AmbujaNeotia

THE NEOTIA UNIVERSITY

ज्ञानम् आत्म प्रदीपाय

UGC Enlisted & Recognised

GENERAL ELECTIVE COURSES

General Elective Subjects under the CBCS course curriculum

Contents

FOREWARD

General Electives are a basket of subjects, designed for the development of the personality, inherent competence, knowledge and understanding of a subject which is not a part of student's chosen core curriculum. This is aimed towards overall development and channelizing one's passion that will engage the other side of their brain for their holistic development.

Comprehensive coverage of the course is not the expectation – what is desired is to create an opportunity that will help our students with an understanding of the basic principles and framework that will develop the appreciation of the aesthetic, technical and philosophical underpinnings of the chosen General Elective subject.

It will be executed involving the learning tools, simulation, gamming and real life exposure inside and outside the teaching periphery.

The choice of GE may be beneficial for fulfilling students' inherent passions leading to advantage in future job opportunities, building entrepreneurial mind set leading to nurturing the hidden talent of our students.

Prof. (Dr.) Niloy Sarkar
Dean- Academics
The Neotia University

PROCEDURES TO BE FOLLOWED BY THE STUDENTS

- You are requested to go through the entire GE course curricula which are available in this booklet.
- You should shortlist your preferred GE subject(s) on your own after reading the available information in the booklet.
- You will be given a Google Form for the online selection of GE subject and the link will be activated sharply on a particular time and date, a centralized notification will be made in due course of time either from the office of the Dean Academics or the office of the Registrar of the university regarding the exact date and time for the GE subject selection.
- After signing in the form **with your official email id (e.g. ---------@tnu.in),** you have to fill up the details such as- name, TNU UID, Phone Number, Course Pursuing, Current Semester, etc. and finally you have to select your preferred GE subject from a drop down list and need to submit at the earliest.
- Once you select and submit a subject, the subject will be allotted to you automatically, subject to a cap of maximum 60 students per course.
- Once a subject is chosen by 60 students that same subject will be deleted from the GE subject list automatically in the Google Form.
- A 15 days' window will be starting from the time of the activation of the link and this will remain active for any change of GE subject, if at all you are interested for any kind of change. The request for any change are subject to availability of seats in that particular desired course.
- For the change of GE subject as mentioned in the above, you need to apply physically to the Dean Academics in pen and paper. After 15 days' window period, no request for change of GE subject will be entertained.

POINTS TO BE NOTED BEFORE THE SELECTION OF GE SUBJECT

- In the ensuing semester - Odd Semester 2022, we are offering a basket full of 58 General Elective (GE) subjects. You are free to choose any one GE subject which is not offered by your own department.
- There are 60 seats for each and every GE subject and the seat will be allotted on a first come first serve basis.
- Please keep your official email ID and password handy with you before you start filling the google form.
- You need to use only your official TNU email id (e.g. abcd.xyz@tnu.in) while filling up the selection form. No other email can be used to fill up the form.
- You are requested to select the subjects from the link provided at the earliest to get the maximum options for the selection.
- In this session, student of any semester of a programme will be eligible to choose any one of the available GE subjects offered by any other department (Other than offered by his/her own department) and there is no barrier of semester wise allotment i.e. a student of any semester can choose any GE subject.
- Please find the syllabi of all GEs given herewith for your reference. You should go through all the syllabi before you go for the selection of the GE subject.
- All GE Papers have equal credit of 2 (two).
- The GE classes will be held on every Wednesday in the last two periods starting from 3.10 PM to 5.10 PM.
- Those who have already opted for a certain GE paper in the last semester cannot opt for the same again.
- GE subject is mandatory for all students except 1st, 5th, 7th Semester B.Sc. (Hons) in Agriculture and 1st and 7th semester students of School of Pharmacy.
- English literature students are allowed to take the creative writing (GE-ENL001) as General Elective though it is offered by their own department.
- The students who are going for any internship programme, as specified in the course curriculum in the ensuing semester are excused for GE subjects' selection.
- For NCC, there is a prerequisite of physical height of a student:

  Height for Male students - 157.5cm and for Female students - 152cm (For Gurkha and students from North-Eastern states, height may be relaxed up to 05cm less than the normal requirements)
- The competent authority may hold the right to change anywhere in the contents of this booklet with or without prior intimation to any end user.

1. BASIC NUTRITION (GE-HML001)

Course Instructor:
Prof. Atrayee Bandyopadhyay

Offering School	Offering Department
School of Health Sciences	Hospital Management

COURSE OBJECTIVES

- To understand the importance of food for the healthy body
- To enable students to understand the importance of nutrition and balance diet
- To understand the concept & functioning of essential nutrients

LEARNING OUTCOMES

On successful completion of the course, the students will be able to-

- Understand the definition, types & importance of nutrients
- Understand the Functions of Food
- Understand the Food Groups
- Understand Macro & micro nutrients
- Understand the Concept, Dietary Sources and its' functions in human body Deficiency/Excess nutritional disorders associated with each of nutrients
- Understand the Types of Diets given to patients in hospitals

SYLLABUS

- Nutrients: Definition, types, Importance, Relationship between food nutrition & health
- Functions of Food-Physiological, psychological and health
- Food Groups: Brief idea about following: Cereals, Pulses, Fruits & Vegetables, Milk & Milk products, Eggs, Meat, poultry and Fish, Fats & Oils
- Classification of nutrients- Macro & micro nutrients
- Carbohydrates- Concept, Dietary Sources, Functions in human body, Deficiency/Excess nutritional disorders
- Proteins- Concept, Dietary Sources, Functions in human body, Deficiency/Excess nutritional disorders
- Fats- Concept, Dietary Sources, Functions in human body, Deficiency/Excess nutritional disorders
- Vitamins-Concept, Classification a) Fat Soluble Vitamins- A, D, E & K- Dietary Sources, Functions, Deficiency disorders b) Water Soluble Vitamins-B & C- Dietary Sources, Functions, Deficiency disorders
- Minerals- Concept, Types, Dietary Sources, Functions, Deficiency disorders
- Types of Diets given to patients in hospitals

2. BASICS OF PHYSIOTHERAPY (GE-BPTL003)

Course Instructor:
Dr. Amrit Biswas

Offering School	Offering Department
School of Health Sciences	Physiotherapy

COURSE OBJECTIVES

Subject aims to introduce the students to history of Physiotherapy profession. It will introduce them to the outline of examination, exercise therapy and electrotherapy. Student will get theoretical knowledge of what is the role and purpose of Physiotherapy profession.

LEARNING OUTCOMES

Understand the need of Physiotherapy and its role in different settings. Describe different types of exercises. The student will be able to self-manage minor injuries.

SYLLABUS

- **Introduction to Physiotherapy**
  - a. Definitions by different organisations
  - b. History of Physiotherapy
- **Role of Physiotherapist**
  - a. What does a physiotherapist do in different settings?
- **General examination**
  - a. SOAP assessment
  - b. Musculoskeletal assessment
  - c. Cardiorespiratory assessment
- **What is Exercise therapy?**
  - a. Introduction
  - b. Types of exercises - passive, active and relaxation exercises
- **What is Electrotherapy?**
  - a. Introduction
  - b. Common modalities – Cryotherapy, heat therapy and TENS.

3. BASICS OF PYTHON FOR BEGINNERS (GE-CSEL007)

Course Instructor:
Prof. Sandipan Chakravorty

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

- Master the fundamentals of writing Python scripts
- Learn core Python scripting elements such as variables and flow control structures
- Discover how to work with lists, tuples, dictionary and sequence data
- Write Python functions to facilitate code reuse
- Use Python to read and write files
- Use Python to perform CRUD operations using DB
- Make their code robust by handling errors and exceptions properly
- Work with the Python standard library
- Explore Python's object-oriented features
- Search text using regular expressions

LEARNING OUTCOMES

- Problem solving and programming capability.
- Python can be used to develop prototypes, and quickly because it is so easy to work with and read.
- Most automation, data mining, and big data platforms rely on Python. This is because it is the ideal language to work with for general purpose tasks.
- Python allows for a more productive coding environment than massive languages like C# and Java.
- Python is easy to read, even if you're not a skilled programmer.
- It has a massive support base thanks to the fact that it is open source and community developed.

SYLLABUS

UNIT I - ALGORITHMIC PROBLEM SOLVING:

Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms.

UNIT II - DATA, EXPRESSIONS, STATEMENTS:

Python interpreter and interactive mode; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments.

UNIT III - CONTROL FLOW, FUNCTIONS:

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Productive functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays.

UNIT IV - LISTS, TUPLES, DICTIONARIES:

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing - list comprehension; Introduction to JSON data format.

UNIT V - FILES AND EXCEPTION:

text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.

UNIT VI - OBJECT ORIENTED PROGRAMMING IN PYTHON:

Python Classes, Methods, Constructors, Class variables & Instance Variables, Basic inheritance, Special methods, Data Hiding. Use of Regular expressions.

UNIT VII - INSTALL PYTHON MYSQL CONNECTOR:

MySQL-Connector-Python module in Python. Connect MySQL database using MySQL-Connector Python. Use CRUD operations with external db and SQLITE DB

4. CLIMATE CHANGE AND ITS IMPACT ON LIFE (GE-AGL004)

Course Instructor:
Prof. Chandra Mukherjee

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

- To improve awareness and understanding of climate change amongst students
- To demonstrate that daily activities can collectively make a big difference and that each individual has a role to play in the fight against climate change
- To impart knowledge about different climate change mitigation strategies and options.
- To provide overview of GHG emission calculation methods and approaches
- To provide the knowledge and tools to devise effective strategies for climate mitigation on a global, sectoral and local scale.

LEARNING OUTCOMES

Upon completion of this course, a fully engaged student will be able to:

- Understand the need of awareness and individual role to control climate change.
- To calculate GHG emissions using different approaches.
- To demonstrate the impact of climate change on the living world.
- To impart the knowledge of the important policy instruments available nationally or internationally in mitigation.

SYLLABUS

- **Introduction to the history of Climate Change**

  In this module basic concept related to climatology and contribution of GHG emissions in current global change will be discussed. Heat Transfer, Simple Global Temperature Model, Black body radiation. Climate change response measures: definition and evolution and current status. A comparative study with introduction to mitigation of GHGs and stabilization scenario; Characteristics of mitigation in regional and national context; long term and short-term mitigation options; mainstreaming climate change in development.

- **Area specific sources with per capita allocation and Sector Based Approaches**

  The module will focus on available sectoral specific approaches of mitigation, the major sectors will be covered are– transport, power, agriculture, municipal waste, specific industries, and buildings. Mitigation from cross sector perspective and its linkages with sustainable development will also be discussed using case study-based approach.

- **Emission computation techniques**

  The module discusses various GHG emissions calculation techniques based on scientific principles of energy and carbon intensities. It will cover integrated assessment models; EIA & Life Cycle Assessment based techniques. Methodologies for regional GHG inventories; IPCC good practice guidelines for National greenhouse gas inventories.

- **Impact on life and Role of individual**

  Practical work on biodiversity index study in the campus. Carbon footprint measurement, Tree fixation, Zero emission, C neutral and C sink.

5. DIABETES AND HYPERTENSION MANAGEMENT (GE-BPTL002)

Course Instructor:
Dr. Haimanti Goswami

Offering School	Offering Department
School of Health Sciences	Physiotherapy

COURSE OBJECTIVES

The course will give the students a theoretical idea about the different lifestyle disorders commonly seen. This covers non-communicable diseases and the risk factors that can aggravate the diabetes and hypertension.

LEARNING OUTCOMES

Understand and discuss the clinical presentation of diabetes mellitus and metabolic syndrome. Understand the importance of early diagnosis, prevention and management of hypoglycaemia. Describe the evidence for the use of lifestyle modifications in the achievement of optimal glycaemic goals.

SYLLABUS

SECTION A

- **Introduction**
  a. Brief history of Diabetes
  b. Definition and Classification of Diabetes.
- **Clinical features and diagnosis**
  a. Clinical presentation of Diabetes
  b. Complications of Diabetes (Overview)
  c. Screening and Diagnosis of Diabetes
- **Non-pharmacological management of diabetes**
  a. This module talks about the various non-pharmacological strategies employed in the management of diabetes, and covers in brief the aspects related to diet prescription in diabetes, exercise planning in diabetes, tobacco cessation and stress management.

SECTION B

- **Fundamentals of Hypertension**
  a. Epidemiology of Hypertension
  b. Pathophysiology of Hypertension
  c. Risks of Hypertension
  d. Diagnosis and Investigations of Hypertension
- **Clinical features and diagnosis**
- **Non-pharmacological management of Hypertension.**
  a. This module talks about the various non-pharmacological strategies employed in the management of hypertension, and covers in brief the aspects related to diet prescription in Hypertension, exercise planning, tobacco cessation and stress management.

6. DIAGNOSTIC TESTS AND ITS IMPLICATION- AN UNDERSTANDING (GE-BML001A)

Course Instructor:
Prof. Swarnava Biswas

Offering School	Offering Department
School of Health Sciences	Medical Laboratory Technology

COURSE OBJECTIVES

Diagnostic tests are approaches used in clinical practice to identify with high accuracy the disease of a particular patient and thus to provide early and proper treatment. An accurate and timely diagnostic with the smallest probability of misdiagnosis, missed diagnosis, or delayed diagnosis is crucial in the management of any disease. In clinical practice, it is essential to correctly identify the diagnostic test that is useful to a specific patient with a specific condition. The over- or underdiagnostic closely reflects on unnecessary or no treatment and harms both the subjects and the health-care systems. In this course the students will able to learn about various kinds of common basic diagnostic tests.

LEARNING OUTCOMES

- Identify the different clinical laboratory settings and roles in a health care organization.
- Discuss pre-analytic (pre-examination), analytic (examination), and post-analytic (post-examination) variables encountered in each department of the clinical laboratory.
- Describe basic and contemporary techniques utilized in a clinical laboratory testing.
- Identify the basic diagnostic techniques and procedures performed in a clinical laboratory.
- Differentiate between manual and automated methods of laboratory testing.
- Learn basic essential skills to procedures commonly performed in a clinical laboratory.
- Distinguish between normal and abnormal laboratory results

SYLLABUS

- Diagnostic Blood Tests-
- Complete Blood Count (CBC)
- Lipid Profile Test
- Liver Function Test (LFT)
- Kidney Function Tests (KFT)
- Diabetic Profile Test
- Thyroid Function Test.
- Biopsy
- Gastroscopy (Upper GI Endoscopy)
- Colonoscopy
- Diagnostic Imaging Tests-
- X-rays Imaging
- CT scan
- Ultrasound Imaging
- MRI scan
- PET scan
- Electrocardiogram (ECG)
- Electroencephalogram (EEG)

7. FOREIGN LANGUAGE TRAINING - FRENCH (GE-AAD001)

Course Instructor:
Prof. Susovan Kundu

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

This intensive French language course is for absolute beginners (no previous knowledge of French).

- Listening
- Reading
- Speaking
- Writing in an interactive communicative way

LEARNING OUTCOMES

you will learn body parts, profession, nationality, Common French words, possessive and demonstrative adjectives, Irregular verbs and common question answer with their use, perfect tense. You will also study about various French expressions and translations.

SYLLABUS

- Body parts
- Profession
- Nationality
- Common French words
- Opposite words
- Perfect tense
- Comprehension
- Gender & number
- Demonstrative & Possessive adjectives
- Irregular verbs with 're' and 'oir'
- Common question answer for communication

8. ENTREPRENEURSHIP SKILL DEVELOPMENT (GE-BBAL001)

Course Instructor:
Prof. P. Roy Barman

Offering School	Offering Department
School of Humanities, Management & Social Sciences	Business Administration

COURSE OBJECTIVES

- Understanding basic concepts in the area of entrepreneurship
- Understanding the role and importance of entrepreneurship for economic development
- Developing personal creativity and entrepreneurial initiative
- Understanding the stages of the entrepreneurial process and resources needed for the successful development of entrepreneurial ventures.

LEARNING OUTCOMES

On successful completion of this course, student should be able to:

- Define basic term
- Analyze business environment in order to identify business opportunities
- Identify the elements of success of entrepreneurial venture
- Specify the basic performance indicators of entrepreneurial activity
- Sketch their own business plan

SYLLABUS

UNIT: I

Evolution of term 'Entrepreneurship', Factors influencing entrepreneurship', Psychological factors, Social factors, Economic factor, Environmental factors

UNIT: II

Entrepreneur and Entrepreneur, Types of entrepreneurs, According to Type of Business, According to Use of Technology, According to Motivation, According to Growth, According to Stages, New generations of entrepreneurship viz. social entrepreneurship, Edupreneurship, Health entrepreneurship, Tourism entrepreneurship, Women entrepreneurship etc.

UNIT: III

Motivation, Maslow's theory, Herjburg's theory, McGragor's Theory, McClelland's Need – Achievement Theory, Culture & Society, Values / Ethics, Risk taking behavior

UNIT: IV

Idea Selection, Selection of the Product / Service, Aspects of a Project, Phases of a Project, Project Report

9. MANAGING HEALTH - EXERCISE AND FITNESS (GE-BPTL001)

Course Instructor:
Prof. Srijani Banerjee

Offering School	Offering Department
School of Health Sciences	Physiotherapy

COURSE OBJECTIVES

The subject aims to introduce the students to the concept of health, fitness and physical activities. It will give comprehensive theoretical information about the common types of exercises, their effects and how they can be used to deal with common injuries.

LEARNING OUTCOMES

The students at the end should be able to maintain an active lifestyle and also plan their own exercise session for maintaining fitness. Understand the types of exercises and their effects.

SYLLABUS

SECTION 1

- Introduction to concept of health
- What is fitness?
- Why physical activity and exercises are important?
- Factors affecting fitness and health

SECTION 2

- **Types of exercises**
  - Aerobic exercises
  - Resisted exercises
  - Flexibility exercises
  - Relaxation techniques
- **Basic exercises for flexibility, endurance and strength**
- **Breathing exercises**

10. CREATIVE WRITING (GE-ENL001)

Course Instructor:
Dr. Debabani Biswas

Offering School	Offering Department
School of Humanities, Management & Social Sciences	English

COURSE OBJECTIVES & LEARNING OUTCOMES

This is an interdisciplinary Elective Paper that will build a foundational understanding of the theories of creative writing and analysis, to fuel innovation and cultural appreciation and critical thinking among the students. It will also help the students to express themselves more confidently and effectively.

SYLLABUS

SECTION I -
Theory Based:

- The Basics of Creative Writing
- Comparison between fictional and non-fictional writing, Journalistic and Literary writing
- Styles of Writing: Inverted, Pyramidical
- Writing for the Media - Audio, visual, print and news media
- Writing for the press

SECTION II -
Practical Based:

- Script Writing -
- Short Story Writing -
- Poetry Writing -
- Newspaper Writing -
- Project Submission -

Suggested Readings

- Becoming a Writer – Dorothea Brande
- On Becoming a Novelist – John Gardner
- On Writing: A Memoir of the Craft – Stephen King
- The Forest for the Trees – Betsy Lerner
- Westward Ho – Samuel Beckett

11. BASICS OF INDIAN CONSTITUTION (GE-LLBL003)

Course Instructor:
Prof. Paramita Dhar Chakroborty

Offering School	Offering Department
School of Legal Studies	Law

COURSE OBJECTIVES

Students will get to

- Know about the salient features of Indian Constitution
- Know about fundamental rights of Indian Constitution
- Know about fundamental duties of Indian Constitution
- Know about functioning of executives and judiciary as laid down in Indian Constitution

LEARNING OUTCOMES

The learners will be equipped with fundamentals of Indian Constitution. Students will be aware of the fundamental law of the land which is the source of all the laws. Students will be aware of fundamental rights and duties as guaranteed by Indian Constitution. Students will also get to know about functioning of Executives and Judiciary as laid down in Indian Constitution.

SYLLABUS

- Indian Constitution: Meanings and Features
- Preamble
- Fundamental Rights
- Directive Principles of State Policy
- Fundamental Duties
- President and Governors: Powers and Function
- Lok Sabha and Rajya Sabha: Basic Idea
- High Court and Supreme Court: Powers and Functions
- Emergency
- Union List, State List, Concurrent List: Basic Idea

12. CYBER LAW & PROTECTION FROM CYBER CRIME (GE-LLBL004)

Course Instructor:
Prof. Souvik Dhar

Offering School	Offering Department
School of Legal Studies	Law

COURSE OBJECTIVES

Main purpose of the course is to –

- disseminate knowledge about Cyber Law
- disseminate knowledge about different cyber crimes
- make aware of the legal protection in case of cyber crime
- disseminate knowledge about different aspects of digital evidence
- disseminate knowledge about the process of submitting of digital evidence
- disseminate knowledge about basic idea on the Information and Technology Act, 2020

LEARNING OUTCOMES

The learners will be equipped with basics of Cyber law with special reference to the Information Technology Act, 2000. In the digital regime it becomes essential for the students to know the importance of Information technology and the allied laws. Students will get to know about several cybercrimes and how law is playing its part to curbing down the cybercrimes.

SYLLABUS

- Development of Cyber Law – National and International Perspective
- Cyber Law – Meaning and Scope
- Cybercrimes – Meaning, Scope and Types
- Cyberspace – Meaning and Scope
- Information Technology Act, 2000 (with Latest Amendments): Important Provisions
- Legal recognition of Digital Evidence
- Online Intermediaries in the governance of Internet
- Social Networking Sites vis-à-vis Human Rights

13. INTELLECTUAL PROPERTY RIGHTS- AN OVERVIEW AND ITS IMPORTANCE (GE-LLBL002)

Course Instructor:
Prof. Swati Sharma

Offering School	Offering Department
School of Legal Studies	Law

COURSE OBJECTIVES

- To introduce fundamental aspects of Intellectual Property Rights to students who are going to play a major role in development and management of innovative projects in industries.
- To disseminate knowledge on patents, patent regime in India and abroad and registration aspects
- To disseminate knowledge on copyrights and its related rights and registration aspects
- To disseminate knowledge on trademarks and registration aspects
- To disseminate knowledge on Design, Geographical Indication(GI), Plant Variety and Layout Design Protection and their registration aspects
- To aware about current trends in IPR and Govt. steps in fostering IPR

LEARNING OUTCOMES

- The students once they complete their academic projects, shall get an adequate knowledge on patent and copyright for their innovative research works
- During their research career, information in patent documents provides useful insight on novelty of their idea from state-of-the art search. This provide further way for developing their idea or innovations

SYLLABUS

- Intellectual property right (IPR): Meaning and Scope
- Intellectual Property Rights: Types
- Patent, Copyright, Trade Mark, Design, Geographical Indication, Plant Varieties, Layout Design
- International Conventions: Basic Concept

14. COMPUTER APPLICATION (GE-CSEL005)

Course Instructor:
Prof. Jaydeb Mondal

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

The objective of this course is to familiarization with basic operational procedures of a digital computer from hardware as well as from software perspectives. Various components of a computer will be studied and the role of operating system will be discussed. In addition to that MS-EXCEL will be studied and basic mathematical operations on excel will be practiced.

LEARNING OUTCOMES

- Familiarization with digital computer, Students will learn basic operational procedures of a digital computer from hardware as well as from software perspectives.
- Students will learn various components of a digital computer.
- To understand basic day to day useful software's.

SYLLABUS

1. **Basics of computer:**
   Fundamentals of Computers, Block diagram of PC, peripheral devices of PC and their functions
2. **Number System & Data Representation:**
   Decimal Number System, Binary number system, Decimal to Binary conversion, Binary operations. Octal number system & the conversion. Octal to Decimal. Binary to Octal & Vice Versa.
3. **Operating System:**
   Introduction & classification of software, working principle of MS DOS (Some basic internal & external commands). Creating a file. Windows & its components.
4. **MS- Office and MS-EXCEL:**
   Introduction of word processing-invoking MS-word – create, edit, save document, cut & paste perform operations on blocks of text, header & footer, Mail Merge, printer setup. Introduction to EXCEL. Concept of worksheet, making Charts & graphs, perform calculations & re calculations.

15. EXPLORING POSITIVE PSYCHOLOGY (GE-APL003)

Course Instructor:
Dr. Soma Pramanik

Offering School	Offering Department
School of Health Sciences	Applied Psychology

COURSE OBJECTIVES

- To learn the basics of Positive Psychology and its evolution
- To learn and understand the different perspectives and domains/ foci of positive psychology
- To learn one's own strengths and utilise them for living an enriched and fulfilling life
- To learn and apply certain interventions to improve one's own wellbeing

LEARNING OUTCOMES

- Student will develop a basic idea of the emergent field of positive psychology
- Student will learn about his/ her/ their strength and character and use the knowledge for facilitating himself better in his life, career and interpersonal relationships.
- Student will learn and be able to apply positive psychology interventions to improve his/ her/ their own wellbeing.

SYLLABUS

UNIT 1:

- Myths of Psychology
- Introduction to Positive Psychology
- Basic concepts of Positive Psychology
- Application in various domains with examples

UNIT 2:

- Positive Subjective Experiences
- Happiness and Well being
- Flow
- Broaden-and-Build Theory of Positive Emotions
- Application: Assessment of happiness- Oxford Happiness Questionnaire

UNIT 3:

- Positive Individual Traits:
- Character strengths and virtues
- Optimism & Hope
- Gratitude
- Forgiveness
- Application: Scale on trait gratitude- Gratitude, Resentment & Appreciation Questionnaire

UNIT 4:

- Positive Psychology Interventions (PPI):
- Gratitude intervention
- Kindness intervention
- Mindfulness
- Brief overview of PPI in workplace

16. INTRODUCTION TO APP DEVELOPMENT (GE-CSEL008)

Course Instructor:
Prof. Bilas Halder

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

- Describe the platforms upon which the Android operating system will run.
- Create a simple application that runs under the Android operating system.
- Access and work with the Android file system.
- Create an application that uses multimedia under the Android operating system.
- Access and work with in-memory databases under the Android operating system.

COURSE PREREQUISITES

- Core Java/OOP programming is required
- Familiarity with UI/UX design
- Familiarity with XML and role of XML as mapping configuration files.

LEARNING OUTCOMES

- Know how to create apps from scratch for both Android.
- Understand Android Studio and IDEs (Integrated Development Environment) at a basic productivity level
- Layout UI elements and event handlers
- Basic understanding of developing for multiple screen sizes
- Networking in Android and iOS
- Persisting data basics

SYLLABUS

UNIT I- Introduction: a. Introduction to Mobile Computing- b. Introduction to Mobile Computing- c. Android Development Environment

UNIT II- Factors in Developing Mobile Applications: a. Mobile Software Engineering - b. Frameworks and Tools - c. Generic UI Development- d. Android User

UNIT III- Android sdk Installation and configuration: Issues and Troubleshooting- Terminal emulator configuration and issues

UNIT IV- More on UIs: a. Designing the Right UI- b. Multichannel and Multimodial UIs - c. Intents and Services

UNIT V- More on UIs: d. Android Intents and Services- e. Characteristics of Mobile Applications- f. Successful Mobile Development

UNIT VI- Storing and Retrieving Data: a. Synchronization and Replication of Mobile Data - b. Getting the Model Right- c. Android Storing and Retrieving Data - d. Working with a Content Provider

UNIT VII: APK based Project

17. INTRODUCTION TO WEBSITE DESIGN (GE-CSEL009)

Course Instructor:
Prof. Souvik Biswas

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

- Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.
- Become familiar with graphic design principles that relate to web design and learn how to implement theories into practice.
- Develop skills in analyzing the usability of a web site.
- Understand how to plan and conduct user research related to web usability.
- Learn the language of the web: HTML5 and CSS, BOOTSTRAP, JQUERY AND JAVASCRIPT
- Learn CSS grid layout and flexbox.
- Learn techniques of responsive web design, including media queries.
- Develop basic programming skills using Javascript and jQuery.
- Be able to embed social media content into web pages.
- Understand and implement the difference between synchronus and asynchronous web page design.

LEARNING OUTCOMES

Learn tools to create professional looking websites by your own.

- Discover how does website reallywork, what makes web sites work.
- Simple and impressive design techniques, from basics till advanced to focus on goal oriented anduser centric designs.
- How to and where to start research, planning for website & actually build excellent web sites.
- To create web elements like buttons, banners & Bars and of course complete UI designs.
- Forms and validations for your website.
- Setting up page layout, color schemes, contract, typography in the designs.
- Use of Content delivery network to develop Responsive web pages using Bootstrap 4.0/ 5.0
- Writing valid and concise code for webpages using JQUERY
- Implementing ge-location services through use of Maps
- Setting up a dynamic landing page for business and clients.

SYLLABUS

UNIT I- Using Wireframes and the concept of Web page design.

UNIT II- HTML tags and attributes: Main root - Document metadata- Content sectioning- Text content

UNIT III- HTML tags and attributes: Frames and tag attributes - Html Tables- Html forms

UNIT IV- Formatting Web Pages with Style Sheets: Introduction to Cascading Style Sheets- Anatomy of a Style- Applying Styles- Linking to an External Style Sheet

UNIT V- Using JavaScript: Using Javascript to Show an Alert- Javascript Errors and Debugging- Building a JavaScript Clock - Using JavaScript to Hide and Show Content- Building a Custom Video Player

UNIT VI- Responsive design and Bootstrap

UNIT VII- Project work on HTML, CSS, JAVASCRIPT, BOOTSTRAP AND JQUERY.

18. MENTAL HEALTH AND HYGIENE (GE-APL002)

Course Instructor:
Dr. Sudeshna Roy

Offering School	Offering Department
School of Health Sciences	Applied Psychology

COURSE OBJECTIVES

- To understand the concept of mental health.
- To understand the concept of mental hygiene
- Understand the basics of psychological disorders
- To gain knowledge on the importance of and how to take care of mental health.

LEARNING OUTCOMES

- To gain an understanding on what is Mental Health.
- To gain awareness of mental health and its various aspects.
- To understand the concepts such as diagnosis, intervention for psychological disorders.
- To gain understanding on how to keep mental hygiene.

SYLLABUS

Unit 1-

- Introduction to mental health,
- Importance of mental health,
- Social myth about mental health.
- How to tackle Peer group pressure and saying No to substance abuse.

UNIT 2-

- Importance of physical activities for mental health.
- Maintaining Sleep hygiene.
- Taking care of emotions.
- Tackling effect of social media for better mental health.

UNIT 3-

- General Health Questionnaire

19. RAMANUJAN MATHEMATICS (GE-MAL002)

Course Instructor:
Dr. Mostaid Ahmed

Offering School	Offering Department
School of Science & Technology	Mathematics

COURSE OBJECTIVES

This course has been outlined on the trajectory of the life of Ramanujan, the great Indian mathematical genius who was born in 1887. The son of a clerk in a cloth merchant's shop, at the age of 13, Ramanujan had mastered Loney's Trigonometry and calculated the length of the Earth's equator. Before he was 23 and in spite of poverty and unemployment, Ramanujan had filled a whole notebook with hundreds of mathematical theorems and results. The course has been designed with an aim to let students understand his several works on Number theory, Algebra and Trigonometry.

LEARNING OUTCOMES

In addition to the specific student learning outcomes identified above, the Course: Ramanujan Mathematics, Course Code: GE-MAL002 will equip graduates with a range of generic skills that will help to ensure success in both their academic and professional lives like interpretation of the concepts of divisibility, prime number, congruence and number theorems, practice on divisibility, demonstrate uniqueness of distinguishing to prime number factors at integers, practice on linear congrunce and quadric linear congruence and use Fermat's Theorem and Wilson's Theorem.

SYLLABUS

- History of Ramanujan, Childhood Education and Beginning of Research,
- Ramanujan's Mentor GH Hardy and brief history,
- Ramanujan's Conjecture
- The Circle Method: Partition function, Waring's problem,
- Goldbach's conjecture: Major Arcs, Application to partial summation
- Primes in Arithmetic Progression and Singular series,
- Arithmetic of the Partial Function: Dyson's Ranks and Cranks
- Prime numbers and highly composite numbers: Ramanujan and Prime number theorem

20. SOCIAL MEDIA ADVERTISING (GE-ENL002A)

Course Instructor:
Prof. Rupa Biswas

Offering School	Offering Department
School of Humanities, Management & Social Sciences	English

COURSE OBJECTIVES

- In this course students will learn what social media advertising is and its principles.
- They will study, at a high level, how to implement a strong social advertising strategy across Facebook, Instagram, YouTube, and more.
- Discover how to analyze and optimize campaigns to increase growth and conversions.
- They will gain hands-on experience by creating ads including images, graphics, videos, and ad copy. Using original advertisements, you will create and execute advertising campaigns on several of the platforms studied.

LEARNING OUTCOMES

- Identify social media objectives by determining what matters most
- Use different channels (Facebook, Twitter, LinkedIn, YouTube, Pinterest, Flickr, Instagram, Reddit, blogs, industry specific, international channels, etc.) to address objectives
- Explore the importance of video, images, memes, &info graphics across channels, how to select and create effective images and video, determine bias and managing risk with use of intellectual property and shared material
- Learn using measurement, analytics and paid options (Facebook Ads, Sponsored Tweets, LinkedIn Premium)
- Use measurement, analytics and paid options (Facebook Ads, Sponsored Tweets, LinkedIn Premium)

SYLLABUS

- Social Media Marketing
- Social Media Marketing goals and Strategies
- Identifying target Audiences
- Social Media Platforms and Social Network Sites
- Content Creation and Sharing: Blogging, Streaming Video, Podcasts, and Webinars
- Mobile Marketing on Social Networks
- Video Marketing including Youtube, Snap Chat
- Microblogging
- Facebook and Instagram Marketing Strategies
- Social Media Marketing Plan

21. STRESS MANAGEMENT-(GE-APL001)

Course Instructor:
Prof. Aritrika Lahiri

Offering School	Offering Department
School of Health Sciences	Applied Psychology

COURSE OBJECTIVES

- To know the concept of Stress.
- To know the importance of stress management.
- To learn how to manage Stress.

LEARNING OUTCOMES

- To enable students to deal with stress.
- To empower students with the techniques of Stress management.

SYLLABUS

- **UNIT 1:**
  Stress: Introduction, Nature of stress, symptoms of stress.
- **UNIT 2:**
  Various sources of stress: environmental, social, physiological and psychological
- **UNIT 3:**
  Stress and health: effects of stress on health, eustress.
- **UNIT 4:**
  Managing stress: Methods - yoga, meditation, relaxation techniques, Problem focused and emotion focused approaches.

22. HYDROPHONIC VEGETABLE FARMING (GE-AGL013)

Course Instructor:
Dr. Sarthak Bhattacharya

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

- To know the importance of hydroponics
- To understand the scientific cultivation methods of vegetables hydroponically.
- To study the methods of hydroponics
- To know more about the pH, nutrient, light requirement of hydrophonics

LEARNING OUTCOMES

To know about the growing methods of different vegetable crops viz. Tomato, gherkin, cucumber, lettuce, celery etc. hydroponically.

SYLLABUS

Hydrophonic system for growing vegetables. Importance of Ph in Hydrophonic system. Light requirements for growing vegetables hydrophonically .Water and nutrient requirements for growing vegetables hydrophonically. Temperature requirements for growing vegetables hydrophonically Media for growing vegetables hydrophonically. Advantages of growing vegetables hydrophonically. Hydrophonic farming of Lettuce.Hydrophonic farming of Tomato,Kale, Swiss Chard, Hot Peppers, Cucumber, Lettuce.

23. FISH PRODUCTION IN HOUSEHOLD PONDS (GE-FSL002A)

Course Instructor:
Prof. Ujjwala Upreti

Offering School	Offering Department
School of Agriculture & Allied Sciences	Fisheries Science

COURSE OBJECTIVES

- This course will help students to learn about various culture practices in household ponds.
- The students will get acquainted with the various scientific practices followed in pond culture.
- Executing the same as a skill for building a self-entrepreneurship in terms of fish production.

LEARNING OUTCOMES

On completion of course the students will be able to

- Understand the importance and scope of fish production in small ponds from different species of fish.
- Get an idea about different types of pond.
- Apply the principles of fish culture in developing a scientific aquaculture.
- Get a scientific idea related to the culture practices in pond systems.
- Understand the different styles and forms of fish curing and appropriate application of these forms while developing their own enterptreneurship.
- Know about different culturable fish species.
- Know about the threats from exotic species of fish.

SYLLABUS

Major species cultured in pond water system production trends and prospect in different parts of the world. Nursery, rearing and grow-out ponds preparation and management-control of aquatic weeds and algal blooms, predatory and weed fishes, liming, fertilization/manuring, use of biofertilizers, supplementary feeding. Water quality management. Selection, transportation and acclimatization of seed. Composite fish culture system of Indian and exotic carps-competition and compatibility. Exotic fish species introduced to India. Culture of other freshwater species. Medium and minor carps, catfish and murrels. Species of fish suitable for integrated aquaculture. Integration of aquaculture with agriculture/ horticulture.

24. LANDSCAPING & GARDENING (GE-AGL10)

Course Instructor:
Prof. Monika Jain

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

- This course will help students to learn about ornamental plants and their usage in creating aesthetic landscape designs in various forms and styles.
- The students will get acquainted with plethora of plants and know their habits, specialities and propagation methods.
- Use of modern technology to create designs.
- Executing the same on spot will also be the part of the course.
- Taking inspiration from the past gardens and their styles and creating modern designs to best suit the conditions will also be the objective of this course.

LEARNING OUTCOMES

On completion of course the students will be able to

- Understand the importance and scope of Landscaping.
- Apply the principles of Landscaping.
- Understand the different common garden styles.
- Understand the different forms of garden and appropriate application of these forms while creating a landscape design.
- Know about different classes of ornamental plants and their habits.
- Use the specialities of the plants to incorporate them into right garden designs.
- Design gardens/landscapes as per location and purpose.
- Customise garden design as per client choice, season, visibility, etc.
- Know about urban gardening and other modern styles of sustainable gardening.
- Apply AUTO CAD software to draw landscape design to give potential clients the simulated garden experience.

SYLLABUS

1. Importance and scope of Landscaping, 2. Principles of landscaping, 3. Garden style and types, terrace gardening and vertical gardening, 4. Garden components - Adornments, Lawn making, Rockery and Water Garden, Walk-paths, bridges, other constructed features etc. 5. Gardens for special purposes, 6. Trees: selection, propagation, planting schemes, canopy management, 7. Shrubs and herbaceous perennials: selection, propagation, planting schemes, architecture, 8. Climber and creepers:importance, selection, propagation, planting, 9. Annuals: selection, propagation, planting scheme, 10. Other Garden plants: palms, ferns, grasses, cacti and succulents, 11. Pot plants: selection, arrangement,management, Bio-aesthetic planning: definition, need, planning, 12. Landscaping of urban and rural areas; Peri-urban landscaping, 13. Bonsai: principles and management, 14. Lawn: establishment and maintenance, 15. CAD application.

25. ROOF TOP GARDENING (GE-AGL005)

Course Instructor:
Dr. Shankha Koley

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

This course will create an in-depth understanding of the basics of Roof Top Gardening. Alongside it will also provide a general idea regarding the importance of roof top gardening in urban areas

LEARNING OUTCOMES

On completion of course the students will be able to

- Understand the principles and theoretical aspects of roof top gardening
- Familiarize with importance and scope of roof top gardening

SYLLABUS

Introduction to roof top gardening. Status of roof top gardening in India. World types of roof top gardening structures based on site.Types of roof top gardening. Roof top gardening design.Environment control in Roof top gardening. Soil preparation and management. Substrate management. Planting material for roof top gardening. Irrigation and drainage system. cultivation of important horticultural crops – rose, carnation. cultivation of important horticultural crops – tomato, bell pepper. Cultivation of important horticultural crops strawberry, pot plants, etc.Cultivation of economically important aromatic plants. Insect pest and disease management

26. VERTICAL GARDENING (GE-AGL012)

Course Instructor:
Dr. Riman Saha Chowdhury

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

This course is designed to introduce the student about the theory of scientific cultivation practices of different crops under vertical gardening condition. Students will receive an introduction to basic concepts of highly sophisticated vertical gardening system, which will be the only way out in our near future, because day to day the land is getting reduced.

LEARNING OUTCOMES

Vertical gardening is an energy intensive system of crop production involving integration of multiple technologies such as big data analytics, robotics, internet of things, artificial intelligence etc. so that crops can grow well without any agronomic constraint. Vertical gardening structures rely on comprehensive solutions to support different hardware integration, data collection, data analysis and automatic control of the installed devices within the structures. Considering the economy of vertical gardening, it is not a viable option for growing field crops or low value crops because returns on investment are not enough to justify the worth.

Energy efficient structures, diversified crop production and production cost are some of the important criteria to prove the worth of vertical gardening. IT companies have a significant role to make the technology feasible for crops cultivation by integrating domain specific solutions, relevant hardware and devices for real time data collection, data analysis, and automatic application of actuators. IT can also help to optimize different operations carried out in a vertical farm to make the crop production more competitive and profitable.

SYLLABUS

Introduction about vertical gardening, Types of Vertical Gardening, Process used vertical gardening, Hydroponics, Aeroponics, Aquaponics, Success stories of Vertical Gardening, Challenges of Vertical Gardening, SWOT analysis of Vertical gardening

27. GEOSPATIAL TECHNOLOGY (GE-AGL014)

Course Instructor:
Prof. Indrani Khaoso

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

Geospatial Technology is an emerging field of study that includes Geographic Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS). Geospatial technology enables us to acquire data that is referenced to the earth and use it for analysis, modeling, simulations, and visualization. Geospatial technology allows us to make informed decisions based on the importance and priority of resources most of which are limited in nature. Geospatial technology is a significant scientific finding, which moved the possibilities of humankind to a brand-new level. We apply them in multiple spheres, from geospatial technologies for maps like GPS navigators for drivers to vast-scope remote sensing by satellites orbiting Earth.Using geospatial technology is comparatively inexpensive and simple, while its possibilities are next to unlimited. Applications of geospatial technologies are incorporated in almost any sector, industry, or research where the location is important.

LEARNING OUTCOMES

- Explore mapped data
- Relate GIS with remote sensing technologies
- Analyze spatial data, using GIS analysis tools
- Develop and manage geodatabases.
- Create maps, images and apps to communicate spatial data in a meaningful way to others
- Comprehend fundamental concepts and practices of Geographic Information Systems (GIS) and advances in Geospatial Information Science and Technology (GIS&T).
- Apply basic graphic and data visualization concepts such as color theory, symbolization, and use of white space.
- Demonstrate organizational skills in file and database management.
- Give examples of interdisciplinary applications of Geospatial Information Science and Technology.
- Apply GIS analysis to address geospatial problems and/or research questions.
- Demonstrate proficiency in the use of GIS tools to create maps that are fit-for-purpose and effectively convey the information they are intended to.
- Effectively communicate and present project results in oral, written, and graphic forms.
- Demonstrate confidence in undertaking new (unfamiliar) analysis using GIS, troubleshoot problems in GIS, and seek help from software/website help menus and the GIS community to solve problems.
- Apply mathematical concepts, including statistical methods, to data to be used in geospatial analysis
- Gather and process original data using a Global Positioning System (GPS) or other Global Navigation Satellite Systems (GNSS).

SYLLABUS

Geospatial technology- definition, concepts, tool and techniques,Concepts of Remote sensing and Types of Remote Sensing and sensor characteristics,Applications of Remote sensing ,Advantages and Limitations of RS,Digital Image processing and Classification,Visual Interpretation of Satellite data, Aerial Photo and Its Interpretation, Concepts of GIS (Geographic Information System) and application,Mapping & Cartography,Spatial data and their management in GIS,Process of GIS and Geospatial Analysis,Overview of GNSS (Global Navigation Satellite System), Functional segments of GNSS, Working principle of GNSS,Ground Truth Data and Global positioning system (GPS),Applications of GNSS, Godesy and its Basic principles,Trends of Geospatial Technology.

28. BEEKEEPING (GE-AGL007)

Course Instructor:
Dr. Koushik Sen

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

The goal of this course is to teach basic beekeeping of honey bees. Students will gain a general knowledge of honey bee biology as well as how to care for honey bees throughout the year. Students will be taught how to recognize common honey bee diseases and pests, as well as the methods for treating them. This course also covers the history of bees, their importance and applications, bee flora, bee behaviour and communication. Emphasis is placed on honey bee products (honey, wax, royal jelly, propolis, pollen and venom) and on the impact of honey bees as pollinators in nature and in agriculture. After completion students will know how to manage honey bee colonies for maximum bee health and honey production.

LEARNING OUTCOMES

Students will able to learn about:

- History and importance of beekeeping, species, castes and colony organization of bees
- Bee biology and morphology
- Bee behaviour and communication
- Beekeeping methods
- Tools and equipment of beekeeping
- Seasonal management of honey bees
- Care and management of apiary
- Bee pasturage and bee products
- Natural enemies and diseases of bees

SYLLABUS

Introduction to Apiculture: history, importance, Present scenario & scope. Honey bee species and castes of bees, general morphology and anatomy of honey bee. Colony organization and bee biology. Bee behaviour and communication in bees. Methods of beekeeping, tools and equipment. Care and management of an Apiary and handling of bee colony. Bee pasturage and bee foraging. Bee products: properties and application. Seasonal management of honey bee colonies: Spring and Summer management. Seasonal management of honey bee colonies: Monsoon, Autumn and Winter management and migratory beekeeping. Natural enemies and diseases of honey bees and their management. Role of honey bees in cross pollination.

29. FERMENTATION TECHNOLOGY (GE-AGL008)

Course Instructor:
Prof. Sujata Karmakar

Offering School	Offering Department
School of Agriculture & Allied Sciences	Agriculture

COURSE OBJECTIVES

- The course aims to provide fundamental insights to fermentation processes and products which have a huge industrial significance.
- It uniquely blends the science and engineering with various biochemical processes to obtain products of diverse fields such as chemicals, food, bioenergy etc.
- The course introduces bioreactors, its types, operation methods and provides an experimental demonstration of the same.
- Students of various disciplines such as biotechnology, chemical engineering, food engineering, and pharmaceutical industries can be benefitted from the course as it discusses
- The existing bioprocess applications such as wine and cheese making, vinegar, antibiotics and vaccines etc.
- The course majorly focusses on the applications and allows students to gain application knowledge rather than mere theory. Major bottlenecks for the operation of
- biochemical/fermentation industries will be discussed.

LEARNING OUTCOMES

On completion of course the students will be able to

- Understand the preparation of inoculum for fermentation process
- Evaluate factors that contribute in enhancement of cell and product formation during fermentation process.
- Understand and optimize the microbial fermentation condition
- Processes involved in production of fermented products
- Differentiate the changes during fermentation process

SYLLABUS

Introduction to fermentation technology; History and development of fermentation industry;General requirements of fermentation processes; Isolation, preservation and improvement of industrially important micro- organisms; Development of inoculate for industrial fermentations;Kinetics of microbial growth and death; Air and media sterilization; Equipment related to fermentation process; Fermentor; Basic design and construction of fermentor and ancillaries;Bioreactor configuration - batch, continuous stirred-tank, tubular, plug flow, packed bed, air lift, fluidized bed; Measurement and control of bioprocess parameters: Analysis of batch, fed-batch and continuous bioreactions;Different types of fermentations processes and their application; Solvent and Organic acid production; Carbohydrate and peptide antibiotic production; Food fermentation and products; Food fermented production; By-products and effluent treatment

30. ORNAMENTAL FISH PRODUCTION AND MANAGEMENT (GE-FSL004)

Course Instructor:
Dr. Subhalaxmi Das Banerjee

Offering School	Offering Department
School of Agriculture & Allied Sciences	Fisheries Science

COURSE OBJECTIVES

Objectives of the course is to know about ornamental fish culture, potentiality in India as well as in the state. The major countries are involved in export and import. To get the details of export of India for last few years including leading states & earning. The idea about domestic markets of West Bengal, species cultured & export market scenario. Major culture and production systems, know about the criteria for species selection, grouping fishes for compatibility. Have an overall idea about food and feeding habit of ornamental fishes, their breeding behaviour. The health care knowledge about the fish also an important objective will be covered in the course.

LEARNING OUTCOMES

Students will able to learn about:

- Ornamental fish and its importance.
- Major countries involved in the venture
- Exotic ornamental fishes have demand in market.
- Indigenous fishes have demand in market.
- The state scenario in culture and export.
- Domestic markets about the state (species in demand)
- Selection criteria of species
- Different types culture systems.
- Breeding behaviour of important species
- Health care of ornamental fishes.
- Setting up an ornamental fish breeding unit for entrepreneurship
- Green certification and its importance.

SYLLABUS

What is ornamental fish and its importance as keeping, worldwide scenario in export and import, domestic market with leading species, green certification and its importance, selection of species according to compatibility, different types of culture systems, idea about export venture from India, the species dominates the export market, export venture from India for last few years, potentiality of the segment as an entrepreneur, pros and cons of the venture, breeding behaviour of important varieties, health care of the fishes. Species those are dominate export market and interstate markets.

31. BASICS OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE FOR NON-ENGINEERS (GE-CSEL006)

Course Instructor:
Prof. Usha Rani Gagoi

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

- To understand different types of data and its properties, Multimedia
- To familiarize with basic principles of AI and knowledge representation for problem solving
- To familiarize with different types of data analytics techniques and their applications
- To apply analytics on Structured, Unstructured Data.
- To understand the applications of AI and Damascene in real time problem solving

LEARNING OUTCOMES

On completion of the course, students will have the ability to

- Understand different types of data and its properties
- Understand the basics of Artificial intelligence and Data science.
- Represent knowledge for problem solving
- Apply basic principles of AI and Data Science in solutions that require problem solving, inference, perception, knowledge representation, and learning.

SYLLABUS

Introduction to Analytics: Definition and Introduction to concepts of Data, Information, Knowledge; Types of Data – Qualitative, Quantitative & Mixed; Forms of Data – Textual, Audio, Video, Multimedia; Evolution of Information Technology; Concepts of Business and Information System Architecture with business cases as examples. What is Data Analytics? Strategies for Data Analysis – Visualizing Data, Exploratory Analysis, Trend Analysis, Estimation; Importance of Data Analytics, Business Analytics; Overview of Types of Data Analytics – Descriptive, Diagnostic, Predictive, Prescriptive; How Data Analytics related to Data Science

Basics of Data Science: Introduction to Data Science – Evolution of Data Science – Data Science Roles – Stages in a Data Science Project – Applications of Data Science in various fields – Data Security Issues. Data Collection Strategies – Data Pre-Processing Overview – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization.

Introduction to AI and Machine Learnings: What is AI, its history and foundations; Importance of AI, Applications and Challenges; Introduction to Intelligent Agents; Task environments; Idea of knowledge, reasoning and planning, first order logic, uncertainty and reasoning, probabilistic reasoning; What is Learning in AI; Types of AI learning models; Machine learning and Deep learning: learning from examples

AI and Data Science Applications: Use cases from different verticals – Manufacturing, Marketing, Banking / Financial Services, Healthcare, Telecom, Bio informatics, Smart Data Analytics, Security Analytics, HR Analytics, Agriculture, Pharmaceutical.

32. HEALTH & HYGIENE (GE-HML002)

Course Instructor:
Prof. Shreya Bhanja Chowdhury

Offering School	Offering Department
School of Health Sciences	Hospital Management

COURSE OBJECTIVES

- Understand the Importance of Health & Hygiene
- Understand the Levels of Hygiene: Personal & Social
- Understand the importance of maintaining personal hygiene & apply methods to ensure personal hygiene
- Understand the importance of maintaining community hygiene & apply methods to ensure Community hygiene
- Understand the importance of maintaining Home and everyday hygiene & apply methods to ensure Home and everyday hygiene
- Understand the importance of maintaining Culinary (food) hygiene hygiene & apply methods to ensure Culinary (food) hygiene
- Understand the importance of maintaining sleep hygiene & apply methods to ensure Sleep hygiene

LEARNING OUTCOMES

- To define the basic knowledge of Health and Hygiene, its importance in life.
- To describe what are acceptable and poor personal hygiene practices.
- To describe the public health importance of personal hygiene.
- Explain the elements and activities that are needed for planning personal hygiene.
- Describe the criteria that are used for evaluating the effectiveness of personal hygiene application.
- Prioritise the components of personal hygiene that are critical for public health concerns.

SYLLABUS

- Definition of Health & Disease
- Introduction about Health
- Definition of Hygiene
- Importance of Health & Hygiene
- Levels of Hygiene: Personal & Social (community)
- Importance of maintaining personal hygiene
- Importance of maintaining community hygiene
- Methods to ensure personal Hygiene
- Methods to ensure Community hygiene
- Types of Hygiene: Introduction & methods of Hand Hygiene, Sickness
- Culinary (food) hygiene
- Sleep hygiene
- Personal service hygiene Hygiene, Teeth Hygiene, Toilet Hygiene, Shower Hygiene, Nail Hygiene
- Medical hygiene
- Home and everyday hygiene: Hand washing, Respiratory hygiene,
- Food hygiene at home, Hygiene in the kitchen, bathroom and toilet,
- Laundry hygiene, Medical hygiene at home, Disinfectants and antibacterials in home hygiene
- Personal hygiene : Regular activities, Excessive body hygiene, Oral hygiene

33. BASIC OF MARKETING MANAGEMENT (GE-BBAL003)

Course Instructor:
Dr. Sweta Rani

Offering School	Offering Department
School of Humanities, Management & Social Sciences	Business Administration

COURSE OBJECTIVES

This course aims to build a basic understanding of marketing management decisions in every student of TNU. It will equip students with an understanding of various types of environment, elements of marketing mix and blending of business, customer, market and revenue generation.

LEARNING OUTCOMES

Students will be able to

- Understand the concept of marketing and related concepts.
- Evaluate the various functions and role of marketing.
- An understanding of various elements of marketing mix.

SYLLABUS

- Overview of Marketing, Origin of Marketing, Definition, nature & scope of Marketing. Need for marketing. Types of markets. Demand & supply Need & its types. Marketing Management - Marketing Concept - Production concept, Selling concept, Societal, Marketing concept. Selling Vs marketing - Mix, Promotion - Mix
- Market Segmentation. Segmenting the market. Basis of segmentation. Targeting & positioning. Product. Product concept. Types of product. PLC – Product life cycle
- Marketing Channel Management – Channel of distribution, Role of channel of Distribution, Channel Choice. Channel conflict.

34. SPORTS TRAINING FOOTBALL AND CRICKET (GE-ADML003)

Course Instructor:
Mr. Soumen Chakroborty

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

- Help student to understand the concept sports training football and cricket
- To help the student understand the importance of sports training
- To help the student, physically, mentally, emotionally, development.

LEARNING OUTCOMES

On successful completion of the course, the students will be able to

- Understand the definition, importance of sports training.
- Understand the aim and objective sports training football and cricket
- Understand the game type, basic skill.
- Understand the measurement of playing field and rule regulation.
- Understand the specific and general exercise and basic skill.

SYLLABUS

- Sports training: definition, importance, and characteristics football /cricket
- Sports training aim and objective
- Principle of sports training , and training methods football and cricket
- Football / crocket training Worming up, cooling down and specific exercise
- Cricket / football Practical field marking and measurement and basic rule
- Conditioning and basic skill practice
- Game and skill practice for separate game
- Skill training and Strength training
- Endurance and ABC training and match practice
- All body development basic physical fitness training. And recreation game

35. SPORTS TRAINING BASKET BALL AND SWIMMING (GE-ADML001)

Course Instructor:
Mr. Gopal Bhandari

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

Sports training is especially focused on optimal performance in a particular sport. Its main aim is to develop the performance capacity of sports persons, so that they achieve the highest possible performance. To do so, it is essential to be mentally strong. It improves the student's sport personality and physical fitness, mental abilities and intellectual training

LEARNING OUTCOMES

On successful completion of the course, the students will be able to

- Understand the definition, importance of sports training
- Allows the body to gradually build up strength and endurance
- improve skill levels and build motivation, ambition and confidence.
- To gain more knowledge of their sport as well as enabling them to learn about the importance of having a healthy mind and body.
- Understand the measurement of playing field and rule regulation.
- Understand the specific and general exercise.

SYLLABUS

- Sports training: definition, importance, and characteristics
- Sports training aim and objective
- Principle of sports training, and training methods
- Basketball and swimming training Worming up, cooling down and specific exercise
- Practical field marking and measurement and basic rule
- Conditioning and basic skill practice
- Game and skill practice
- Strength training and speed training
- Endurance and ABC training
- All body development basic physical fitness training.

36. THE TECHNIQUES OF ASIAN CUISINE (GE-CAL002)

Course Instructor:
Chef Atin Das

Offering School	Offering Department
School of Hospitality & Culinary Art	Culinary Art

COURSE OBJECTIVES

This course has been prepared keeping in view, the unique requirements for the students from different schools other than students from School of Hospitality & Culinary Art, to gain knowledge on different cuisines, culture, food habits of popular Asian countries.

The objectives of the course are:

- To impart knowledge in areas related to cuisines of Asian countries and food habits
- To make the students familiarize with various influential factors (geographical & historical) that impact on changing food habits, trends, locally grown foods in different Asian countries.
- To enable the students to understand the role of various ingredients and utilization that play key role in making of delicious products
- To make the students familiarize with the various equipment used in Asian kitchen.

LEARNING OUTCOMES

After completion of the semester students will be able to

- Identify various equipment for preparing food items as per their requirement.
- Identify and process various commodities and ingredients used in Asian kitchen
- List down various ingredients required for preparing food from different cuisines
- List down various safety measures to be taken to ensure food safety and prevent accidents.

SYLLABUS

- **Set up of the Pan Asian Kitchen-** Major equipment used in Pan Asian Kitchens, Typical Asian Ingredients
- **Techniques in the Pan Asian Context-** Skill of the fingers- Cleaver Techniques- Managing Heat according to product- Wok Techniques
- **Cuisine Of Pan Asia-** Historical and Geographical influences- Regional influences- Special Ingredient and Equipment
- Indian Cuisine
- Chinese Cuisine
- Thailand Cuisine
- Japanese Cuisine
- Indonesian Cuisine
- Lebanese Cuisine
- Sui Mai Technique
- Malaysian Cuisine
- Burma

37. THE ART OF PATISSERIE (GE-CAL001)

Course Instructor:
Chef Subrata Routh

Offering School	Offering Department
School of Hospitality & Culinary Art	Culinary Art

COURSE OBJECTIVES

This course has been prepared keeping in view, the unique requirements for the students from different schools other than students from School of Hospitality & Culinary Art.

The objectives of the course are:

- To impart knowledge in areas related to bakery & confectionery
- To enable the students to understand the role of various ingredients and their proportion that plays key role in making of delicious bakery & confectionery products
- To make the students familiarize with the various equipment used in bakery & confectionery kitchen
- To make the students familiarize with personal hygiene and food safety practices must be followed while handling food items

LEARNING OUTCOMES

After completion of the semester students will be able to

- Identify various equipment as per their need.
- Identify and utilize of various commodities and ingredients used in bakery & confectionery kitchen
- List down weighs & equivalents for various raw commodities; measurement of ingredients is an essential part in bakery kitchen
- Plan a start up in future with bakery & confectionary products

SYLLABUS

- **INTRODUCTION TO BAKERY AND CONFECTIONERY**
  Introduction to Bakery & Confectionery -Scope of Bakery & Confectionery -Organizational Structure - Basic Equipment used in Bakery & Confectionery
- **HYGIENE & SANITATION IN BAKERY AND CONFECTIONERY**
  Introduction to Hygiene -Important steps to be followed to maintain hygiene in Bakery & confectionery kitchen
- **CLASSIFICATION OF BAKERY PRODUCTS**
  Classification of Bakery Products -Different ingredients used & their role; methods, temperatures, faults & rectification
  - Bread rolls & Bread Loafs
  - Cookies & Biscuits
  - Basic Pastries

- **CLASSIFICATION OF CONFECTIONERY PRODUCTS**
  Classification of Confectionery Products Different ingredients used & their role; methods, temperatures, faults & rectification
  - Cakes
  - Mousses
  - Frozen desserts
- **COMMON POPULAR BAKERY PRODUCTS**
  (Origin and description of the product, methods, service style etc)
  - French Baguette
  - Grissini
  - Nankhatai
  - Muffins
  - Croissant
  - Foccacia
  - Puff
- **COMMON POPULAR CONFECTIONERY PRODUCTS**
  (Origin and description of the product, methods, service style etc)
  - Black Forest Cake
  - Profitroles
  - Eclairs
  - Croquembouche
  - Pie
  - Tart
  - Chocolate/ Pineapple Mousse
  - Ice cream
  - Kulfi
- **Scope of Bakery & Confectionery in Indian Market**
  - Choosing of the site
  - Budget for the project
  - Payout of bakery & confectionery kitchen

38. ART OF MIXOLOGY (GE-HAL002)

Course Instructor:
Prof. Sumit Das

Offering School	Offering Department
School of Hospitality & Culinary Art	Hospitality & Hotel Administration

COURSE OBJECTIVES

The subject aims to help students experience the knowledge and science behind the basic bartending working procedure, knowing the specific ingredients and techniques used to make various sorts of alcoholic and non-alcoholic based drinks. It will seek to provide learners an opportunity to acquire knowledge on the types of cocktails, equipment and the principle of appropriate garnishes for the various types of cocktails. The subject will help the student to gain knowledge about the various beverages that may be served to a guest in a five star luxury property and the food that goes well with it.It enriches the student's knowledge regarding various process and science related to the production of wine and spirits. The course study helps students to know the classification of various wines and spirits.

LEARNING OUTCOMES

After completion of this syllabus the students will be enriched with the basic knowledge which will occur during preparing, pairing of various types of alcoholic beverages. Students will be able to list down various points which have to be considered for food and wine pairing. Students will be able to write down various factors which affect food and wine pairing. Our students will have the basic knowledge about the various categories of alcoholic beverages that can be served in a correct manner at right temperature. Students will also be able to list down various points to be considered for the basic knowledge of mixology.

SYLLABUS

- **Introduction to Beverage:**
  Classification:
  - Non- Alcoholic Beverage
  - Alcoholic Beverage
- **Non-Alcoholic Beverages:**
  - Tea - Types & Brands
  - Coffee - Types & Brands
  - Juices and Soft Drinks
  - Cocoa & Malted Beverages
  - Mocktail
- **Alcoholic Beverage:**
  - Introduction and definition
  - Production Methods
  - Types of Alcoholic Beverage: (Beer, Wine, Whisky, Rum etc.)
- **Cocktails and Mixed drinks:**
  - Definition
  - History
  - Methods of Making Cocktails
- **SPIRITS & Spirit Based Cocktails:**
  - Introduction & Definition
  - Spirit Based Cocktails
- **Wines & Beer + Wine & Beer based cocktails:**
  - Definition
  - Its Types
  - Wine & Beer based cocktails

39. COSMETIC SCIENCE- SKIN CARE, HAIR CARE & ORAL CARE (GE-PHL002)

Course Instructor:
Prof. Partha Niyogi

Offering School	Offering Department
School of Pharmacy	Pharmacy

COURSE OBJECTIVES

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to :

- Understand the need of supplements by the different group of people to maintain healthy life.
- Understand the outcome of deficiencies in dietary supplements.
- Appreciate the components in dietary supplements and the application.
- Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

LEARNING OUTCOMES

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.

SYLLABUS

- **UNIT I**

  Classification of cosmetic and cosmeceutical products

  Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

  Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

  Skin: Basic structure and function of skin.

  Hair: Basic structure of hair. Hair growth cycle.

- **UNIT II**

  Principles of formulation and building blocks of skin care products:

  Face wash,

  Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages. Application of these products in formulation of cosmecuticals. Antiperspants & deodorants- Actives & mechanism of action.

  Principles of formulation and building blocks of Hair care products:

  Conditioning shampoo, Hair conditioner,anti-dandruff shampoo. Hair oils.

  Chemistry and formulation of Para-phylene diamine based hair dye.

- **UNIT III**

  Sun protection, Classification of Sunscreens and SPF.

  Role of herbs in cosmetics:

  Skin Care: Aloe and turmeric Hair care: Henna and amla. Oral care: Neem and clove

  Analytical cosmetics: BIS specification and analytical methods for shampoo, skin- cream and toothpaste.

- **UNIT IV**

  Principles of Cosmetic Evaluation: Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combing properties

  Soaps, and syndet bars. Evolution and skin benefits.

- **UNIT V**

  Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis.

  Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

  Antiperspirants and Deodorants- Actives and mechanism of action

40. DIETARY SUPPLEMENTS AND NUTRACEUTICALS (GE-PHL001)

Course Instructor:
Prof. Subhasish Mondal

Offering School	Offering Department
School of Pharmacy	Pharmacy

COURSE OBJECTIVES

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to :

- Understand the need of supplements by the different group of people to maintain healthy life.
- Understand the outcome of deficiencies in dietary supplements.
- Appreciate the components in dietary supplements and the application.
- Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

LEARNING OUTCOMES

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population

SYLLABUS

- **UNIT I**
  a. Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.
  b. Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education in community.
  c. Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds

- **UNIT II**
  Phytochemicals as nutraceuticals: Occurrence and characteristic features (chemical nature medicinal benefits) of following
  a. Carotenoids- α and β-Carotene, Lycopene, Xanthophylls, leutin
  b. Sulfides: Diallyl sulfides, Allyl trisulfide.
  c. Polyphenolics: Reservetrol
  d. Flavonoids- Rutin , Quercitin, Anthocyanidins, Flavones

e. Prebiotics / Probiotics.: Fructo oligosaccharides, Lacto bacillum

f. Phyto estrogens : Isoflavones, daidzein, Geebustin, lignans

g. Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and the like.

- **UNIT III**

a. Introduction to free radicals: Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

b. Dietary fibres and complex carbohydrates as functional food ingredients.

- **UNIT IV**

a. Free radicals in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

b. Antioxidants: Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defence, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E, α- Lipoic acid, melatonin Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

c. Functional foods for chronic disease prevention

- **UNIT V**

a. Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

b. Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods.

c. Pharmacopoeial Specifications for dietary supplements and nutraceuticals.

41. IDEA GENERATION TO STARTUP (GE-INC001)

Course Instructor:
Prof. Sudipto Bhattacharjee

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

- To create realization that everyone can be creative.
- To impart knowledge on creative techniques that foster idea generation and problem-solving.
- To identify and learn to create compelling value proposition and conduct feasibility analysis.
- To design effective business models for developing minimum viable product and reach the market.
- To learn the fundamentals on how to start a firm and implement the idea of socio-economic change

LEARNING OUTCOMES

- Knowledge on techniques of Idea generation to solve the current and futuristic market relevant problems
- Ability to design solutions for present and futuristic real-life problems, system components or processes to meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental concerns, using different techniques of feasibility studies
- Foundation knowledge to company formation, analyzing competitors and taking Minimum Viable Product to the market

SYLLABUS

- **Entrepreneurial Thinking**
  Entrepreneurial skills, Working with ambiguity, How to be ready for Entrepreneurship
- **The Idea / Opportunity / Problem**
  Conducting opportunity discovery, Problem Validation, The Problem Pitch
- **Customer and Market**
  Identifying the market type, Exploring market segment, Determining market positioning, Creating customer persona
- **Creating a Compelling Value Proposition**
  Crafting core value proposition, Creating sustainable differentiation strategy, Delivering Value
- **Competition Analysis**
  Competitors identification, Identifying critical product features, How to conduct feature ranking
- **Business Models**
  Building and testing a business model, Pivot or persevere, Identifying the riskiest assumptions in the business model
- **Minimum Viable Product**
  Building prototype, Testing with early adopters, Conducting customer interviews, Refining the prototype, Building minimum viable product
- **Financial Feasibility**
  Ascertaining costs, Appropriate pricing strategy, Financial projections, Key financial metrics
- **Market Strategy**
  Identifying appropriate channels, Building strategic partnerships, Creating digital marketing plan, Devising market penetration strategy
- **Funding the Venture**
  Creating sources and uses of funds statements, Mapping Start-up lifecycle to funding options

42. BASICS IN LIFE SAVING MANAGEMENT (GE-HML003)

Course Instructor:
Dr. Tridib Chatterjee

Offering School	Offering Department
School of Health Sciences	Hospital Management

COURSE OBJECTIVES

This course offers to train the students with the basic life saving techniques that offer individuals the opportunity to survive life threatening situations as well as help others in a life-threatening situation. The knowledge of certain skills like cardiopulmonary resuscitation, Heimlich maneuver etc. This subject will include some basic first aid techniques like dealing with cuts, hypothermia, burns, snakebite etc.

LEARNING OUTCOMES

This subject is the foundation for saving life in case of an emergency before the patient can be handed over for medical help. The course outcome and the learning outcome can be divided to:

- Understand and recall the steps of cardiopulmonary resuscitation and airway management.
- Get comprehensive knowledge about the identification of various emergencies such as heart attack, stroke, burns, bleeding etc.
- Explain the basic principles of giving first-aid and the laws governing these principles.

SYLLABUS

- Demonstrate the ability to measure pulse and blood pressure that form the precursor to care of a victim.
- Demonstrate the skill to recognise and respond to medical emergencies like stroke, heart attack etc.
- Concept and Importance of Life saving skills. Basic First aid principles.
- Heart Attack-Signs of identifying, Risk factors, What to Do If Someone May Be
- Having a Heart Attack?
- Stroke-Introduction, Recognition of signs and symptoms of a possible stroke.
- Providing aspirin for Heart attacks and strokes.
- CPR-Introduction, importance, how to give CPR.
- AED- Introduction, importance, Usage of AED (Automated External defibrillator).
- Response to a person who is choking, Concept of The Heimlich maneuver to save a
- person from choking.
- Severe allergic reaction- Definition, Response to a person having a severe allergic reaction.
- Compromising of normal breathing of a person-Concept, Ways to open a person's
- airway when normal breathing is compromised.
- Wounds and bleeding, Ways to stop severe bleeding.
- Burn Injuries- Introduction, how to treat burns.
- Hypothermia-Definition & Introduction, Prevention of Hypothermia.
- Proper Reaction to a snakebite.

43. PERSONAL EYE HEALTH (GE-BOL002)

Course Instructor:
Prof. S. Mehmood

Offering School	Offering Department
School of Health Sciences	Optometry

COURSE OBJECTIVES

- To educate the participants regarding basic personal eye and vision care.
- To create a public awareness about regular eye and vision examination.
- To create awareness about the environmental hazards on eye and their prevention.
- To create awareness of proper nutrition in maintaining normal vision and eye health.

LEARNING OUTCOMES

- The students will become aware about their personal eye care and hygiene
- The students will know about the different hazards which may affect the eye.
- The students will learn about the different protective eye wear and their application

SYLLABUS

- Introduction to the concept to the GE Subject
- Basic structure and function of the eye
- Importance of eye care
- Myths and facts about the Eye and Vision
- Optimal Nutrition and Vision
- Basics about refractive errors and their corrections
- Personal Ocular and Visual hygiene for prevention of eye & vision problems
- Environmental hazards on eyes and their prevention
- Protection of eyes and vision from different occupational hazards
- Effects of Video Display Terminal units on eyes and their prevention
- Appropriate eye safety wear for different activities
- Effects of sunlight and Eye protection
- Effects of life style/ General diseases in the eye
- Good reading habits and posture
- Importance of Regular Eye & Vision Examination

44. YOGA AND MEDITATION (GE-ADM002)

Course Instructor:
Mr. Utpal Ghorai

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

- Help student to understand the concept yoga and meditation
- To help the student understand the importance of yoga and meditation
- To help the student, physically, mentally, emotionally, development Throw yoga and meditation

LEARNING OUTCOMES

On successful completion of the course, the students will be able to

- Understand the definition, importance of yoga meditation
- Understand the aim and objective yoga and meditation
- Understand the basic kill in yoga and meditation
- Understand the specific and general exercise and basic skill and yoga meditation in social value.

SYLLABUS

- Definition, importance, and characteristics
- Aim and objective in yoga and meditation
- Principle of yoga and meditation, and training methods and impotent.
- Training Worming up, cooling down and specific exercise for yoga (standing position) ardhachandrasana / padahastasana
- Practical sitting position padma asana / paschimottasana
- Conditioning and basic skill practice and yoga supine position halasana/
- Yoga prone position bhujangasana / salvasana /dhanurasana
- Inverted position, shirsasana and meditation
- Meditation yoga workshop and competition
- All body development basic physical fitness training. And recreation game and yoga meditation.

45. FROM SHAKESPEARE TO WORDSWORTH (GE-ENL003A)

Course Instructor:
Prof. Atraya Banerjee

Offering School	Offering Department
School of Humanities, Management & Social Sciences	English

COURSE OBJECTIVES

This is an interdisciplinary Elective Paper that will build a foundational understanding of literatures of the icons: Shakespeare, Wordsworth, and two other figures who come in between – plus their literary analysis. This will fuel literature and cultural appreciation and critical thinking among the students. It will help the students to express themselves more confidently and effectively, also in the future competitive examinations where questions from literature would be asked.

LEARNING OUTCOMES

- Students of this Paper will understand the traditions of English Literature across the ages of the two icons, Shakespeare and Wordsworth.
- Students will develop a clear understanding of various philosophies and thought-flow that provide the basis for the texts suggested.
- Students will engage with the major genres and forms of English literature, across the mentioned ages.
- Students will develop fundamental skills required for close reading and critical thinking of literary texts and concepts
- Students will also learn to appreciate and analyze the various literary genres in the larger socio-political-economic and religious contexts of the mentioned times – realizing how relevant they are in today's times, as well.

SYLLABUS

SECTION I – William Shakespeare

- William Shakespeare – Brief background, his contemporaries and the Renaissance Age
- Selections from two of his popular plays (Macbeth/The Merchant of Venice/As You Like it/Hamlet/Twelfth Night/Othello)
- Two Sonnets

SECTION II – Jonathan Swift

- Jonathan Swift – Brief background, his contemporaries and the Neoclassical Age
- Selections from Gulliver's Travels/ ATale of a Tub
- One Essay – A Modest Proposal

SECTION III – Samuel Johnson

- Samuel Johnson – Brief background, his contemporaries and the Age of Sensibility
- One Poem: "London"/"The Vanity of Human Wishes"

SECTION IV – William Wordsworth

- William Wordsworth – Brief background, his contemporaries and the Romantic Age
- Two Poems – "The Solitary Reaper"/"Tintern Abbey"/"The Prelude"/"Daffodils"/"Tintern Abbey"

46. UNDERSTANDING ROBOTICS (GE-REL002A)

Course Instructor:
Dr. Prabin Kumar Jha

Offering School	Offering Department
School of Science & Technology	Robotics Engineering

COURSE OBJECTIVES

To provide fundamental ideas on Robot and its utilities.

LEARNING OUTCOMES

After the successful completion of the course the students will be able to:

- Understand the fundamentals of creating and programming a robot to interact with its environment.
- Perform basic tasks involving motion, sensor data and decisionmaking.
- Combine instruction in theory with practical application.
- Explain the fundamentals of robotics and its components
- Illustrate the Kinematics and Dynamics of robotics
- Elucidate the need and implementation of related Instrumentation & control in robotics
- Illustrate the movement of robotic joints with computers/microcontrollers.
- Explain sensors and instrumentation in robotics

SYLLABUS

- **Basic Concepts in Robotics:**
  Automation and robotics, Robot anatomy, Basic structure of robots, Resolution, Accuracy and repeatability, and Classification and Structure of robots, Point to point and continuous path systems.
- **Robotic Systemand Control Systems:**
  Components of robotic system,Hydraulic systems, d.c. servo motors, Basic control systems concepts and models, Control system analysis, Robot activation and feedback components. Positional and velocity sensors, actuators. Power transmission systems,
- **Robot arm Kinematics and Dynamics:**
  Robot joints, The direct kinematics problem, The inverse kinematics solution, Lagrange-Euler formation, GeneralizedD'Alembert equations of motion, DenavitHartenberg convention and its applications.
- **Sensors and Instrumentation in robotics:**
  Tactile sensors, proximity and range sensors, Force and torque sensors, Uses of sensors in robotics. Vision equipment, Image processing, Concept of low level and high level vision.
- **Computer based Robotics:**
  Method of robots programming, GUI based robotic arm control, Interfacing with computer

47. INTRODUCTION TO 3D PRINTING (GE-REL003)

Course Instructor:
Prof. Sangeeta Barua

Offering School	Offering Department
School of Science & Technology	Robotics Engineering

COURSE OBJECTIVES

The objective of this course is to impart students to the fundamentals of various 3D Printing Techniques for application to various industrial needs. Student will be able to convert part file into STL format and will understand the method of manufacturing of liquid based, powder based and solid based techniques.

PRE-REQUISITES

Basics of Engineering Graphics, Product design and Computer Aided Design

LEARNING OUTCOMES

On completion of the course the student will be able to:

- Use software tools for 3D printing
- Prepare 3D printed modules
- Construct products using FDM technologies

SYLLABUS

- Introduction
- What is 3D printing
- History of 3D Printing
- 3D Printing Technology
- Different types of 3D printers
- 3D Printing Processes
- Calibrating the Printer
- 3D Printing
- Materials
- 3D Modeling Software
- 3D Printing Benefits & Value
- 3D Printing Applications

48. INTERNET OF THINGS AND ITS APPLICATIONS FOR NON ENGINEERS (GE-REL001)

Course Instructor:
Dr. Md. Kamaruzzaman

Offering School	Offering Department
School of Science & Technology	Robotics Engineering

COURSE OBJECTIVES

This course enables the students:

- Understand the basic concept and the Iot Paradigm
- Know the state of art architecture for IoT applications
- Learn the available protocols used for IoT
- Design basic IoT Applications.
- Evaluate optimal IoT applications.

LEARNING OUTCOMES

After the completion of this course, students will be:

- Identify the IoT Components and its capabilities
- Explain the architectural view of IoT under real world constraints
- Analyse the different Network and link layer protocols
- Evaluate and choose among the transport layer protocols
- Design an IoT application

SYLLABUS

- **Introduction to IOT:**
  Definition & Characteristics of IoT - Challenges and Issues - Physical Design of IoT, Logical Design of IoT - IoT Functional Blocks.
- **Components in Internet of Things:**
  Control Units Communication modules- Bluetooth, Zigbee, Wifi, GPS- IOT Protocols (IPv6, 6LoWPAN, RPL, CoAP etc).
- **Technologies behind IoT:**
  Pillars of IOT paradigm - RFID, Wireless Sensor Networks, SCADA (Supervisory Con- troll and Data Acquisition), M2M
- **Resource Management in IoT:**
  Clustering, Clustering for Scalability, and Clustering Protocols for IOT.
- **IoT Applications:**
  Smart city, smart manufacturing, smart health, environment monitoring and surveillance etc.

49. INCOME TAX AND GST IN DAILY LIFE (GE-BBAL002)

Course Instructor:
Prof. Bitobi Lahiri

Offering School	Offering Department
School of Humanities, Management & Social Sciences	Business Administration

COURSE OBJECTIVES

- To collect the basic concepts and definitions of Income Tax Act 1961.
- To know the residential status of assesse and incomes exempted from tax.
- To familiar with the computation of income from all heads of income.
- To provide knowledge about goods service tax.
- To create basic information to the students about the GST practices.

LEARNING OUTCOMES

- Acquire conceptual knowledge of Direct and Indirect Tax.
- Acquire the complete knowledge of basic concepts of income tax.
- Understand the concept of GST in daily life.
- Understand the practical application of GST.
- Calculate Residential status of a person.

SYLLABUS

- **UNIT I: Introduction**
  Basic concepts, Indian tax system, Direct and indirect taxes, Income, Agricultural income, Person, Assessee, Assessment year, Previous year, Gross total income, Total income, Permanent Account Number (PAN), Tax avoidances and evasion, The penalties and assessment rates Residential status, Scope of total income on the basis of residential status, Determination of Residential Status of an individual (simple problems)
- **UNIT II: Heads of Income and Deductions**
  Salary, House Property, Business / Profession, Capital Gain, Other Sources, Various deductions under Section 80 (80CCC to 80U)
- **UNIT III: GST and its Uses**
  Basic Concepts, Application of Service Tax and GST in India, Slab Rates GST, GST return.

50. SHARE MARKET AND EQUITY INVESTMENT (GE-BCOML001)

Course Instructor:
Dr. Mustaq Ahmad

Offering School	Offering Department
School of Humanities, Management & Social Sciences	Commerce

COURSE OBJECTIVES

- To understand the role and importance of the Indian capital market.
- Apply and analyze the concepts relevant to Indian financial markets.
- The intent of the course is to provide students with a basic understanding of various investment alternatives and how to value those investments.
- Analyze specific problems or issues related to financial markets and institutions
- Researching equity markets for wealth creation

LEARNING OUTCOMES

- To understand stock market and its functions.
- The equity investment helps to study the companies, analyze financials, and look at
- Quantitative and qualitative aspects mainly for decision making purpose.
- To understand investment pattern in a company or sell the shares and come out.
- Understand basics in derivatives.
- Theoretical and practical know-how of stock markets.

SYLLABUS

- **UNIT I: Capital Markets in India**
  Introduction, Meaning, functions and significance of Capital Markets, Structure and characteristics of the Indian Capital Markets, Instruments in the Indian Capital Market-Products, Operations and Practice, Institutions in the Indian Capital Market, Role of SEBI in the Capital Market- Stock Exchanges in India-. Bombay Stock Exchange, National Stock Exchange. Calculation of Sensex and Nifty
- **UNIT II: Share and Debentures**
  Issue of shares, Forfeiture of shares, Types of shares and debentures, Sweat Equity Shares, Employee Stock Option Plan (ESOP).
- **UNIT III: Elements of Investments**
  Financial Institutions, Security Markets and Transactions, Mutual Funds and Other Investment Companies Risk and Return, Derivative- Markets Options Markets, Futures Markets.

51. BASIC ECONOMICS- DEMAND, SUPPLY AND ITS IMPACTS ON PRICE LEVEL (GE-BBAL006)

Course Instructor:
Dr. Santanu Ray Chaudhuri

Offering School	Offering Department
School of Humanities, Management & Social Sciences	Business Administration

COURSE OBJECTIVES

The course aims at providing basic theories and tools of analysis of the behaviour of various economic agents (individuals and firms) in the market context.

LEARNING OUTCOMES

Students will be skilled in critical thinking and decision-making, supported by economic principles and best practices in business. Students will be able to put together quantitative reports as well as to evaluate reports and able to comprehend economics-related writing.

SYLLABUS

- Definition and Significance of Economics, Scarcity, Wealth
- Methods of scientific Enquiry: Inductive Method, Deductive Method- Divisions
- Utility Analysis: Measurement of Utility
- Law of Diminishing Marginal Utility,
- Law of Equi-Marginal utility – Law of Demand
- Causes of Downward Sloping Demand Curve, Exceptions to the Law of Demand - Giffen's Paradox
- Elasticity definition, Types of Elasticity of Demand: Price Elasticity of Demand
- Price Elasticity of Demand-Different degrees.
- Determinants of Price Elasticity of Demand
- Measurement of Price Elasticity of demand
- Cross Elasticity of Demand
- Income Elasticity of Demand, Nature of commodity and Income-Elasticity
- Determinants of Income Elasticity of Demand
- Law of Supply: Supply Schedule, Supply Curve
- Supply Function, Shifts in Supply
- Elasticity of Supply & Determinants
- Production and Cost
- Ordinal Utility Theory
- Laws of Production: Law of Variable Proportions
- Explanation Law of Variable Proportions
- Laws of Returns to Scale
- Concepts of Costs, Short run Cost, Long run Cost - Economies of Scale
- Cost Elasticity of output and other concepts
- Engel Curve and ICC
- Diseconomies of Scale and Related Issues
- Market Structure and Pricing: Introduction, Micro-market, Micro-market analysis
- Classification of Markets
- Perfect Competition: Features of the Perfect Competition
- Equilibrium conditions: SR and LR
- Monopoly: Features of the Monopoly, Equlibrium conditions

52. FOREIGN LANGUAGE TRAINING - GERMAN (GE-AAD002)

Course Instructor:
Prof. Ajanta Chakroborty

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

This intensive German language course is for absolute beginners (no previous knowledge of German).
To impart basic proficiency in four skills

- Listening
- Reading
- Speaking
- Writing in an interactive communicative way

LEARNING OUTCOMES

Student will understand and use familiar everyday expressions and very simple sentences which relate to the satisfying of concrete needs. They introduce him/herself and others as well as. For example, where they live, who they know and what they own and much more. Can respond to questions related to day to day communication

SYLLABUS

TOPIC 1
How to talk about yourself, how to introduce yourself, and get introduce to people. Asking their names, where they live, where they are from, age, languages, countries.

GRAMMAR: German articles

TOPIC 2
Talking about describing cities, places, and famous buildings in cities. Also about transport and directions.

GRAMMAR: Declension of Nouns

TOPIC 3
Conversation about hobbies, friends, family, profession, weekdays, months, dates, time.

GRAMMAR: Nominative and Accusative Cases

TOPIC 4
Discuss about food and drink, how it tastes, different food items, and placing an order in a restaurant, and paying bills. Groceries, stores, and prices.

GRAMMAR: Negation with “kein/e/er”

TOPIC 5
Hobbies, habits, planning some activities together, talking about places or programs to go out.

GRAMMAR: Dative Case

TOPIC 6
Talk about day-to-day routine, Talk about the weekly or monthly schedule, using verbs, framing questions.

GRAMMAR: Plural

TOPIC 7
Communication at the workplace, talking with colleagues, writing emails, talking about the work schedule, meetings, and telephonic communication.

GRAMMAR: Personal Pronouns

TOPIC 8
Types of houses and house rents, apartments, furniture, renting a house in Germany, describing house or apartment, how to use adjectives.

GRAMMAR: Prepositions

TOPIC 9
How to shop; types of shops; online shopping; talking about shops; going to a mall; buying things and clothes, size, shape, colour, brands.

GRAMMAR: Conjugation of Verbs in Present Tense

TOPIC 10
How to talk about health, communicating with the doctor, fixing appointments at the doctor, discussing health issues, talking about diet plans.

GRAMMAR: Separable and Inseparable Verbs

TOPIC 11
Travel, Tickets booking, hotels. Hotel and services, Tourist places in various countries.

GRAMMAR: Conjugation of Verbs in Present Perfect

TOPIC 12
Similar topics which enhance your language skills.

GRAMMAR: Modal Verbs

53. FOREIGN LANGUAGE TRAINING - SPANISH (GE-AAD003)

Course Instructor:
Prof. Malay Roy

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

This intensive Spanish language course is for absolute beginners (no previous knowledge of Spanish).
To impart basic proficiency in four skills

- Listening
- Reading
- Speaking
- Writing in an interactive communicative way

LEARNING OUTCOMES

The course will familiarize you with the very basic phrases and the most common expressions which are used in the Spanish-speaking World. In this level, the learner can learn to ask and answer the question about the personal details such as where he/she lives, natives he/she recognizes, and things he/she has. In this level, you can interact in a simple way provided the other person talks slowly and clearly and this level is prepared to help. In this Spanish course, you can understand sentences and frequently used expressions related to areas of most immediate relevance. Learners can communicate in simple and routine tasks that requiring a simple and direct exchange of information on familiar and routines matters.

SYLLABUS

- Alphabets & sound
- Genres and conjugations
- Verbs "estar", "ser", "tener", "llamarse", "gustar", "poner" y "traer"
- Adjectives
- Present tense of regular and irregular verbs
- Uses of "por" and "para"
- Superlative
- Reflexive verbs
- Yo también/ Yo tampoco/ Yo sí/ Yo no
- Primero/ Después/ Luego
- Perfect tense
- Reflexive verbs: "sentirse" + adjective
- Tener que / hay que / lo mejor es
- Pensar / Ir a + Infinitive
- Past tense
- este/esta/estos/estas, ese/esa/esos/esas
- el/la/los/las + adjective, el/la/los/las + de + noun
- el/la/los/las + que + verb
- Expressions with Imperative
- Present Perfect and Undefined
- DO, IO pronouns
- Impersonal forms with "se"
- Temporary markers
- Empezar a+ Infinitive, ir/irse
- me/te/le/nos/os/les gustaría + Infinitive

54. WRITING RESEARCH PAPER AND ITS PUBLICATION IN JOURNALS (GE-BTL005)

Course Instructor:
Dr. Prosun Tribedi

Offering School	Offering Department
School of Science & Technology	Biotechnology

COURSE OBJECTIVES

- Understanding of ethical issues related to Research, Publication, Patents and rights
- Understanding the objectives and methodologies of pursuing research and writing manuscript
- Understanding writing manuscripts adhering to publication ethics
- Understanding strategies for avoiding plagiarism in publication process

LEARNING OUTCOMES

In this course, the students will learn what is necessary before writing research paper: the context in which the researchers are addressing the research questions and subsequently publishing the manuscript. Finally, the students will learn with a couple of ethical values, like copyrights and plagiarism that are strongly relevant for making a worthy publication.

SYLLABUS

- **UNIT I: Overview of Research**
  Meaning of Research, Objectives of Research, Motivation in Research, Types of Research, Research Approaches, Significance of Research, Research Methods versus Methodology, Research and Scientific Method, Research Process, Criteria of Good Research, Problems Encountered by Researchers in India
- **UNIT II: Defining the Research Problem**
  Definition of Research Problem, Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem
- **UNIT III: Research Design**
  Meaning of Research Design, Need for Research Design, Features of a Good Design, Important Concepts Relating to Research Design, Different Research Designs, Basic Principles of Experimental Designs
- **UNIT IV: Methods of Data Collection**
  Collection of Primary Data, Observation Method, Interview Method, Collection of Data through Questionnaires, Collection of Data through Schedules, Difference between Questionnaires and Schedules, Some Other Methods of Data Collection, Collection of Secondary Data
- **UNIT V: Research Paper Evaluation and Writing**
  Peer reviewed process, Impact factor, Impact factor calculation, ISSN, ISBN, Presentation of Abstracts, Key Words, Title, Rationale, Novelty and Originality, Results and Discussion, Citations, Referencing and Plagiarism analysis.

55. INTRODUCTION TO BIG DATA AND BUSINESS ANALYTICS FOR NON-ENGINEERS (GE-CSEL002)

Course Instructor:
Prof. (Dr.) Partha Kumar Mukherjee

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

- Understand the Big Data Platform and its business Use cases
- Provide an overview of Apache Hadoop
- Provide HDFS Concepts and Interfacing with HDFS in various business domain 4. Understand Map Reduce Jobs
- Apply analytics on Structured, Unstructured Data
- Exposure to Data Analytics
- To understand different types of data and its properties, Multimedia
- To understand data visualization and explorations
- To familiarize with different types of data analytics techniques and their applications in Manufacturing, Marketing, Banking and Finance sector etc.
- To understand the life cycle of data analytics projects

LEARNING OUTCOMES

- Have an understanding of different types of data and its properties, Multimedia Demonstrate data visualization and explorations techniques
- Have an understanding with different types of data analytics techniques and their applications in Manufacturing, Marketing, Banking and Finance sector etc.
- Identify Big Data and its Business Implications.
- Access and Process Data on Distributed File System
- Manage Job Execution in Hadoop Environment
- Develop Big Data Solutions using Hadoop Eco System

SYLLABUS

- **UNIT I: Introduction to Business Analytics**
  Definition and Introduction to concepts of Data, Information, Knowledge; Types of Data – Qualitative, Quantitative & Mixed; Forms of Data – Textual, Audio, Video, Multimedia; Evolution of Information Technology; Allied Current Technologies – 2, 3-tier architecture, Service-Oriented Architecture, Cloud Computing; Concepts of Business and Information System Architecture with business cases as examples.

- **UNIT II: Basics of Data Analytics**
  What is Data Analytics? Strategies for Data Analysis – Visualizing Data, Exploratory Analysis, Trend Analysis, Estimation; Importance of Data Analytics, Business Analytics; Overview of Types of Data Analytics – Descriptive, Diagnostic, Predictive, Prescriptive; How Data Analytics related to Data Science.
- **UNIT III: Introduction to Big data**
  Types of Digital Data, Introduction to Big Data, Big Data Analytics, History of Hadoop, Apache Hadoop, Analysing Data with Unix tools, Analysing Data with Hadoop, Hadoop Streaming, Hadoop Echo System, IBM Big Data Strategy, Introduction to Infosphere BigInsights and Big Sheets.
- **UNIT IV: Introduction to Big data Tools**
  The Design of HDFS, HDFS Concepts, Command Line Interface, Hadoop file system interfaces, Data flow, Data Ingest with Flume and Scoop and Hadoop archives, Hadoop I/O: Compression, Serialization, Avro and File-Based Data structures. Anatomy of a Map Reduce Job Run, Failures, Job Scheduling, Shuffle and Sort, Task Execution, Map Reduce Types and Formats, Map Reduce Features.
- **UNIT V: Data Analytics Applications**
  Use cases from different verticals – Manufacturing, Marketing, Banking / Financial Services, Healthcare, Telecom, Bio informatics, Smart Data Analytics, Security Analytics, HR Analytics.

56. INTRODUCTION TO CYBER SECURITY AND ITS APPLICATIONS FOR NON-ENGINEERS (GE-CSEL003)

Course Instructor:
Dr. Pranam Paul

Offering School	Offering Department
School of Science & Technology	Computer Science Engineering

COURSE OBJECTIVES

Learn about basic concepts of Cyber Security, Awareness about Cyber Crime. Process of self-defence from cybercrime.

LEARNING OUTCOMES

Ability to understand different types of threats, attack, crime etc. and its protection.

SYLLABUS

- **Introduction**

  Introduction to Cyber Security, Importance and challenges in Cyber Security, Cyberspace, Cyber threats (Advanced persistent threat, Computer crime, Vulnerabilities, Eavesdropping, Malware, Spyware, Ransomware, Trojans, Viruses, Worms, Rootkits, Bootkits, Keyloggers, Screen scrapers, Exploits, Backdoors, Logic bombs, Payloads, Denial of service, Web shells, Web application security, Phishing), Introduction to network concepts, introduction to network security and Critical Infrastructure, Cybersecurity - Organizational Implications.

- **Hackers and Cyber Crimes**

  Types of Hackers, Hackers and Crackers, Cyber-Attacks and Vulnerabilities, Ethical Hacking and Social Engineering: Ethical Hacking Concepts and Scopes, Threats, Information Assurance.

- **Protection Mechanism**

  Introduction to Physical security, understanding access control and monitoring system, biometrics and smart card, understanding video surveillance system, data centre and its safety and security.

- **Pre and Post Activity of the Cyber Crime**

  Cybercrime methodologies and types, Cybercrime investigation, Digital Evidence, Introduction to Cyber Forensics, Computer and allied Equipment with storage media, Role of forensics Investigator, Forensics Investigation Process, Introduction to Cyber Forensic tools, Introduction to Cyber Laws including IPR.

57. NSS AND YOUTH DEVELOPMENT (A SKILL BASED COURSE) (GE-ADML004)

Course Instructor:
Prof. Suman Haldar

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

The National Service Scheme (NSS) is a Central Sector Program of the Ministry of Youth Affairs & Sports of the Government of India. It gives students in technical Institution, graduate and postgraduate programmes at universities, and college levels in India the chance to participate in a variety of government-led community service projects and initiatives. The sole aim of the NSS is to provide hands on experience to young students in delivering community service using volunteer teaching program, medical and health related volunteering program, environment & conservation volunteering program.

- To understand the community in which they work
- Develop among themselves a sense of social and civic responsibility
- Utilize their knowledge in generating practical solution to individual and community problems
- Gain skills in mobilizing community participation.
- Acquire leadership qualities and democratic attitude

LEARNING OUTCOMES

- Learners know about NSS in the context of youth, community and voluntary service
- Comprehending the environment in which they work
- Utilize their expertise in engineering, science, and the humanities to provide realistic solutions to issues affecting both the individual and the community.
- Develop the skills necessary for sharing duties and functioning in a community.
- The development of emergency and disaster response capabilities.
- Practice social harmony and national integration.

SYLLABUS (30% Theory and 70% fieldwork)

- **Module I:**
  Introduction to NSS: History, philosophy, aims and objectives of NSS, Organization of NSS, Funding; Regular Activities; Special Camping; Adopted village
- **Module II:**
  Youth Competencies & Youth Leadership: Definition and importance of life and youth competencies, child literacy and school dropout problem, Internet safety education for youth.

- **Field work:**

  Internet misuse education and prevention for children and youth at school. Identifying the different causes of school dropout and probable solution, Remedial coaching of students from weaker sections.

- **Module III:**

  Youth Health: Healthy lifestyles; Introduction substance abuse, HIV/AIDS, drugs, smoking and HIV/AIDS.

- **Field work:**

  School-based education for drug abuse and smoking prevention. Managing performance anxiety and improving mental skills

- **Module IV:**

  Health, Hygiene and Sanitation: Importance of health, hygiene and sanitation;

- **Field work:**

  Personal Hygiene for school children's after post pandemic, Organizing Blood donation camp

- **Module V:**

  NSS in Social-economic Development

  Environment Issues and Sustainability, Gender sensitivity and woman empowerment, Waste Management, employment opportunity for woman

- **Field work:**

  A community solid Waste management program / Swachh Bharat Abhiyan Program ,Woman empowerment and employment through NGO, Donation of books and cloths to under privilege people.

58. NATIONAL CADET CORPS (NCC) (GE-ADML005)

Course Instructor:
Ms. Munmun Das Mondal

Offering School	Offering Department
Academic Administration	Academic Administration

COURSE OBJECTIVES

1. The NCC provide exposure to the cadets in a wide range of activities., with a distinct emphasis on Social Service, discipline, and Adventure Training.
2. The NCC is open to all regular students of University on a voluntary basis. The National Cadet Corps (NCC) is governed by NCC Act 1948 and attendant NCC Rules. 3.
3. It functions under the Ministry of Defence and is headed by DGNCC. Currently NCC training is imparted as extra-curricular activity to volunteer students from recognized schools and colleges who enroll as cadets.
4. NCC as a Credit Course is designed with an intent to transform NCC training into a curricular activity from an extra-curricular thereby providing academic credits to students undergoing NCC training along with other attended advantages to the cadets in the college/ university.

LEARNING OUTCOMES

The aims of NCC as approved by MOD in Mar 2001 are as under: -

1. To develop character, camaraderie, discipline, secular outlook, the spirit of adventure, sportsman spirit and ideals of selfless service amongst cadets by working in teams, honing qualities such as self-discipline, self-confidence, self-reliance and dignity of labour in the cadets.
2. To create a pool of organized, trained and motivated youth with leadership qualities in all walks of life, who will serve the Nation regard less of which career they choose.
3. To provide a conducive environment to motivate young Indians to choose the Armed Forces as a career.

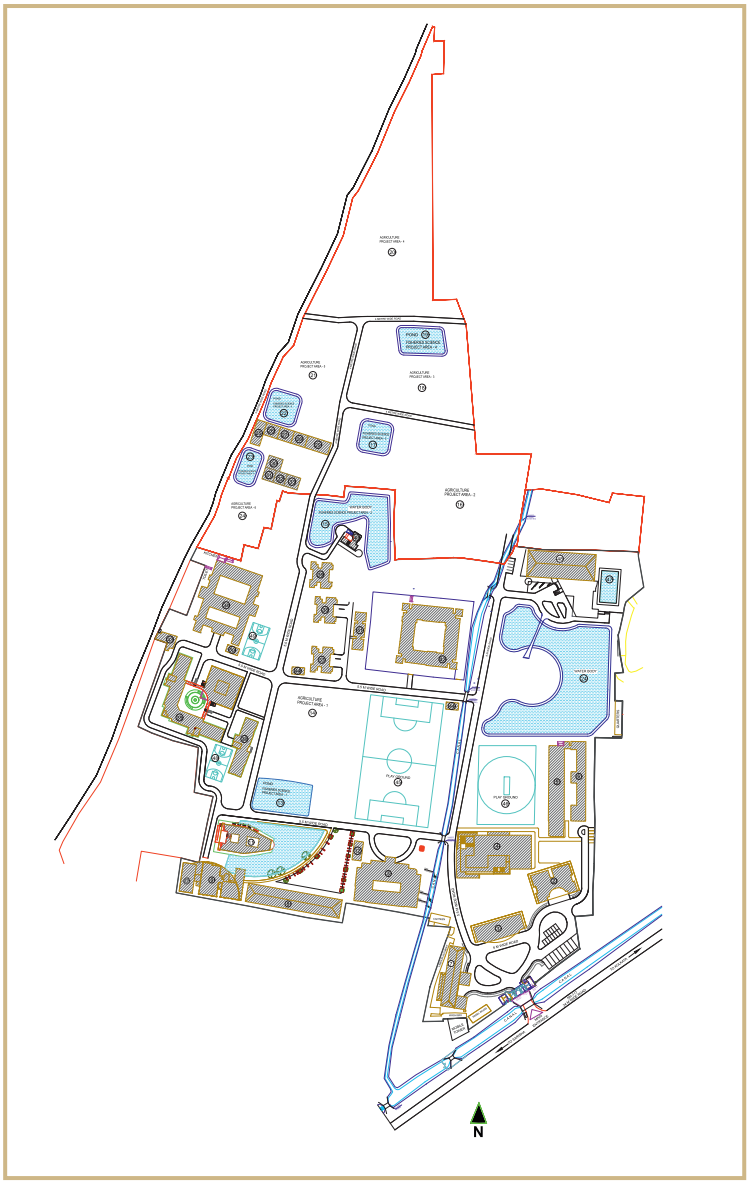
SYLLABUS

Theory

NCC General, National integration and awareness, Personality Development, Social service and community development, Leadership, Disaster Management, Adventure, Border & Coastal Areas, General Awareness, Armed Forces, Introduction to infantry Battalion and its Equipment's, Military History

Practical

Foot drill, General and Words of Command, Attention, Stand at Ease and Stand Easy, Turning and Inclining at the Halt, Sizing, Forming up in Three Ranks, Numbering and Close Order March and Dressing, Saluting at the Halt, Getting on Parade, Falling Out and Dismissing, Marching: Length of Pace and Time of Marching, Marching in Quick Time and Halt, Slow March and Halt, Turning at the March and Wheeling, Saluting at the March, Individual Word of Commands, Side Pace, Pace Forward and to the Rear, Marking Time, Forward Halt in Quick Time and, Formation of Squad and Squad Drill, Map Reading, Weapons study



LEGEND- BUILDING

A. ADMINISTRATIVE BLOCK

1. ADMINISTRATIVE BUILDING (G + V)

B. ACADEMICS BLOCK

2. SCHOLASTIC BUILDING - 1 (G + III)
3. SCHOLASTIC BUILDING - 2 (G + II)
4. SCHOLASTIC BUILDING - 3 (G + III)
5. SCHOLASTIC BUILDING - 4 (G + III)
6. SCHOLASTIC BUILDING - 5 (G + III)
7. WORKSHOP BUILDING
8. NEW WORKSHOP BUILDING
9. NEW PHARMACY BUILDING (G + III)
10. PHARMACY BUILDING (G + III)
11. SHIP IN CAMPUS (G + III)

C. AGRICULTURE & FISHERY SCIENCE BLOCK

12. POLY HOUSE & NET HOUSE
13. FISHERY SCIENCE PROJECT AREA - 1
14. AGRICULTURE PROJECT AREA - 1
15. FISHERY SCIENCE PROJECT AREA - 2
16. AGRICULTURE PROJECT AREA - 2
17. FISHERY SCIENCE PROJECT AREA - 3
18. AGRICULTURE PROJECT AREA - 3
19. FISHERY SCIENCE PROJECT AREA - 4
20. AGRICULTURE PROJECT AREA - 4
21. AGRICULTURE PROJECT AREA - 5
22. FISHERY SCIENCE PROJECT AREA - 5
23. FISHERY SCIENCE PROJECT AREA - 6
24. AGRICULTURE PROJECT AREA - 6
25. MUSHROOM UNIT
26. FIELD LAB
27. STORE HOUSE
28. SERICULTURE UNIT
29. THRESHING FLOOR
30. BIO GAS PLANT
31. CATTLE SHED
32. VERMI COMPOST PIT
33. BIO FERTILIZER PLANT

D. RESIDENTIAL BLOCK

34. BOY'S HOSTEL - 1 & 2 (G + III)
35. BOY'S HOSTEL - 1 & 2 (G + III)
36. BOY'S HOSTEL - 1 & 2 (G + III)
37. OLD STAFF QUARTERS (G + III)
38. NEW STAFF QUARTERS (G + III)
39. NEW STAFF QUARTERS (G + III)
40. DIRECTOR'S RESIDENCE (G + I)
41. OLD STAFF QUARTERS (G + III)
42. GIRL'S HOSTEL - 3 (G + II)

E. UTILITY & SERVICES BLOCK

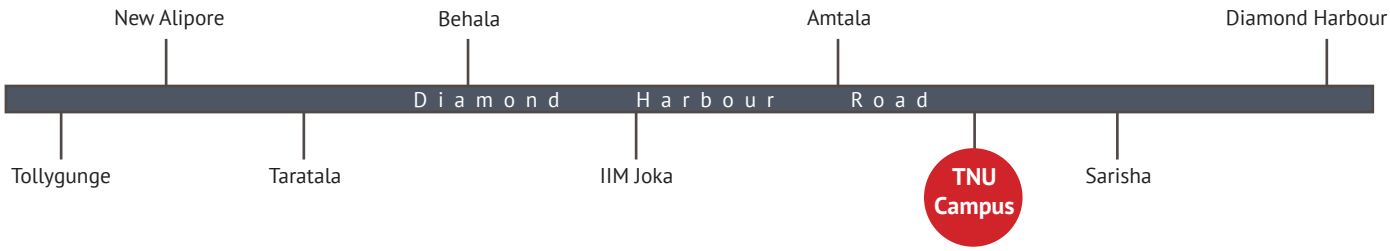
43. ELECTRICAL ROOM
44. PUMP ROOM

F. RECREATIONAL BLOCK

45. FOOTBALL GROUND
46. CRICKET GROUND
47. SWIMMING POOL
48. MULTI PURPOSE HALL
49. BASKETBALL COURT (3 NOS.)

G. HEALTH BLOCK

50. MEDICAL UNIT



AmbujaNeotia

THE NEOTIA UNIVERSITY
ज्ञानम् आत्म प्रदीपाय
UGC Enlisted & Recognised

NEOTIA INSTITUTE OF TECHNOLOGY MANAGEMENT AND SCIENCE
(Formerly ITME. Since 2002.)

Campus: Sarisha, Diamond Harbour Road, 24 Parganas (S), West Bengal - 743 368
Head Office: Vishwakarma, 86C Topsia Road (S), Kolkata - 700 046
Campus: +91 70444 46888 / **Head Office:** +91 70444 46999 | **Email:** contact@tnu.in