

**HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE,  
PADUR**

**B.Sc. (ANESTHESIA TECHNOLOGY)**

Proposed by

School of Science and Humanities

Curriculum and Syllabus

2015

**HINDUSTAN UNIVERSITY**  
**HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE**  
**ACADEMIC REGULATIONS**

## **1. Vision, Mission & Objectives**

**1.1** The Vision of the Institute is to make everyone a success and no one a failure

In order to progress towards the vision, the Institute has identified itself with a mission to provide every individual with a conducive environment suitable to achieve his / her career goals, with a strong emphasis on personality development, and to offer quality education in all spheres of engineering, technology, applied sciences and management, without compromising on the quality and code of ethics.

**1.2** Further, the Institute always strives

- To train our students with the latest and the best in the rapidly changing fields of Engineering, Technology, Management, Science & Humanities.
- To develop the students with a global outlook possessing, state of the art skills, capable of taking up challenging responsibilities in the respective fields.
- To mould our students as citizens with moral, ethical and social values so as to fulfill their obligations to the nation and the society.
- To promote research in the field of Science, Humanities, Engineering, Technology and allied branches

**1.3** Aims and Objectives of the Institute are focused on

- Providing world class education in engineering, technology, applied science and management.
- Keeping pace with the ever changing technological scenario to help the students to gain proper direction to emerge as competent professionals fully aware of their commitment to the society and nation.
- To inculcate a flair for research, development and entrepreneurship.

## **2. Admission**

**2.1.** The admission policy and procedure shall be decided from time to time by the Board of Management (BOM) of the Institute, following guidelines issued by Ministry of Human Resource Development (MHRD), Government of India. The number of seats in each branch of the B.Sc. (Applied Science) programme will be decided by BOM as per the directives from MHRD, Government of India and taking into account the market demands. Some seats for Non Resident Indians and a few seats for foreign nationals shall be made available.

**2.2.** The student should have

- A pass in +2 (CBSE, Matriculation, State Board) or an equivalent with 12 years of Schooling from a recognized Board with Physics, Chemistry and Biology/ Botany and Zoology as subjects of study.
- Minimum 35% marks in each subject separately.

**2.3.** The selected candidates will be admitted to the B.Sc. programme after he / she fulfills all the admission requirements set by the Institute after payment of the prescribed fees.

**2.4.** In all matters relating to admission to the B.Sc. programme, the decision of the Institute and its interpretation given by the Chancellor of the Institute shall be final.

**2.5.** If at any time after admission, it is found that a candidate has not fulfilled any of the requirements stipulated by the Institute, the Institute may revoke the admission of the candidate with information to the Academic Council.

### **3. Structure of the programme**

**3.1.** The programme will have the following structure:

- i) A general programme comprising Basic Anatomy, Physiology, Pathology, Biochemistry and basics of Computer.
- ii) A core programme introducing the student to the foundations of Practical field.

**3.2.** The duration of the programme will be a minimum of 3 years. Every branch of the B.Sc. programme will have a curriculum and syllabi for the courses approved by the Academic Council.

**3.3** The academic programmes of the Institute follow the credit system.

**3.4.** For the award of degree, a student has to earn certain minimum total number of credits specified in the

curriculum of the relevant branch of study. The curriculum of the different programs shall be so designed that the minimum prescribed credits required for the award of the degree shall be within the limits of 120

**3.5.** The medium of instruction, examination and the language of the project reports will be English.

### **4. Faculty Advisor**

**4.1.** To help the students in planning their courses of study and for getting general advice on the academic programme, the concerned Department will assign a certain number of students to a Faculty member who will be called their Faculty Advisor.

### **5. Class Committee**

**5.1** A Class Committee consisting of the following will be constituted by the Head of the Department for each class:

- (i) A Chairman, who is not teaching the class.
- (ii) All subject teachers of the class.
- (iii) Two students nominated by the department in consultation with the class.

The Class Committee will meet as often as necessary, but not less than six times during a year.

The functions of the Class Committee will include:

- (i) Addressing problems experienced by students in the classroom and the laboratories.

- (ii) Analyzing the performance of the students of the class after each test and finding ways and means of addressing problems, if any.
- (iii) During the meetings, the student members shall express their opinions and suggestions of the class students to improve the teaching / learning process.

## 6. Grading

6.1 A grading system as below will be adhered to.

Range of Marks	Letter Grade	Grade points
90-100	S	10
80 - 89	A	09
70- 79	B	08
60-69	C	07
50-59	D	06
40-49	E	05
< 40	U	00
	I (Incomplete)	

### 6.2 GPA & CGPA

GPA is the ratio of the sum of the product of the number of credits  $C_i$  of course "i" and the grade points  $P_i$

earned for that course taken over all courses "i" registered by the student to the sum of  $C_i$  for all "i". That is,

$$GPA = \frac{\sum C_i P_i}{\sum C_i}$$

CGPA will be calculated in a similar manner, at any year, considering all the courses enrolled from first year onwards.

6.3. For the students with letter grade I in certain subjects, the same will not be included in the computation of GPA and CGPA until after those grades are converted to the regular grades.

6.4 Raw marks will be moderated by a moderation board appointed by the Vice-Chancellor of the University. The final marks will be graded using absolute grading system. The Constitution and composition of the moderation board will be dealt with separately.

## 7. Registration & Enrolment

7.1 Except for the first year, registration and enrollment will be done in the beginning of the year as per the schedule announced by the University.

7.2 A student will be eligible for enrollment only if he/she satisfies regulation 10 (maximum duration of the programme) and will be permitted to enroll if (i) he/she has cleared all dues in the Institute, Hostel & Library up to the end of the previous Year and (ii) he/she is not debarred from enrollment by a disciplinary action of the University.

**7.3.** Students are required to submit registration form duly filled in.

## **8. Registration requirement**

**8.1.** If a student finds his/her load heavy in any year, or for any other valid reason, he/she may withdraw from the courses within three weeks of the commencement of the year with the written approval of his/her Faculty Advisor and HOD. However the student should ensure that the total number of credits registered for in any year should enable him/her to earn the minimum number of credits per year for the completed years.

## **9. Continuation of programme**

**9.1.** For those students who have not earned the minimum required credit prescribed for that particular year examination, a warning letter to the concerned student and also to his parents regarding the shortage of his credit will be sent by the HOD after the announcement of the results of the University examinations

## **10. Maximum duration of the programme**

**10.1.** The normal duration of the programme is 3 years. However a student may complete the programme at a slower pace by taking more time, but in any case not more than 5 years excluding the years withdrawn on medical grounds or other valid reasons.

## **11. Temporary discontinuation**

**11.1.** A student may be permitted by the Dean (Academic) to discontinue temporarily from the programme for six months or a longer period for reasons of ill health or other valid reasons. Normally a student will be permitted to discontinue from the programme only for a maximum duration of 6 months.

## **12. Discipline**

**12.1.** Every student is required to observe discipline and decorous behavior both inside and outside the campus and not to indulge in any activity which will tend to bring down the prestige of the University.

**12.2.** Any act of indiscipline of a student reported to the (Academics) will be referred to a Discipline Committee so constituted. The committee will enquire into the charges and decide on suitable punishment if the charges are substantiated. The committee will also authorize the Dean (Academic) to recommend to the Vice-Chancellor the implementation of the decision. The student concerned may appeal to the Vice-Chancellor whose decision will be final. The Dean (Academic) will report the action taken at the next meeting of the Council.

**12.3.** Ragging and harassment of women are strictly prohibited in the University campus and hostels.

## **13. Attendance**

**13.1.** A student whose attendance is less than 75% in a year is not eligible to appear for the end – year examination. The details of all students who have less than 75%

attendance in a course will be announced by the teacher in the class. These details will be sent to the concerned HODs and (Academic).

**13.2.** Those who have less than 75% attendance will be considered for condonation of shortage of attendance. However, a condonation of 10% in attendance will be given on medical reasons. Application for condonation recommended by the Faculty Advisor, concerned faculty member and the HOD is to be submitted to the Dean (Academic) who, depending on the merits of the case, may permit the student to appear for the year end examination. A student will be eligible for this concession at most in one year during the entire degree programme. Application for medical leave, supported by medical certificate with endorsement by a Registered Medical Officer, should reach the HOD within seven days after returning from leave or, on or before the last instructional day of the year, whichever is earlier.

**13.3** As an incentive to those students who are involved in extra-curricular activities such as representing the University in Sports & Games, Cultural Festivals, and Technical Festivals, NCC/ NSS events, a relaxation of up to 10% attendance will be given subject to the condition that these students take prior approval from the officer – in-charge. All such applications should be recommended by the concerned HOD and forwarded to Dean (Academic) within seven instructional days after the programme / activity.

## **14. Assessment Procedure**

**14.1.** The Academic Council will decide from time to time the system of tests and examinations in each subject in each year.

**14.2** For each theory course, the assessment will be done as follows:

<b>Internal Tests</b>	<b>End Year Examination</b>	<b>Total</b>
<b>Max</b>	<b>Max</b>	
25	75	100

Computer courses will be evaluated through internal examinations only.

Internal Assessment will be done based on the components below:

1. Written test/term test
2. Record Books
3. Assignments
4. Oral presentations/seminars
5. Skills/practical training acquired in Laboratory
6. Communication skills

**14.3** For practical courses, the assessment will be done by the subject teachers as below:

- (i) Weekly assignment/Observation note book / lab records – weightage 60%.
- (ii) Year- end examination of 3 hours duration including viva – weightage 40%.

**14.4** For courses on Physical Education, NSS, etc the assessment will be as satisfactory/not satisfactory only.

## **15. Make up Examination/Periodical Test**

**15.1.** Students who miss the year end examinations / periodical test for valid reasons are eligible for makeup examination /periodical test. Those who miss the year-end examination / periodical test should apply to the Head of the Department concerned within five days after he / she missed examination, giving reasons for absence.

**15.2.** Permission to appear for make-up examination/periodical test will be given under exceptional circumstances such as admission to a hospital due to illness. Students should produce a medical certificate issued by a Registered Medical Practitioner certifying that he/she was admitted to hospital during the period of examination / periodical test and the same should be duly endorsed by parent/guardian and also by a medical officer of the University within 5 days.

**15.3.** The student will be allowed to make up at the most two out of three periodical tests.

## **16. Declaration of results**

**16.1..** A candidate who secures not less than 40% of total marks prescribed for a course with a minimum of 40% of the marks prescribed for the year end examination shall be declared to have passed the course and earned the specified credits for the course.

**16.2** After the valuation of the answer scripts, the tabulated results are to be scrutinized by the Result Passing Boards of UG and PG programmes constituted by

the Vice-Chancellor. The recommendations of the Result Passing Boards will be placed before the Standing Sub Committee of the Academic Council constituted by the Chancellor for scrutiny. The minutes of the Standing Sub Committee along with the results are to be placed before the Vice-Chancellor for approval. After getting the approval of the Vice-Chancellor, the results will be published by the Controller of Examination / Registrar.

**16.3.** If a candidate fails to secure a pass in a course due to not satisfying the minimum requirement in the year end examination, he/she shall register and re-appear for the end year examination during the following year. However, the internal marks secured by the candidate will be retained for all such attempts.

**16.4.** If a candidate fails to secure a pass in a course due to insufficient sessional marks though meeting the minimum requirements of the year end examination, wishes to improve on his/her sessional marks, he/she will have to register for the particular course and attend the course with permission of the HOD concerned and with a copy marked to the Registrar. The sessional and external marks obtained by the candidate in this case will replace the earlier result.

**16.5.** A candidate can apply for the revaluation of his/her year -end examination answer paper in a theory course within 2 weeks from the declaration of the results, on payment of a prescribed fee through proper application to the

Registrar/Controller of Examinations through the Head of the Department. The Registrar/Controller of Examinations will arrange for the revaluation and the results will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses and for project work.

## 17. Grade Card

17.1 After results are declared, grade sheet will be issued to each student which will contain the following details:

- (i) Program and branch for which the student has enrolled.
- (ii) Year of registration.
- (iii) List of courses registered during the Year and the grade scored.
- (iv) Year Grade Point Average (GPA)
- (v) Cumulative Grade Point Average (CGPA).

## 18. Class / Division

Classification is based on CGPA and is as follows:

CGPA  $\geq$ 8.0 : **First Class with distinction**

7.0  $\leq$ CGPA < 8.0 : **First Class**

6.0  $\leq$ CGPA < 7.0 : **Second Class**

5.0  $\leq$ CGPA < 6.0 : **Third Class**

## 19. Transfer of credits

19.1 Within the broad framework of these regulations, the Academic Council, based on the recommendation of the transfer of credits committee so consulted by the

Chancellor may permit students to earn part of the credit requirement in other approved institutions of repute and status in the country or abroad.

## 20. Eligibility for the award of B.Sc.

20.1. A student will be declared to be eligible for the award of the B.Sc. Degree if he/she has

- i) Registered and successfully obtained credit for all the core courses;
- ii) Successfully acquired the credits in the different categories as specified in the curriculum corresponding to the discipline (branch) of his/her study within the stipulated time;
- iii) Has no dues to all sections of the Institute including Hostels, and
- iv) Has no disciplinary action pending against him/her.

The award of the degree must be recommended by the Academic Council and approved by the Board of Management of the University.

## 21. Power to modify

21.1. Notwithstanding all that has been stated above, the Academic Council shall modify any of the above regulations from time to time subject to approval by the Board of Management.



**HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE**  
**B.Sc. Anesthesia Technology**  
**Curriculum & Syllabus**  
**(Annual Pattern) 2015**  
**First Year**

S. No.	Course Code	Course Title	L	T	P	Credits	Total Contact Hours
<b>Theory</b>							
1	AT101	Anatomy	8	-	0	8	4
2	AT102	Physiology	8	-	0	8	4
3	CVT103/PFT103/ AT103	Biochemistry	8	-	0	8	4
4	AT104	Pathology	8	-	0	8	4
5	AT105	Principles of Management	8	-	0	8	4
6	BCS101	Fundamentals of Computers	3	-	0	3	3
<b>Practical</b>							
7	AT131	Anatomy Practical	0	0	3	2	3
8	CVT132/AT132	Cardiac Physiology Practical	0	0	3	2	3
9	CVT133/PFT133/ AT133	Biochemistry Practical	0	0	3	2	3
10	AT134	Pathology Practical	0	0	3	2	3
11	BCS131	Computer laboratory	0	0	3	2	3
<b>Total</b>						<b>53</b>	<b>38</b>

**HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE**

**B.Sc. Anesthesia Technology**

**First Year**

L	T	P	C
8	0	0	8

**AT 101 ANATOMY**

**Objective:** To impart knowledge to the students on basics of Human Anatomy

**Outcome:** The course should enable the students

1. To understand anatomy of Human system
2. To educate the over view of different systems

**UNIT 1 INTRODUCTION TO ANATOMY 10 periods**

**UNIT 2 OSTEOLOGY 20 periods**

Upper limb – clavicle, scapula, humerus, radius, ulna

Lower limb - femur, hipbone, sacrum, tibia, fibula, Vertebral column

**UNIT 3 THORAX 20 periods**

Intercostal space, pleura, bony thoracic cage, ribs sternum & thoracic vertebrae

**UNIT 4 AIRWAY 20 periods**

Larynx, Trachea, bronchial tree

**UNIT 5 HEART 20 periods**

Surface anatomy of heart, chambers of the heart, valves of the heart, major blood vessels of heart, pericardium, coronary arteries

**UNIT 6 SKELETO-MUSCULAR SYSTEM 20 periods**

Muscles of thorax, muscles of upper limb & Lower limb

**UNIT 7 EXCRETORY SYSTEM 10 periods**

Kidneys, ureters, bladder, urethra

### **REFERENCE BOOKS**

1. William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill
2. Chaurasia –A Text book of Anatomy T.S. Ranganathan – A text book of Human Anatomy
3. ESTER. M. Grishcimer, Physiology & Anatomy with Practical Considerations, J.P. Lippin  
Cott. Philadelphia

**L= 120 Periods**

## AT 102 PHYSIOLOGY

L	T	P	C
8	0	0	8

**Objectives:** To educate the students on basics of Human Physiology

**Outcomes:-**The course should enable the students to

1. Gain a wide knowledge on the physiology of cardio vascular system.
2. Get a good exposure on cardiac cycle, cardiac output and circulation

### UNIT 1 THE CELL

**10 Periods**

Cell Structure and functions of the varies organelles,Endocytosis and exocytosis. Neuro muscular junction

### UNIT 2 THE BLOOD

**15 Periods**

Composition of Blood, functions of the blood and plasma proteins, classification and Protein, Function of Hemoglobin, Erythrocyte Sedimentation Rate, Detailed description about WBC- Total count (TC), Differential count (DC) and functions, Platelets – formation and normal level and functions ,Blood groups and Rh factor .

### UNIT 3 CARDIO-VASCULAR SYSTEM

**15 Periods**

Physiology of the heart,Heart sounds ,Cardiac cycle, Cardiac output,Auscultatory areas. Arterial pressures, blood pressure, Hypertension ,Electro cardiogram (ECG) .

### UNIT 4 RESPIRATORY SYSTEM

**10 Periods**

Respiratory movements, Definitions and Normal values of Lung volumes and Lung capacities.

### UNIT 5 EXCRETORY SYSTEM

**10 Periods**

Normal Urinary output, Micturation ,Renal function tests

### UNIT 6 REPRODUCTIVE SYSTEM

**15 Periods**

Reproduction organs, Menstrual cycle, Brief account of menstrual cycle.

**UNIT 7 CENTRAL NERVOUS SYSTEM****15 Periods**

Functions of CSF, Functions of Cortex Steep cycle, Reticular activative system

**UNIT 8 ENDOCRINE SYSTEM****15 Periods**

Functions of the pituitary, thyroid, parathyroid, adrenal and pancreatic Hormones.

**UNIT 9 DIGESTIVE SYSTEM (FOR THE STUDENTS OF DIPLOMA IN SCOPE SUPPORT TECHNOLOGY)****15 Periods**

Physiological Anatomy of the GUT, Food Digestion in the mouth, stomach, intestine, Absorption of foods and gastric emptying, Role of bile in the digestion- Vomiting mechanism

**L= 120 Periods****REFERENCE BOOKS**

1. Guyton (Arthur) Text Book of Physiology. Latest Ed. Prism publishers
2. Chatterjee(CC) Human Physiology Latest Ed. Vol-1, Medical Allied Agency
3. Choudhari (Sujith K) Concise Medical Physiology Latest Ed. New Central Book,
4. Ganong (William F) Review of Medical Physiology. Latest Ed . Appleton

## AT 103 BIOCHEMISTRY

L	T	P	C
8	0	0	8

**OBJECTIVES:** To impart knowledge to the students on principles of Biochemistry

**OUTCOMES:** Completion of the course will enable the students

- To understand and appreciate the structure and functions of Protein, lipids and carbohydrates.
- To know about the composition and biological properties of carbohydrate lipid and protein
- To understand the nutrition aspects of Biomolecules

### **Unit I ACIDS AND BASES**

**12 Periods**

Definition, pH, Henderson – Hasselbalch equation, Buffers, Indicators, Normality, Molarity, Molality, fluid and electrolyte balance

### **Unit II CARBOHYDRATES**

**16 Periods**

Structure, Classification & Functions (Monosaccharides, Disaccharides, Polysaccharides, Homopoly- saccharides, Heteropolysaccharudes), glycoproteins

### **Unit III PROTEINS**

**16 Periods**

Amino acids, Classification & Structure of proteins, Physical & Chemical Properties of proteins, Denaturation, Antigen, Antibody Types, Plasma proteins, Blood clotting

### **Unit IV LIPIDS**

**20 Periods**

Chemical structure, functions & Classification of fatty acids (Essential fatty acids & non-essential fatty acids, MUFA, PUFA); Classification of lipids: Triacylglycerols, Phospholipids, Lipoproteins, Steroids, Amphipathic lipids, miscelles, Fluid mosaic model

### **Unit IV NUCLEIC ACIDS**

**12 Periods**

Purines and pyrimidine, Structure of DNA, Watson & Crick model of DNA, Structure of RNA & its types

**Unit V ENZYMES****14 Periods**

Definition, Nomenclature, Classification, Factors affecting enzyme activity, Active site, Coenzyme, Enzyme Inhibition, Mechanism of enzyme action, Units of enzyme, Isoenzymes, Enzyme pattern in diseases.

**Unit VI VITAMINS & MINERALS****16 Periods**

Fat soluble vitamins (A, D, E, K), Water soluble vitamins, B-complex vitamins & C, Essential Macro elements (Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and sulphur) and Trace elements- Calorific value of foods, Basal metabolic rate (BMR), respiratory quotient (RQ) Specific dynamic action (SDA), Balanced diet – Marasmus & Protein Energy Malnutrition – Kwashiorkar

**Unit VII HORMONES****14 Periods**

Classification, Mechanism of action, Hypothalamic hormones, Pituitary, Anterior, posterior, Thyroid, Adrenal cortex, Adrenal medulla, Gonad hormones, Menstrual cycle, GI hormones.

**L=120 Periods****REFERENCE BOOKS**

1. Harold Varley, Practical Clinical Biochemistry, 4<sup>th</sup> Edition, CBS Publishers, New Delhi.
2. Carl A. Burtis, PhD and David E. Bruns TEITZ Fundamentals of Clinical chemistry, 6<sup>th</sup> edition, Saunders, 2008.
3. Lawrence A. Kaplan, and Amadeo J. Pesce, Clinical chemistry 5<sup>th</sup> Edition, Elsevier, 2010.
4. Ramakrishna(S) Prasanna(KG), Rajna ® Text book of Medical Biochemistry Latest Ed Orient longman Bombay –1980
5. Vasudevan (DM) Sreekumari(S) Text book of Biochemistry for Medical students, Latest Ed 6. DAS (Debajyothi) Biochemistry, Latest ED Academic, Publishers, Calcutta – 1992

## AT 104 – PATHOLOGY

L	T	P	C
8	0	0	8

**Objective:** This course will cover common cardiovascular diseases, their related pathology and microbiology and outline of clinical presentation and management of these conditions including medical and surgical interventions.

**Outcome:** The course should enable the students to understand patho physiology of cardiovascular system

### **UNIT1 CELLULAR ADAPTATION, CELL INJURY & CELL DEATH. INTRODUCTION TO PATHOLOGY 20 periods**

Overview: Cellular response to stress and noxious stimuli. Cellular adaptations of growth and differentiation. Overview of cell injury and cell death. Causes of cell injury. Mechanisms of cell injury. Reversible and irreversible cell injury. Examples of cell injury and necrosis

### **UNIT 2 INFLAMMATION 20 periods**

General features of inflammation Acute inflammation, Chemical mediators of inflammation, Chronic inflammation.

### **UNIT 3 IMMUNITY DISORDERS 20 periods**

General features of the immune system, Disorders of the immune system, Hyper sensitivity reaction – I, II, III, IV.

### **UNIT 4 INFECTIOUS DISEASES 20 periods**

General principles of microbial pathogenesis Viral infections – HBV, HCV, HIV, CMV, Bacterial infections- Staphylococci, /streptococci, E-Coli, Salmonella, Tuberculoses. Fungal infections, Parasitic infections Torch infection.



**UNIT 5 NEOPLASIA****20 periods**

Definitions, Nomenclature, Biology of tumor growth benign and malignant neoplasms, Carcinogenic agents and their cellular interactions Clinical features of tumors.

**UNIT 6 ENVIRONMENTAL AND NUTRITIONAL DISORDERS****20 periods**

Occupational Hazards, Radiation injury, Marasmus Kwashiorkor.

**REFERENCE BOOKS**

1. Culling Histopathology techniques
2. Bancroft Histopathology techniques
3. Todd & Sanford Clinical Diagnosis by laboratory method
4. Dacie & Lewis – Practical Haematology
5. Ramanic Sood, Laboratory Technology (Methods and interpretation) 4th Ed. J.P. Bros, New Delhi –1996) 9. Satish Gupta Short text book of Medical Laboratory for technician J.P. Bros, New Delhi – 1998.
6. Sachdev K.N. Clinical Pathology and Bacteriology 8th Ed, J.P. Bros, 26 New Delhi-1991.
7. Krishna - Text book of Pathology, Orient Longman PVT Ltd. Bacteriology 8th Ed, J.P. Bros, New Delhi-1991.

**AT105 - PRINCIPLES OF MANAGEMENT**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>

**Objectives::** To introduce basics of principles of management.

**Outcomess:** To understand the fundamentals of management.

To increase the communication skills for the students.

**UNIT 1 DEVELOPMENT OF MANAGEMENT: DEFINITIONS OF MANAGEMENT**

**FUNCTIONS OF MANAGEMENT**

**30 Periods**

Planning – Organizing – Directing – Controlling Planning: Types of planning Short-term and long plans – Corporate or Strategic

**UNIT 2 COMMUNICATION**

**30 Periods**

Types of communication – Barriers of effective communication – Techniques for improved communication, Directing: Principles relating to Direction process – Principles and theories of leadership – Leadership Styles – Delegation of authority

**UNIT 3 CO-ORDINATION**

**30 Periods**

Co-ordination and co-operation – Principles of co-ordination – Techniques of co-ordination charts and records – Standard procedure instructions

**UNIT 4 PERSONNEL AND FINANCIAL MANAGEMENT**

**30 Periods**

Objective of Personnel Management – Role of Personnel Manager in an organization – Staffing and work distribution techniques – Job analysis and description – Recruitment and selection processes – Orientation and training – Coaching and counseling – disciplining – Complaints and grievances – Termination of employees – Performance appraisal – Health and safety of employees - Consumer Protection Act as applicable to health care services Insurance – Health Schemes – Re-imburement.

**L=120 Periods**

<b>BCS 101</b>	<b>FUNDAMENTALS OF COMPUTERS</b> (Common to B. Sc. Physics (Nano Technology), B. Sc. Analytical Chemistry, B.Sc. (Cardiovascular Technology and B.Sc. (Perfusion Technology))			<b>L</b> <b>3</b>	<b>T</b> <b>0</b>	<b>P</b> <b>0</b>	<b>C</b> <b>3</b>
	<b>Goal</b> To introduce computer fundamentals.						
<b>OBJECTIVES</b>				<b>OUTCOMES</b>			
The course should enable the students to				The student should be able to			
Learn the major components of a Computer system.				Have understood the interaction between different components of Computer system and number system.			
Learn the computer information Concepts. Understand the basic concepts of computer programming.				Perform conversions from one number system to another.			
Learn the types of software				Design and develop flowcharts, algorithms and pseudo code for the given problem.			
Understand the fundamentals of computer networks				Have understood the fundamental concepts of OS and computer networks			

### **UNIT 1: COMPUTER FUNDAMENTALS**

**9 Periods**

Introduction - Evolution of Computers - Generations of Computer - Classification of Computers - Application of computers - Computer Organisation: CPU, Memory, ALU, Control Unit, I/O unit - Secondary Storage Devices - Booting

### **UNIT 2: INFORMATION CONCEPTS**

**9 Periods**

**Number System:** Binary, Octal and Hexadecimal and conversion from one number system to another - Data and its representation - Information and its characteristics - Categories of Information - Levels of information - Levels of Information

**Data Storage and retrieval:** Concept of file - record and field

### **UNIT 3: COMPUTER PROGRAMMING**

**9 Periods**

**Problem Solving Techniques:** Algorithms, Flowchart, Pseudo code - Program Control Structures - Programming Paradigms - Programming Languages -Generations of Programming Languages - Language translators - Characteristics of Good Programming Language

### **UNIT 4: INTRODUCTION TO SOFTWARE**

**9 Periods**

Definition - Types of Software -System software: Operating System, Functions of OS, Overview of DOS, Windows and Linux.

**Application software:** Word Processor, Spread Sheet, Database concepts, Flat file versus Database.

## **UNIT 5: COMPUTER NETWORK CONCEPTS**

**9 Periods**

Introduction to Computer Networks - Evolution - Network Architecture - Applications and usage of Internet - Browser and its types - Domain Name System (DNS), WWW, Electronic Mail (e-mail) - Search Engines and Intranets.

**TOTAL: 45 Periods**

### **TEXT BOOKS**

1. P.K. Sinha & P. Sinha, “Computer Fundamentals”, BPB Publications, 4th edition, 2004  
ITL Education Solution Limited.
2. Ashok Kamthane, “Computer Programming”, Pearson Education Inc 2007.

### **REFERENCE BOOKS**

- 1 .Excel-Missing Manual, Mathew McDonald, O Reilly Press
2. Fundamentals of Computer – V.Rajaramanna ( Prentice Hall )
3. Computers and Commonsense Hunt, J. Shelley, Prentice Hall of India

## AT 131 ANATOMY PRACTICAL

L T P C  
0 0 3 2

**Objective:** To make the students conversant with the practical aspects of anatomy.

### List of Exercises:

a. Histology:

Identification  
general features  
heart muscle  
Valves and Atherosclerosis

b. Heart:

Cut section  
Anatomy and identification of structure

**P = 45 Periods**

## AT 132/CVT132 CARDIAC PHYSIOLOGY PRACTICAL

L T P C  
0 0 3 2

**Objective:** To train the students for the processes and techniques related to cardiac physiology

### List of Exercises:

1. The compound Microscope
2. White Blood Cell count Red Blood Cell count Determination
3. Determination of ESR-By Westergren's method
4. Determination of Blood Groups
5. Calculation of Blood indices-MCH, MCHC
6. Measurement of human blood pressure
7. Examination of Respiratory system to count respiratory rate and measure inspiration and respiration

**P = 45 Periods**

## AT 133/PFT133 BIOCHEMISTRY PRACTICAL

L T P C  
0 0 3 2

**Objective:** To expose and train the students with laboratory experiments / tests related to the identification of biomolecules

### List of Exercises:

**Qualitative Tests:**

- Carbohydrates: Molisch's test, Fehling's test, Benedict's test, Seliwanoff's test
- Lipids: Solubility test, Emulsification Test, Saponification test
- Proteins: Heat Coagulation test, Isoelectric precipitation test

**P = 45 Periods****AT134 –PATHOLOGY PRACTICAL**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

**Objective:** To educate and practically train the students in the areas of pathology**List of Exercises**

- Spotters – Carryout any two Investigations
- Hb/ PCV/ WBC count/ differential count / P.S. staining & reporting/ ESR/ Retic count.
- Urine Examination - 8 marks. General Physical Examination Tests for Sugar, Ketone bodies, Blood & Proteins.

**P = 45 Periods**

<b>BCS 131</b>	<b>COMPUTER LABORATORY</b> (Common to B. Sc. Physics (Nano Technology), B. Sc. Analytical Chemistry, B.Sc. (Cardiovascular Technology and B.Sc. (Perfusion Technology)	<b>L T P C</b> <b>0 0 3 2</b>
<b>Goal</b>	<b>To impart computational skills using computer software</b>	
<b>OBJECTIVES</b>		<b>OUTCOMES</b>
The course should enable the students to		The students should be able to
Gain an exposure to work with OS commands		Work with DOS and Linux commands in command mode.
Gain knowledge about word processing, Spreadsheet and Databases.		Use word processors to create document, table, text formatting and Mail merge options.  Use spreadsheet for calculations using formula editor, creating different types of charts and including pictures etc.,  Use database software to create databases, design queries and generate forms and reports.

## **LIST OF EXPERIMENTS**

- a) DOS Commands**
- b) Basic Linux Commands**
- c) Word Processing**
  - 1. Document creation, Text manipulation with Scientific notations.
  - 2. Table creation, Table formatting and Conversion.
  - 3. Mail merge and Letter preparation.
  - 4. Drawing - flow Chart
- d) Spread Sheet**
  - 5. Chart - Line, XY, Bar and Pie.
  - 6. Formula - formula editor.
  - 7. Spread sheet - inclusion of object, Picture and graphics, protecting the document
- e) Database**
  - 8. Creation of Database
  - 9. Forms
  - 10. Queries
  - 11. Reports

**P= 45 Periods**