

Non-verbal Communication, Non-verbal Communication: Body Language

Business Communication, Barriers to communication,

Overcoming communication Barriers

How to sender can overcome communication barriers

How to receive can overcome communication barriers.

Developing effective messages

UNIT-II How can we make communication effect?

Listening

Clarity and Brevity of ideas

The “you” Attitude

Simple and plain English, positive attitude and Bias free language

Computer- Mediated Communication (CMC)

UNIT-III A. How we speak English: The Respiratory system

The Phonatory system, The Articulator System,

International Phonetic Alphabet (IPA), Transcription

Vowels of English, Consonants of English, Varieties of English,

Standard English, American English, Indian English,

Word Stress: Functions of Word stress in English, Intonation

B. Grammar: Aid to communication

Time and Tense: Aspect of Event verb and state verb

Concord. Finite verb and Non-finite verbs,

Interrogatives: Open Questions, Closed Questions and : Rhetorical Questions

Books prescribed:

Smith L.E. Readings in English as an international Language, Oxford, Pergamon press (1983)

Banasal. R.K and J.B Harrison- Spoken English – A manual of speech and phonetics. Madras Orient Longman 1972

Dr. Das Shruti, Contemporary Business Communication New Delhi, S.Chand Publising, 2008.

O. Conner. J.D Better English pronunciation, 2nd ed. Cambridge, Cup, 1980.

Division of marks:

Unit-I (1) One long answer type question carrying 8 marks- 1x8=08

(2)Two short answer type Questions carrying 4 marks each-2x4=08

UNIT-II (1) One long answer type question carrying 8 marks – 1x8=08

(2)Two Short answer type questions carrying 4 marks -2x4=08

UNIT-III (1) One long answer type question carrying 8 marks -1x8=08

(2)Two short answer type questions carrying 4 marks each - 2x4=08

COMPUTER SCIENCE

SEMESTER-I

DURATION-3HRS. CORE COURSE-1 MID SEM- 15 END SEM-60

PROGRAMMING USING C

UNIT-1

Introduction to programming Language: Introduction to C Programming, C Tokens, Characters set, Keywords & Identifiers, Constants, Variables, Data Types, Operators (Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Increment & Decrement), Type Conservations, Expressions, Storage Classes, input and output Operations/ Statements.

UNIT-2

Decision Making & Branching: Simple IF statement. IF ... EISE statement, Nested IF statement, EISE IF ladder, Switch Statement. Simple programs on these.

Decision making & Looping: The WHILE, DO... WHILE and FOR loops. Nesting of loops Jumping statements (BREAK & CONTINUS), simple programs on these.

Arrays: Concepts & Programming on One and Two Dimensional Arrays. Character Array & Strings.

UNIT-3

Functions: Concepts & category. User defined functions: Definition, Need, Elements & parts. Function prototype, Definition & calls. Call by value vis call by Address. Types of parameters & recursion.

Structures & Unions: Definition, Accessing & Initialisation of structures. Arrays vis Structures, Array of Structures, Array Of Structures, Arrays within Structures. Unions. Structures vis Unions.

UNIT-4

Pointers: Concepts of points, Accessing the Address of a variable, Declaring pointer Variables, Initialisation of pointer Variables, Accessing a variable through its pointer, chain of pointer Arithmetic, pointer Expressions, pointer to function, pointer to Array, pointer to character Array or String, Array or pointers.

UNIT-5

Fill managements in C: Defining a file, Opening a file, closing a file, input/ output Operations on files, functions on file, functions of file, Headlining of I/O operations of files, Related Simples programs, Dynamic Memory Allocation.

PRACTICAL

1. Writing a programme for swapping of two numbers.
2. Writing a program to display the Students Details.
3. Write a program to find the Fibonacci Series.
4. Write a program to find the factorial of a given number.
5. Write a program to find the pyramid cal output.
6. Write a program to find the sum of the series.
7. Write a program to find out addition of two numbers using function.
8. Write a program to reverse a string & to check for PALINDROME.
9. Write a program for factorial of a number using recursion concept.
10. Write a program for matrix addition using array.
11. Write a program for matrix multiplication using array.
12. Write a program to store the name, role no & mark using Structure.
13. Write a program for union.
14. Write a program for chain of pointers.
15. Write a program to open & close a file

Text Books:

The C programming Language: Balguruswamy

SEMESTER-I

COMPUTER ORGANISATION

UNIT-1

Character codes: Number System & its Types, Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Conversions of Number System, Boolean Algebra, Basic logic functions, Electronic Logic Gates, Synthesis of Logic functions, Minimization of Logic Expressions Minimization using Karnough Maps, Synthesis with NAND & NOR Gates.

UNIT-2

Flip flops, Gated Latches, Master- Slave fill flops, Edge Triggering flip flops, RS flip flops, T flip flops, D flip flops, JK-Flip flops, Registers, shift Registers, Counters, Decoders, Multiplexors, PLDs, PAL, PAL, PDLs, FPGA, Sequential Circuits.

UNIT-3

Basic Structure of Computer Types, functional units, input units, memory units, Arithmetic & Logic Units, control Units, output Units, Basic operational Concepts, Bus Structure, Software, Machine instructions & programs: Numbers, Arithmetic Operations & Characters, Software, Machine instruction, Addition of positive Numbers, Addition and subtraction of signed Numbers, Overflow of integer Arithmetic, Characters, Memory Locations & Address, Byte Addressability Operations, Instructions & Instruction Sequencing, Resister Transfer Notations, Basic Instruction Types, Instruction Executing & Straight Line Sequencing, Branching, Condition codes, Generating Memory Addresses, Implementation of variables & Constants.

UNIT-4

Addressing Modes: Types, Indirect, Direct, Pointers, Resisters, Indexing & Arrays, Immediate, Relative Addressing THE ARM EXAMPLE: Registers, Memory Access & Date Transfer, Register Structure, Memory Acess instructions & Addressing Modes Resister Move Instructions, Arithmetic & Logic Instructions: Arithmetic Instruction, Logic Instructions, Assembly Language.

UNIT-5

THE MEMORY SYSTEM: Semiconductor RAM memories, internal Organisation of memory Chips, Static Memories, SRMs, DRAMs, Asynchronous DRAMs, synchronous DRAMs, structure of Large memories: Static Memory Systems, Dynamic Memory Systems, Memory system Considerations, RAM BUS Memory, Read Only Memories: ROM, PROM , EPROM, EEPROM, flash Memory: Types & Difference from EEPROM, Speed, Size & Cost, secondary storage: Magnetic Hard Disks, Magnetic Tape Systems.

PRACTICAL

1. Brief study of structure of External parts of Computer Systems.
2. Brief study of structure of Internal parts of Computer system.
3. Briefly study Assembling of External Parts of Computer Systems.

4. Briefly study Assembling of Internal Parts of Computer Systems.
5. Brief Study of Structure of MOTHERBOARD of Computer System.
6. Brief Study of Structure of RAM of Computer Systems.
7. Brief Study of Structure of ROM of Computer Systems.
8. Brief Study of Structure of HARD DISK DRIVE of Computer systems.
9. Brief Study of Structure of External Connections of wiring of Computer Systems.
10. Brief Study of Structure of internal Connections of wiring of Computer Systems.

Text Books: Carl Hamachar, Z. Vranesic,

S.Zaky: Computer Organisation

SEMESTER-II

PROGRAMMING USING C^{++}

Unit-1

Principles of Object oriented programming: Object Oriented programming (OOP) paradigm, Basic Concepts & Features of OOPs, Benefits of OOPs, Applications of OOPs, OOP Languages, Beginning with C^{++} Concepts, Applications & Structures, C^{++} Tokens: Keywords, Identifiers & Rules of Naming, Constants & Types, Variables & Declarations, Dynamic Initialisation of Variables, Expressions & Types, Basic Data Types: User defined, Built in & Derived data types, operators in C^{++}: Arithmetic, Logical, Relational, Assignment, Conditional, Bitwise, Increment or Decrement, Memory management, member referencing, manipulators, Type cast operator precedence, Control Structures: Types & Simple Programs.

UNIT-2

Functions in C^{++} : Categories, The main function, parts of function, prototyping, Types of parameters: Actual & Formal parameters, call by value, call by Reference, Call by Address, Structure of class, Creation of Objects, Array of Objects, Access Specifies, Defining Member function inside & Outside the class, importance of Scope Resolution Operator, The Inline Functions, Nested member factions, friend functions, static Data Members, Static Member functions, function Overloading.

UNIT-3

Constructors & Destructure: Constructors, Characteristics, Types, Default Constructor, parameterised Constructor, copy Constructor, Dynamic Constructor, constructor overloading, Destructors & Characteristics, Differentiate Constructors, Operators Overloading: Rules for Operstor Overloading, Operator overloading using Unary Minus, Operator Overloading using Increment & Decrement Operstors, Operator Overloading using Binary Operators (+ & -), Overloading of Binary Operators by friend Function.

UNIT-4

Inheritance: Base & Derived classes, Visibility Modes, Types of inheritance: Single,Multiple, Multilevel, Hierarchical, Hybrid, Multipath Inheritance, Role of Virtual Base Class, polymorphism:

Bindings, static & Dynamic, Method Overriding, Virtual Functions, Pure Virtual Functions, Abstract Class, This pointers.

UNIT-5

Managing console I/O Operations: C^{++} Strems, C^{++} Stream classes, Unformatted Console I/O Operations, Formatted Console I/O Operations, Managing Output with Manipulators, files: Opening & closing of a file, Detecting End-of-file, Introduction to Template & Exceptions Handiling.

PRACTICAL

1. Writing a program in C^{++} for defining member functions inside & outside a class.
2. Writing a program in C^{++} for function Overloading.
3. Writing a program in C^{++} for friend function
4. Writing a program in C^{++} for inline function.
5. Writing a program in C^{++} for cell by Value, Call by Reference & call by Adress.
6. Writing a program in C^{++} for Operator Overloading.
7. Writing a program in C^{++} for Constructor Overloading.
8. Writing a program in C^{++} for Inheritance.
9. Writing a program in C^{++} for Virtual Function.
10. Writing a program in C^{++} for opening & closing a file.
11. Text Books:
12. Object oriented programming with C^{++} : E. Balguruswami

SEMESTER-II

DATABASE MANAGEMENT SYSTEM

UNIT-1

Database and Database Users, Database System Concepts and Arehitecture, Data Independence. Data Dictionary, Database Manager, Data modelling using the Entity. Relationship (ER) Model, Introduction to Enhanced Entity, Relationship (EER) Model.

UNIT-2

Relational Model: The Relational Data Model, Relational Database Constraints, Keys & Types. The Relational Algebra & Relational Calculus.

UNIT-3

Relational Database Design by ER to Relational Mapping, SQL & Languages, SQL Data Types, Schema Defination, Queries, Views. Introduction to SQL programming with Example.

UNIT-4

Functional Dependences & Types, Data Redundancy & Types, Armstrong's Axioms, Normalization for Relational Database, 1 NF, 2NF & 3 NF, BCNF, 4 NF & 5 NF. Summary of Normalization types, simple Database Examples.

UNIT-5

Disk Storage & Types, Hashing & Types, Indexing Structures for files, B-Tree with simple practical Examples.

PRACTICAL

1. Create STUDENT, EMPLOYEE & DEPT table with different types of Constraints.
2. Insert Data in the All Above said Tables.
3. Updating Data in the All Above said Tables.
4. Delete Data & Columns in the All Above said Tables.
5. Add Extra Columns in the All Above said Tables.
6. Rename & Deleted the Tables.
7. Create the view of the Tables.
8. Apply Arithmetic operators in the All Above said Tables.
9. Create two Tables & Retrieve Data through Reference Key.
10. Join of Two Tables.

Text Books: Fundamentals of Database Systems, Ramez Elmasri & shamkant B. Navathe, pearson, S/E.