

**STUDY & EVALUATION**  
**SCHEMES OF**  
**BACHELOR OF SCIENCE IN FORENSIC**  
**SCIENCE (BFS)**  
**(BFS- I-SEMESTER)**

[Applicable w.e.f. Academic Session 2020-21]



**INTEGRAL UNIVERSITY, LUCKNOW**  
DASAULI, P.O. BAS-HA KURSI ROAD, LUCKNOW – 226026  
Website: [www.iul.ac.in](http://www.iul.ac.in)

Syllabus approved by Board of Study, Faculty Board, Academic Council, Executive Council of the Integral University, Lucknow

**INTEGRAL UNIVERSITY, LUCKNOW**  
**INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH**  
**DEPARTMENT OF PARAMEDICAL & HEALTH SCIENCES**

**STUDY & EVALUATION SCHEME**  
**BACHELOR OF SCIENCE IN FORENSIC SCIENCE (BFS)**  
**(w.e.f. July 2020)**

**I-Year**

**I-Semester**

S. No.	Code	Name of the Subject	Periods			Credits C	Evaluation Scheme			Subject Total	
			L	T	P		Sessional		Exam		
							CT	TA	Total		ESE
1.	FS101	Human Anatomy- I	2	1	0	3	40	20	60	40	100
2.	FS102	Human Physiology-I	2	1	0	3	40	20	60	40	100
3.	CH117	General Chemistry- I	2	1	0	3	40	20	60	40	100
4.	FS104	Community Health Care Issue	2	1	0	3	40	20	60	40	100
5.	FS105	Basics of Physics	2	1	0	3	40	20	60	40	100
6.	LN101	Basic Professional communication	2	1	0	3	40	20	60	40	100
7.	CS103	Introduction to Computers	2	1	0	3	40	20	60	40	100
8.	FS106	Human Anatomy- I Lab	0	0	2	1	40	20	60	40	100
9.	FS107	Human Physiology-I Lab	0	0	2	1	40	20	60	40	100
10.	CH121	General Chemistry-I Lab	0	0	2	1	40	20	60	40	100
11.	FS109	Basics of Physics-Lab	0	0	2	1	40	20	60	40	100
<b>Total</b>			<b>14</b>	<b>07</b>	<b>08</b>	<b>25</b>	<b>440</b>	<b>220</b>	<b>660</b>	<b>440</b>	<b>1100</b>

**L:** Lecture      **T:** Tutorials      **P:** Practical      **C:** Credit      **CT:** Class Test

**TA:** Teacher Assessment      **ESE:** End Semester Examination

**Sessional Total:** Class Test + Teacher Assessment

**Subject Total:** Sessional Total + End Semester Examination (ESE)

**SUBJECT NAME: HUMAN ANATOMY - I**  
**SUBJECT CODE: FS101**  
**(w.e.f July 2020)**

**L T P**  
**2 1 0**

**UNIT-I: GENERAL ANATOMY:**

**(6 hours)**

1. Introduction and subdivisions of Anatomy
2. Anatomical nomenclature :
  - a. Terms of Planes, Positions
  - b. Body parts and movements.
3. Basic tissues of the body:
  - a. Definition, location and their function

**UNIT-II: OSTEOLOGY & ARTHROLOGY (Brief)**

**(7 hours)**

1. Introduction, axial & appendicular skeleton, classification of bone based on shape and structure, structure of growing and adult long bone, ossification of bone, Types of cartilage, their characteristics features with example.
2. Introduction to Arthrology: Definition and classifications of joints with example. Details of synovial joint - characteristics features, type with example, close pack and loose pack position.

**UNIT-III: SYSTEMIC ANATOMY**

**(7 hours)**

1. Brief About Myology: Classification of muscles and its characteristics features, Gross features of skeletal muscle, classification of muscle according to shape and fascicular architecture, action of muscles.
2. Brief About Neurology: Subdivision of nervous system, structural organization of nervous system including types of neurons, ganglion. Introduction to spinal nerves, cranial nerves and autonomic nervous system.
3. Brief About Cardiovascular System: Components of CVS, types of anastomoses, types of circulation, components of lymphatic systems and its functions.

**UNIT-IV: SUPERIOR EXTREMITY**

**(10 hours)**

1. Surface landmarks and Introduction to superior extremity.
2. Brief about Muscles and fascia, Pectoral region: Pectoral muscles, Scapular region and Back, Muscles of Arm, Forearm and Hand:
3. Brief about Joints of superior extremity: Brief of shoulder joint, brief account of elbow joint & wrist joint and radioulnar joint.

**UNIT-V- INFERIOR EXTREMITY**

**(10 hours)**

1. Introduction and surface landmarks of lower extremity.
2. Brief about Muscles and fascia: Thigh: Brief account of thigh muscles.
3. Brief about Gluteal region: Muscles of gluteal region,
4. Compartment of leg, name of the muscles of leg, their action and nerve supply,
5. Brief about Joints: Details of Hip and Knee joint, subtalar, tibiofibular joints.

**RECOMMENDED BOOKS:**

1. Principles of Anatomy & Physiology – Tortora Gerard J
2. Chaurasia's, A Text Book of Anatomy
3. Ranganathan, T.S., A Text Book of Human Anatomy.
4. Fattana, Human Anatomy, (Description and Applied), Saunder's & C P Prism Publishers, Bangalore.
5. Ester. M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia.

**SUBJECT NAME: HUMAN PHYSIOLOGY- I**  
**SUBJECT CODE: FS102**  
**(w.e.f July 2020)**

**L T P**  
**2 1 0**

**UNIT I-GENERAL AND CELL PHYSIOLOGY**

**(8Hours)**

- a. Cell and cell division- Structure, Function and classification of cell
- b. Cellular Movements: Endocytosis and Exocytosis, Molecules of cell
- c. Transport across the cell membrane, Homeostasis
- d. Diffusion, Osmosis, Bonding, Filtration, Dialysis, Surface Tension, Adsorption, Colloid

**UNIT II- BLOOD**

**(8Hours)**

- a. Introduction of blood, Composition and function of blood, Blood cells morphology and development.
- b. Blood cells types and function, Composition and function of blood plasma and Blood clotting factor, Haemoglobin-structure, normal content, function, types. Erythropoiesis.
- c. Erythrocyte sedimentation rate (ESR) and its significance, Hematocrit, PCV, MCV, MCH, MCHC, Blood volume, Prothrombin time, Clotting time, Bleeding time, Blood Group, ABO and Rh factor, Cross matching, Coagulation and Anticoagulants.

**UNIT III- RESPIRATION**

**(8Hours)**

- a. Respiratory System Introduction, Structure, Function and Mechanics of Breathing
- b. Respiration measures (Vital capacity, Total Volume, Reserve volume, Total lung capacity), Mechanism of respiration
- c. Regulation of respiration, pulmonary function test, physiological changes in altitude & acclimatization, hypoxia

**UNIT IV- CARDIOVASCULAR SYSTEM**

**(8Hours)**

- a. Basic Physiology of Heart, Blood circulation, Arteries and veins, properties and structure of heart muscle.
- b. Cardiac Cycle and heart sounds.
- c. Conductive system of heart, Blood Pressure definition, Regulation factor affecting blood Pressure.

**UNIT V- DIGESTIVE SYSTEM**

**(8Hours)**

- a. Digestive system introduction, structure and function
- b. Basic physiology of organs of digestive systems (Salivary glands, Gastric glands, Pancreas, Liver, Gall bladder).
- c. Composition and function of all digestive juices, Digestion and Absorption of carbohydrate, fat and proteins.

**RECOMMENDED BOOKS:**

1. Textbook of Physiology: Guyton
2. Textbook of Physiology : Ganong
3. Human Physiology: A.K. Jain
4. Essentials of Medical Physiology: K.Semubulingam, Jaypee Publishers

**SUBJECT- GENERAL CHEMISTRY- I**  
**SUBJECT CODE- CH117**  
**(w.e.f July 2020)**

**L T P**  
**2 1 0**

**LEARNING OBJECTIVE-** The objective is to learn about the assessment and handling emergencies in the department as well as the infection controls amongst self and the patient.

**UNIT-I** **(8 hours)**

**Periodic Properties:** Atomic radii, ionization potential, electron affinity, electro negativity, metallic characters, non-metallic characters and magnetic properties, d-block elements, transition series (3d) elements with respect to electronic configuration, size, ionization energy, metallic nature, oxidation states, magnetic properties, colour of salts, catalytic properties, complex formation behaviour.

**UNIT-II** **(8 hours)**

**Organic Compounds** Alcohols: Nomenclature, methods of preparation, physical and chemical properties, identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol

**UNIT-III** **(8 hours)**

**Phenols:** Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

**Ethers:** Nomenclature, methods of preparation, physical and chemical properties, uses

**UNIT-IV** **(8 hours)**

**Liquid state:** Free volume of liquid and density measurement, physical properties of liquid, Vapor pressure, surface tension surfactants, viscosity, molar refraction, optical activity structure of liquid, determination of surface tension by stalagmometer method (drop number method), viscosity by Ostwald's viscometer method and refractive index by Abbe's refractometer method. Effect of temperature on surface tension viscosity and refractive index Applications of surface tension, viscosity and refractive index.

**UNIT-V** **(8 hours)**

**Thermo chemistry:** Change in internal energy, enthalpy of reaction, relation between  $\Delta H$  and  $\Delta E$ , different types of thermo chemical equations, energy change during transition or phase change, bond energy.

**Learning outcomes:** After studying this paper the students will know –

1. Understand modern chemical principles both in theory and practice.
2. Importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.
3. The principal laws of thermodynamics and how these dictate the behavior of chemical substances
4. Skills of thermo analysis.
5. Fluid Mechanics
6. Carbon Compounds with different Functional groups

**RECOMMENDED BOOKS:**

1. Principles of Physical Chemistry and Puri, Sharma and Pathania, Vishal Publishing Company, 46<sup>th</sup> Edition 2013
2. Organic Chemistry by Moris and Boyed, Pearson Publishing, 7<sup>th</sup> edition 2011.
3. Text book of organic chemistry by Arun Bahl and B. S. Bahl, S. Chand Publishing, 2016

**SUBJECT NAME: COMMUNITY HEALTH CARE ISSUES**

**SUBJECT CODE: FS104**

**(w.e.f July 2020)**

**L T P**

**2 1 0**

**UNIT I- BASIC CONCEPTS OF COMMUNITY HEALTHCARE (6Hours)**

- a. Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept
- b. National Health Policy, National Health Programmers (Briefly Objectives and Scope)
- c. Population of India and Family welfare programme in India
- d. Health problem in India, Environment and health

**UNIT II- FAMILY (6Hours)**

- a. Family, meaning and definitions, Functions of types of family, changing family patterns
- b. Influence of family on Individuals Health, family and nutrition
- c. Effects of sickness in the family and psychosomatic disease
- d. Concepts of joint family

**UNIT III- COMMUNITY (6Hours)**

- a. Rural community, Meaning and features
- b. Health hazards to rural communities
- c. Health hazards to tribal community
- d. Urban community, Meaning and features, Health hazards of urbanities

**UNIT IV- CULTURE AND HEALTH DISORDERS (6Hours)**

- a. Social Change: Meaning of social changes, Factors of social changes
- b. Human adaptation and social changes, social changes and stress
- c. Social changes and deviance, Social changes and health programme
- d. Role of social planning in the Improvement of health and rehabilitation

**UNIT V- OBJECTIVE AND ORGANIZATION OF IMPORTANT AGENCIES (6Hours)**

- a. WHO, UNICEF, FAO, ILO
- b. Indian Red cross Society
- c. UNFPA, World Bank
- d. Ford foundation, Rockefeller foundation

**RECOMMENDED BOOKS:**

1. K. Perks, Sunder Lal, Adarsh Pandey, Textbook of Preventive Social Medicine

**SUBJECT- BASICS OF PHYSICS**  
**SUBJECT CODE- FS105**  
**(w.e.f July 2020)**

**L T P**  
**2 1 0**

**Learning Objective-** The objective is to learn basic medical pathologies for the image interpretation and diagnosis.

**UNIT-I** **(8 hours)**

**Mechanics:** Force, conservative and non conservative force, rotational motion of inertia, expression of M.I. of regular shaped bodies. Kepler's law. Acceleration due to gravity. Simple Harmonic motion and compound pendulum. Newton's law of motion.

**UNIT-II** **(8 hours)**

**Thermal Physics:** concept of temperature, ideal gas equation and its law. Vander Waal's equation, reversible and irreversible process, Zeroth law, first, second and third law of thermodynamics. Carnot's cycle.

**UNIT-III** **(8 hours)**

**Electromagnetism:** Coulomb's law. Electric field, Magnetic field due to current, Gauss's theorem and its application, Ampere's law, Kirchhoff's law and their applications.

**UNIT- IV** **(8 hours)**

Wheat-stone bridge and its sensitivity. Rectifiers, Amplifiers, semiconductor and its type of junction. Paramagnetic, diamagnetic, ferromagnetic materials and properties.

**UNIT –V** **(8 hours)**

Nuclear Physics Nuclear forces, Nuclear models (elementary idea): Concept of nuclear quantum number, magic numbers. Nuclear Reactions: Artificial radioactivity, transmutation of elements, fission, fusion Radio Activity Half life Period, Nuclear Reactor

**LEARNING OUTCOMES: After studying this paper the students will know –**

1. Will help to understand the quantum mechanism and electromagnetic physics and thermal physics.
2. Will be able to demonstrate general physics phenomena.
3. How to apply basic physics laws in daily concepts.

**RECOMMENDED BOOKS:**

1. Engineering Physics Seventh Enlarged, Revised Edition 2004,
2. M.N. Avadhanulu and P.G. Kshirsagar, S. Chand and Company Ltd. ISBN 81-219-0817-5.
3. Optics – Ajoy Ghatak (3rd Edition) Mc. Graw Hill Co.
4. Modern Physics Concept and Applications – Sanjeev Puri, Narosa Publication.
5. Advanced Practical Physics – Worsnop and Flint Littlehampton Book
6. Services Ltd; 9th Revised edition (1 December 1951)
7. A Text book of advanced Practical Physics – Samir Kumar Ghosh, New Central Book Agency – (3rd edition)

**SUBJECT NAME: BASIC PROFESSIONAL COMMUNICATION**

**SUBJECT CODE: LN101**

**(w.e.f July 2020)**

**L T P**  
**2 1 0**

**UNIT- I- PROFESSIONAL COMMUNICATION**

**(6Hours)**

- a. Professional Communication: Meaning & importance
- b. Essentials of Effective Communication
- c. Barriers to Effective Communication

**UNIT- II- LANGUAGE THROUGH LITERATURE**

**(6Hours)**

- a. Essays:
  - “The Effect of the Scientific Temper on Man” by Bertrand Russell
  - “The Aims of Science and Humanities” by Moody E. Prior
- b. Short Stories:
  - “The Meeting Pool” by Ruskin Bond
  - “The Portrait of a Lady” by Khushwant Singh

**UNIT- III- BASIC VOCABULARY**

**(6Hours)**

- a. Euphemism, One-word Substitution, Synonyms, Antonyms
- b. Homophones, Idioms and Phrases, Common mistakes
- c. Confusable words and expressions

**UNIT- IV- BASIC GRAMMAR**

**(6Hours)**

- a. Articles, Prepositions, Tenses
- b. Concord (Subject-Verb agreement), Verbs: kinds & uses
- c. Degrees of Comparison

**UNIT- V- BASIC COMPOSITION**

**(6Hours)**

- a. Report writing: What is a report? Kinds and objectives of reports, writing reports
- b. Business Letter writing: Introduction to business letters, types of business letters, Layout of business letters, Letter of Enquiry / Complaint

**RECOMMENDED BOOKS:**

1. Lata , Pushp & Kumar, Sanjay .*Communication Skills* , Oxford University Press-2012
2. Quintanilla ,Kelly M. & Wahl ,Shawn T. *Business and Professional Communication* , Sage Publications India Pvt. Ltd-2011
3. Juneja, Om P & Mujumdar, Aarati .*Business Communication :Techniques and Methods*, Orient Black Swan-2010
4. Arora, V. N. & Chandra, Lakshmi. *Improve Your Writing: From Comprehensive to Effective Writing*, Oxford University Press-2010 (For the prescribed essays- “The Effect of the Scientific Temper on Man” by Bertrand Russell &“The Aims of Science and Humanities” by Moody E. Prior)



# **SUBJECT NAME: INTRODUCTION TO COMPUTERS**

**SUBJECT CODE: CS103**

**(w.e.f July 2020)**

**L T P**  
**2 1 0**

## **UNIT-I COMPUTER FUNDAMENTALS: (6 Hours)**

What is a computer? Components of a computer system. Classification of computers. Types of computers. Brief history of evolution of computers and generation of computers. Computer hardware and software. Input/ Output devices.

## **UNIT-II DOS: (7 Hours)**

Elementary knowledge of DOS commands DIR, CLS, DATE, TIME, MD, CD, RD, RENAM, DEL, BACKUP, RESTORE, COPY, SCANDISK, CHKDSK.

## **UNIT-III WINDOWS: (8 Hours)**

Difference between windows and DOS. Basic Features - Date, Time, Time Zone, Display, Screen Saver, Fonts, Mouse, and mouse pointers. Using accessories such as calculator, paint brush, CD player, etc. Use of Windows Explorer for moving and copying files. Introduction to MS-Office and its integrated nature.

## **UNIT-IV MS-WORD: (7 Hours)**

Starting Word, new documents, entering text, changing text, aligning, underlining, and justifying text. Use of tabs. Tables - creation, adding rows and columns, splitting, and combining cells, Borders. Saving, closing, and operating documents. Adding headers and footers. Print preview, and printing a document. Mail merge: creating main document and data source. Adding and removing fields from data source.

## **UNIT-V POWER POINT (PRESENTATION SOFTWARE): (7 Hours)**

Basic concept of presentation software. Standard, Formatting, and drawing toolbars in power point and their use. Creating and opening a presentation. Creating, deleting, opening, and copying slides. Closing and saving a presentation. Use of slide sorter, adding header/footer. Use of master slides and color box. Use of animation features. Inserting pictures, resizing pictures. Inserting organization chart. Use of auto content wizard.

## **RECOMMENDED BOOKS:**

1. A first Course in Computers: Saxena, Vikas Publishing House
2. Fundamentals of Computer science - M. Afshar Alam
3. Fundamental of Information Technology by 'D. S. Yadav- New age International

**SUBJECT NAME: HUMAN ANATOMY - I LAB**

**SUBJECT CODE: FS106**

**(w.e.f July2020)**

**L T P  
0 0 2**

**CONTENTS:**

1. Identification and description of all Anatomical structures
2. The learning of Anatomy is by demonstration only through dummy dissected parts, slides, models, charts etc.
3. Demonstration of dummy dissected parts (upper extremity, lower extremity, thoracic & abdominal viscera, face and brain)
4. Demonstration of skeleton - articulated and disarticulated
5. Demo of all bones showing its parts, radiographs of normal bones & joints. Demonstration of all muscles of the body
6. Demonstration of heart and vessels in the body
7. Demonstration of parts of respiratory system, Normal radiographs of chest.
8. Demonstration of all plexuses and nerves in the body.
9. Demonstration of all part of brain

**RECOMMENDED BOOKS:**

1. Principles of Anatomy & Physiology – Tortora Gerard J
2. Chaurasia's, A Text Book of Anatomy
3. Ranganathan, T.S., A Text Book of Human Anatomy.
4. Fattana, Human Anatomy, (Description and Applied), Saunder's & C P Prism Publishers, Bangalore.
5. Ester. M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia.

**SUBJECT NAME: HUMAN PHYSIOLOGY- I LAB**  
**SUBJECT CODE: FS107**  
**(w.e.f July 2020)**

**L T P**  
**0 0 2**

**CONTENTS:**

1. Measurement of Pulse rate, Heart rate, Blood Pressure.
2. Auscultation for Heart Sounds and Normal Respiratory sounds.
3. Introduction of Microscope, Identification of blood cells by study of peripheral blood smears.
4. D.L.C Differential Leucocytes count.
5. T.L.C Total Leukocytes Count.
6. R.B.C. Count.
7. Estimation of Haemoglobin.
8. Estimation of bleeding time & clotting time.
9. Blood Group, ABO and Rh factor.
10. Haemoglobinometry, various methods of estimation of Hb, errors involved and standardization of instrument for adaptation for Hb estimation.

**RECOMMENDED BOOKS:**

1. Textbook of Physiology: Guyton
2. Textbook of Physiology : Ganong
3. Human Physiology: A.K. Jain
4. Essentials of Medical Physiology: K.Semubulingam, Jaypee Publishers

**SUBJECT- GENERAL CHEMISTRY- I LAB**  
**SUBJECT CODE- CH121**  
**(w.e.f July 2020)**

**L T P**  
**0 0 2**

**LIST OF PRACTICALS:**

1. Introduction to Chemistry laboratory apparatus and instruments.
2. Standardization of given liquid by primary standard.
3. To determine surface tension of the given liquid by using stalagmometer.
4. To determine relative viscosity of given organic liquids by viscometer (Four liquids)
5. pH metric measurement
  - (a) To prepare buffers and standardization of pH meter.
  - (b) Determine the molarity of HCl pH-metrically provided M/10 NaOH.
6. Determination of functional groups.
7. Analysis of acid and basic radicals.
8. Detection of elements.

**RECOMMENDED BOOKS:**

1. Principles of Physical Chemistry and Puri, Sharma and Pathania, Vishal Publishing Company, 46<sup>th</sup> Edition 2013.
2. Organic Chemistry by Moris and Boyed, Pearson Publishing, 7<sup>th</sup> edition 2011.
3. Text book of organic chemistry by Arun Bahl and B. S. Bahl, S. Chand Publishing, 2016.

**SUBJECT- BASICS OF PHYSICS - LAB**  
**SUBJECT CODE- FS109**  
**(w.e.f July 2020)**

**L T P**  
**0 0 2**

**LIST OF PRACTICALS:**

1. Standard operating procedures for using Vernier Caliper, Micrometer Screw Gauge, Travelling Microscope.
2. To determine the value of 'g' by a compound pendulum.
3. To determine the value of 'g' by a Kater's pendulum.
4. To find the Moment of Inertia of a fly wheel about its own axis of rotation  
OR (To find angular.
5. Acceleration of a fly wheel.
6. To verify Newton's law of cooling
7. To determine the Moment of Inertia of a given irregular body using a Torson pendulu

**RECOMMENDED BOOKS:**

1. Engineering Physics Seventh Enlarged, Revised Edition 2004, M.N. Avadhanulu and P.G. Kshirsagar, S. Chand and Company Ltd. ISBN 81-219-0817-5
2. Optics – Ajoy Ghatak (3rd Edition) Mc. Graw Hill Co.
3. Modern Physics Concept and Applications – Sanjeev Puri, NarosaPublication.
4. Advanced Practical Physics – Worsnop and Flint Littlehampton Book Services Ltd; 9th Revised edition edition (1 December 1951)
5. A Text book of advanced Practical Physics – Samir Kumar Ghosh, New Central Book Agency – (3rd edition)