B.S. Physician Assistant at ICVD, Chennai

Course Descriptions

PAT ZC121 Mathematics I 3
Limits; sequences and series; continuity and differentiability of real valued functions of a real variable; integration; applications of derivatives and integrals; linear differential equations with constant coefficients; analytical geometry of conics.

PAT ZC122 Mathematics II 3
Heuristic approach to manipulations with sets; language of logic; vectors and matrices, elementary applications; simplex method for a linear programming problem; elementary probability and statistical tools for tests of significance; game theory; graphs and networks; applications to behavioral and managerial sciences.

PAT ZC131 Introduction to Computers 3
How the PC works. The anatomy of a PC: Elementary DOS usage; Exercises on keyboard familiarity and DOS; Applications of PC like word-processing, spreadsheeting desk, personal information management etc.

PAT ZC132 Scientific Measurements I 3
Measurement in the fields of biology, chemistry and physics. Emphasis in this course shall be on the operation and use of modern laboratory instruments.

PAT ZC141 Biological Chemistry 3
Chemistry and functions of constituents of cells and tissues; introduction to enzymes; metabolism of carbohydrates, lipids, aminoacids; nucleic acids and protein synthesis; vitamins and hormones.

PAT ZC142 Nutrition and Dietetics 4
Emergence, Scope and Methodology of nutrition as a science; Energy metabolism, Food energy (carbohydrates, fat, protein) and individual nutrients (vitamins and minerals) with special reference to distribution in the body and biochemical role, amount in ordinary foods, digestion, absorption, transport, storage, utilization and disposal, requirements and recommended allowances and their modification under stress conditions, effects of deficiency, incidence, etiology and prevention of deficiency disease, inter-relations with other nutrients; Assessment of nutrients; Assessment of nutritional status of the individual and the community; Formulation of balanced diets, Common nutritional disorders, nutritional adaptation; Nutrition and infection; Principles of dietetics, Diet adaptation; Nutrition and infection; Principles of dietetics, Dietary management of Diseases, Practicals: BSA, BMR measurements and calculations, anthropometric measurements, taking dietary history and nutrient calculations, etc.

PAT ZC151 General Anatomy 3
Tissues of Body, General Plan of Organ system, cell structure and other anatomical aspects of vital organs of body. Practicals: Autopsy and dissection classes, Computer software, models and charts, etc.
PAT ZC152 Clinical Biochemistry  5
Role of biochemistry in diagnosis of diseases, clinical manifestations in carbohydrates lipids and protein metabolism including inborn errors of metabolism and their evaluation. Disorders of kidney and liver and their diagnostic test; blood coagulation disorders and their estimation; clinical enzymology; disorders of ions Ca+ and P+ metabolism and their diagnosis. Endocrine disorders and diagnosis neurotransmitters, Radioactive isotopes in diagnosis. Practicals: Specimen collection, Clinical haematology, Blood coagulation tests, Biochemical tests, Renal function tests, Estimation of myocardial enzymes, Liver function tests, Urine analysis, Serological screening for HIV, Hepatitis, Syphilis, etc.

PAT ZC161 General Physiology  3
Cell physiology, Blood, Digestion, Excretion, Endocrines, Reproduction, circulation, Nervous System & Special Senses. Practicals; Autopsy and dissection classes, Computer software, models and charts, etc.

PAT ZC162 Paediatrics and Geriatrics  2
Physiological and psychological fundamentals of child development and disorders, infant feeding major paediatric illnesses, management of paediatric emergencies. Physiological and psychological fundamentals of aging process and disorders, major geriatric ailments and management.

PAT ZC171 Cell Biology  3

PAT ZC212 Introduction to Surgery  2
History of Surgery, Role of the surgeon, Importance of team work and anticipating the needs of surgeons; stresses that may arise during operative procedure; Surgical terminology, types of incision and indications for the use of particular incision; Hemorrhage-signs and symptoms of internal and external; classification and management; identification of types of tourniquets-reasons for use and duration of application, dangers of use; Wounds, types, process of healing, treatment and complications; inflammation; wound infections-causes and treatment; incision and drainage of abscesses; importance of personal cleanliness and aseptic techniques; Pre-operative and post-operative care of the surgical patient; Emergency procedures: Endotracheal incubation; Trachotomy.

PAT ZC222 Introduction to Medicine  3
Disease of respiratory system: Tuberculosis; Pneumonia; Allergic disease; Tumors of the lung; Disease of Liver and Gall Bladder Jaundice; Hepatitis; Hepatic Coma; Cirrhosis of Liver; Hemochromatosis; Cholelithiasis; Cholecystitis; Disease of Excretory System: Acute and Chronic nephritis; Nephrotic Syndrome; Acute and chronic renal failure; Renal calculi; Hemodialysis; Peritoneal Dialysis; Renal Trans plants; Disease of Alimentary System; Peptic ulcer; Cancer stomach; Malabsorption syndrome and inflammatory bowel disorder; Tumors of large and small intestine; Disease of Musculo Skeletal System: Arthritis and allied Rheumatic disorder; Bone Diseases; Disease of endocrine system: Thyroid Disorder : Hyperthyroidism; Hypothyroidism; Thyroid tumor; Parathyroid : Hyperparathyroidism; Pheochromacytoma; Metabolic Disease : diabetes Mellitus; Disease of Central Nervous System : Epilepsy; Cerebrovascular Disease; Infection; Disease of Extrapyramidal system; Infectious Disease : Bacterial, Rickettsial,
Chlamydial Disease; Gram positive, Gram negative; Syphilis; Typhoid; Viral Diseases: measles; Rubella; Rabies; Chicken pox; AIDS; Protozoal Disease: Amoebiasis; Malaria; Helminthes: Filaria; Round worm; Hook worm.

**PAT ZC231 Microbiology**

Microbes in our environment; Microbes on & in our body; Microscope; Morphology of bacteria; Cultivation of bacteria and growth requirements; Mode, Source & Spread of infections; Destruction of Microbes - I: Antiseptics & Disinfections; Destruction of Microbes - II: Sterilization; Destruction of infecting Agent: Antibiotics & Chemotherapy; Immunology; Microbes causing infection in man: Collection, Transport & Preservation of specimens; Microbes causing bacteremia & septicemia in man: Blood culture technique; Urinary tract infections (UTI); Respiratory tract infections: upper respiratory infections (URI); Lower respiratory tract infections (LRI); Pyogenic infections; Infections of CNC & Body cavities; G.I. Infections; Serological diagnosis of microbial diseases; Antibiotic assay in serum; Fungal infections; Viral infections; Parasitic infections; Surveillance in prevention & control of hospital associated infections (HAI): Bacteriological analysis of water; Sterility tests for I.V. Fluids; "In-use" testing of disinfectant.

**PAT ZC251 Principles of Management**

Fundamental concepts of management - planning; organizing; staffing; directing and controlling; production, financial, personnel, legal and marketing functions; accounting and budgeting, balance sheets.

**PAT ZC261 Technical Report Writing**

Elements of effective writing; art of condensation; business letter writing; memos; formal reports; technical proposals; conducting, and participating, meetings; agenda and minutes; strategies for writing technical descriptions, definitions, and classifications; oral presentation; use of graphic and audio-visual aids; editing.

**PAT ZC262 Introduction to Psychology**

The development of Psychology as a science - individual and the environment; nature, kinds and determinants of perceptions, response mechanism and kinds of responses, motivations, modifications of behavior through learning, memory and transfer of training, thought processes, problem solving and creative thinking; nature and characteristics of psychological tests; nature and evaluation techniques of intelligence and personality.

**PAT ZC282 Molecular Genetics**

Genetic foundations; Genetic counseling; Transformation, transduction and conjugation; Recombination and complementation; genetic mapping and linkage analysis; Genome organization; Genome maintenance; Gene regulation in Prokaryotis and Eukaryotics. Cloning techniques in E.coli and Eukaryotic cells; Restriction maps; Nucleic acid blotting and hybridization.

**PAT ZC311 Cardiology & Cardiac Surgery**

Cardiology; the Structural Basis of Cardiovascular Diseases. Embryology of Heart; The Chambers of the Heart; The Heart Valves; Surface Marking of Cardiovascular System; The Great Vessels; Blood supply of the Heart. The functional Basis of Cardiovascular Diseases, Cardiac Cycle; Heart Sounds; The Circulation of Blood; Cardiovascular responses to Exercise; Heart failure and Compensatory Mechanism. The Cellular basis of Cardiovascular Function in Health & Diseases, Heart Cell; Contraction and Relaxation; Excitation; Coronary Perfusion. The Effects of Cardiovascular Diseases. Angina; Dyspnoea; Fatigue; Pedal edema; palpitation; Clubbing-Cyanosis - Pulse; Blood Pressure. the Diagnostic Tools. ECG; Chest X-ray; ECHO cardiology; Cardiac Catheterization & Coronary Angiography; Blood Analysis. Congenital heart Disease. Development of Heart & Great Vessels; Cyanotic Heart Diseases; Acyanotic Heart Diseases. The Blood Pressure. Control of Blood Pressure; Hypertension - a. Essential Hypertension; b. Malignant Hypertension; Arterial Disease; Structure; Atherosclerosis;
Risk Factors; Burger's Disease; Raynaud's Phenomenon Arteries. Thrombosis. Bleeding; Haemostasis; Fibrinolysis; Thrombosis Formation and Structure; Venous & Arterial Thrombosis; Modifying Mechanism. Ischaemic Heart Disease (Ischaemia & Infarct) Angina; Physical Signs; Investigations; management; Infarctive Endocarditis; Cause; Pathology; Features; Investigations; Management; Rheumatic Heart Disease; Clinical manifestations; Jones' Criteria; prevention; Physiological & Pathological changes; Practical Management of Cardiovascular Problems; Arhythmias; Conduction Block; Hypovolemia and Hypervolemia; Heart failure; Hypotension and Hyperactive Care; Preparing a patient mentally & physically; Investigations and plan; Post operative Management; Rehabilitation Programme. Prevention of Heart Diseases; Habits; Food; cardiac surgery; Cardiac patient; Evaluation of cardiac status; The Risk factors; Congenital heart Disease; Cyanotic Heart Disease; Acyanotic Heart Disease; Acquired Heart Disease; Infective; Non infective; Pre-operative Care; The Cardiac Surgery; A. Cardiopulmonary Bypass : Adults, Paediatrics B. Various Closed and Open Heart Operations. Closed Heart Operations a. PDA ligation b. Closed Mitral Valvotomy c. Block trussing Shunt d. Pulmonary Artery Banding e. Pericardiectomy f. Pericardial Window g. Coarctation of Aorta h. Other Shunt operations. Open Heart Operations. Congenital a. Atrial Septal Defect Closure b. Ventricular Septal Defect Closure c. Tetralogy of Fallot Correction d. Surgery for Valvular Disease e. Surgery for Transpositions f. Surgery for Total Anomalies of Pulmonary Venous Connection g. Surgery for Truncus Arteriosus h. Surgery for Pulmonary Atresia i. Other Corrective Surgery, Acquired a. Mitral Valve replacement b. Valvuloplasty c. Aortic Valve replacement d. Tricuspid valve repair e. Coronary surgeries. Postoperative care; postoperative complications; Immediate, Late; Rehabilitation; The follow up of postoperative patient.

PAT ZC312 Advances in Cardiology

The advanced topics will be discussed in detail with the help of latest journals and reviews. The latest investigation procedures and treatments will be discussed in the course.

PAT ZC322 Advances in Cardiac Surgery

The advanced topics will be discussed in detail with the help of latest journals and reviews. The latest investigation procedures and cardiac surgical treatment will be discussed in the course.

PAT ZC332 Principles of Emergency Medicine

Definition of emergency; use of sedation and local, regional and general anaesthesia in the emergency of pain; various routes of intravenous access in emergency patients; Metabolic emergencies related to diabetes mellitus, hypoglycemia, adrenal, thyroid, kidney, liver and hypertensive crisis; different types of allergic reactions from local to systemic and the treatment for the same.

PAT ZC341 Cardiac Nursing

Nursing aspects of Angina; Dyspnoea; Cyanosis Administration of oxygen & its methods; Blood pressure; Nursing aspect of cardiac catheterization & coronary angiography blood analysis; Nursing aspects of cyanotic and acyanotic heart disease; Nursing considerations in atherosclerosis; Nursing considerations in angina; Nursing management in infective endocarditis; Nursing management in cardiac arrest; Nursing considerations in pre-operative & post-operative care; Cardiac surgery-Nursing assessment of cardiac patients; Nursing considerations in congenital heart disease & acquired heart disease; Pre-operative Nursing considerations; Nursing considerations after cardiac surgery; Introduction to pharmacology; Nursing responsibilities while administering medications, the dose, side effects & adverse reactions; Introduction to anaesthesia; Nursing considerations in using anaesthesia in ICUs; Nursing considerations in oxygen administration; Nursing considerations in Haemodynamic monitoring cardiac output determination & ABG Analysis; Nursing aspects in CPR; Nursing aspects in artificial Ventilation (i) Adult, (ii) paediatrics; Nursing aspects in fluid & electrolyte balance; Rehabilitation; Physiotherapy in Cardiac patient pre & post operative.
PAT ZC342 Medical Instrumentation

Basic components of bio-medical instruments, bioelectric signals & recording electrodes, transducers, recording and display devices. Patient care and monitoring systems, cardiovascular measurements, blood pressure, blood flow, cardiac output, heart sounds etc.; instrumentation for respiratory and nervous systems, analysis of EEG, ECG, EMG, and action potentials, non-invasive diagnostic measurement temperature, ultrasonic diagnosis, CAT scan techniques, sensory measurements - monitor response, analysis of behavior etc. biotelemetry, biofeedback, clinical laboratory instruments; X-ray diagnosis, recent advances in biomedical instrumentation - microprocessor based systems, lasers & optical fiber based systems.

PAT ZC381 Anaesthesiology

Pharmacology of drugs used in Anaesthesia and intensive care; Oxygen delivery systems and its applications; Haemodynamic Monitoring; Cardiac output determination and its prognostic significance; Principles of Arterial Blood Gas Analysis; Cardiac Pulmonary Resuscitation; Basic Life Support Systems - BCLS; Active Life Support systems - ACLS; Principles of Artificial Ventilation I; Principles of Artificial Ventilation II; Intra Aortic Balloon Pump & Cardiac Assist Devices; Paediatric Ventilatory Management & Critical Care; Fluid & Electrolyte Balance Principles; Principles of Cardio Pulmonary Bypass & Management.

PAT ZC382 Data Processing

Introduction to data processing; files and file structures; indexing techniques; sorting, searching and merging techniques; introduction to database management systems; design of information systems; emerging trends in data processing.

PAT ZC411 Inservice Training I

Rotational Inservice Training I in OPD (out patient department), Biochemistry lab, Pathology lab, CCU (Coronary care unit), Cath lab, Anesthesia, perfusion, OT (Operation theatre), ICU (Intensive care unit), General ward, Rehabilitation.

PAT ZC412 Inservice Training II

Rotational Inservice Training II in OPD (Out patient department), Biochemistry lab, Pathology lab, CCU (Coronary care unit), Cath lab, Anesthesia, perfusion, OT (Operation theatre), ICU (Intensive care unit), General ward, Rehabilitation.

PAT ZC421 Inservice Training III

The student will be trained in one specific inservice department from the list of departments for the Inservice Training - I (PAT ZC411) & Inservice Training - II (PAT ZC412).

PAT ZC422 Inservice Training IV

It is a continuation of Inservice Training - III (PAT ZC421).

PAT ZC423 Pharmacology & Toxicity

Pharmacology of important classes of drugs including their mechanism of action, therapeutic uses, side effects, toxic manifestations, indications and contra-indications.

PAT ZC431 Biostatistics
Methods of collection and presentation of statistical data; calculation and interpretation of various measures like mean, median, mode, standard deviation, kurtosis, correlation coefficient; probability distributions; sampling and estimation of parameters; tests of hypothesis; data analysis. Topics covered will aim to relate to the health field; introduction to decision analysis; decision theory; decision models.

**PAT ZC442 Internship I**

During Internship I, the students work as full-time assistants to the regular hospital staff. They are given exposure in specialty areas and opportunity to undertake projects or studies of a practical nature by which they develop their clinical skills.

Students are evaluated on a continuous basis. They have also to submit a project report and take a comprehensive examination.

**PAT ZC443 Internship II**

The course is a continuation of the course PAT ZC442. The operational aspects of the course remain the same as in PAT ZC442.

**PAT ZC482 Management Information Systems**

Introduction to Information Systems; Concepts of management, concepts of information, systems concepts; Information Systems and Organizations; decision making process; database systems; data communications; planning, designing, developing and implementing information systems; quality assurance and evaluation of information systems; future developments and their organizational and social implications; decision support system and expert systems.