

**SARDAR PATEL UNIVERSITY  
VALLABH VIDYANAGAR**



**SYLLABUS EFFECTIVE FROM: 2017-18  
POST GRADUATE DIPLOMA (DIETETICS)  
SEMESTER-I**

**R. PG.D H. Sc. 1 :** A candidate who has obtained the degree of Bachelor of Science:- Food & Nutrition / Applied Nutrition / Dietetics, Food Biotechnology / Food Science & Quality Control / Public Health Nutrition / Food Service Management / Home Science with any three nutrition subjects/ Biochemistry / Life Science / Microbiology / Biotechnology / Zoology /Chemistry/ M.L.T / Genetics / Environ. Science or MBBS, BHMS, BAMS

The degree of P.G. Diploma in Dietetics will be taken by papers and practicals (including three months internship) only.

**R. PG. D. H. Sc. 2:** The examination for the various theory courses and laboratory work will be conducted under the semester system. For this purpose, academic year will be divided into two semesters.

**R. PG.D. H. Sc. 3:** Candidates shall be required to attend at least 75% of the total lectures and practicals organized under each of the courses offered by them during a semester.

**R. PG.D. H. Sc. 4:** (i) For the purpose of deciding final University results at the P.G. Diploma (Home Science) (Dietetics) examination the ratio between Internal and External Assessments shall be 30: 70. The weightage for each course of theory or practical or will be as under

**I. Internal:** (a) For Course work:  
Internal test, Quiz, Seminar, Assignment 30%

(b) For Practicals:  
Day to day laboratory work & internal test 30%

**II. External:**  
University Examination for course work and practicals 70%

(ii) Candidates will be required to obtain at least 33% marks separately in each head of passing in the internal tests conducted by the department, provided however, a candidate who fails to obtain 33% marks in not more than two heads of passing, may be allowed to appear at the University examination by the Head of the department concerned on the recommendation of the Committee appointed by him /her to assess the candidate's overall performance. (Note: Head of passing will mean a paper or practical or project paper etc.)

(iii) Candidates will be required to obtain at least 40% aggregate marks in external examination in order to pass in a head.

(iv) Every candidate shall maintain a regular record of his/her practical work which shall be duly certified by his/her guide of guides from time to time.

**R. PG. D. H. Sc. 5:** The final results for the award of the degree will be declared on the basis of the total of all the semester examination prescribed for the degree examination.

**R. PG. D. H. Sc. 6 :** Standard of passing:

The standard of passing the P.G. Diploma (Dietetics) degree examination will be as under:

I. To pass any semester examination for the P.G. Diploma. (Dietetics) the candidate must obtain at least 40% marks in the University examination and 40% marks in the aggregate of University and internal examination in each course of theory, practical and Dissertation.

II. Those of the successful candidates who obtain 50% or more marks in the aggregate of all the semesters taken together will be placed in the second class and those who obtain 60% or more marks in the aggregate will be placed in the first class

III The successful candidates who obtain 70% or more marks in the aggregate of all the semesters taken together will be declared to have passed the examination in the first class with distinction

**R. PG. D. H. Sc. 7:** A candidate who fails in more than three courses (any three out of total heads of passing) in the first semester will not be admitted for further study at a second semester and he/she will be required to repeat the semester in which these courses are again offered. A candidate failing in not more than three courses of first semester examination will be promoted to the second Semester. However his/her result of second semester will not be declare until he/she clears ATKKT of first semester, even if he/she has passed in second semester.

**R. PG. D. H. Sc. 8:** A teacher offering a particular course will be one of the examiners at the University examination and the other examiner may be either a teacher from within the Department/ college or from outside the University.

**R. PG. D. H. Sc. 9:** No candidate will be allowed to reappear in a subject/paper in which he/she has already passed.

**R. PG.D. H. Sc.10:** The following are the scheme and syllabi for the P.G. Diploma in Dietetics

## Post Graduate Diploma in Dietetics

### First Semester

#### **PGDD-108: CLINICAL BIOCHEMISTRY** **Marks-100) Objective:**

(Credits-3, 3hrs,

This course will enable the students to:

- ❖ Understand the mechanisms and interrelationships adopted by the human body for regulation of metabolic pathways
- ❖ Understand and Apply the knowledge for medical nutrition management in various disease conditions.
- ❖ Importance of hormonal and regulation of the body Function.

#### **Contents:**

- 1. Basic laboratory principles, procedures & instruments- quality control**
  - Usage of different types of glassware in clinical biochemistry.
  - Preparation of solutions & reagents
  - Specimen collection, handling, storage of specimens (blood, urine, stool CSF, sweat)
  - Understanding the usage of various laboratory instruments.
  - Standardization of assay methods & interpretation of data, knowledge of normal ranges for various analytes.
  - Quality control (internal & external) aspects in clinical biochemistry.
- 2. Various functional tests & their interpretation**
  - Gastric function tests:
    - Chemical analysis & gastric contents & clinical significance, tubeless gastric analysis.
  - Renal function tests:
    - Osmolarity of urine & serum, composition of urine, GFR, urea, creatinine excretion, microalbuminuria, urinary lipids & proteins.
  - Liver function tests:
    - Clinico- biochemical aspects of jaundice (bile pigments, enzymes). Tests for plasma proteins, Test for detoxification, aspects of liver.
  - Cardiac function tests:
    - Serum lipid profile & apoproteins, cardiac enzymes, CPK, LDH, serum transaminases, serum electrolytes.
- 3. Clinico-biochemical aspects of fluids, electrolytes & acid base balance.**
  - Composition of body fluids- Emphasis on extra & intra cellular fluid compartments.
  - Role of  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{HCO}_3^-$ ,  $\text{Cl}^-$  in electrolyte balance.
  - Acid base balance, respiratory acidosis, alkalosis, metabolic acidosis & alkalosis.
- 4. Clinical Enzymology**
  - Diagnostic value of serum enzymes & isoenzymes- lipase, amylase, trypsin, cholinesterases, alkaline phosphatase, acid phosphatases,  $\gamma$  glutamyl transpeptidase, transaminase (ALT & AST), LDH, creatine phosphokinase, 6,6 p dehydrogenases, isocitrate dehydrogenases, aldolase etc.
- 5. Different endocrine disorders**
  - Assay methods (RIA, Eliza, HPLC)
  - Pancreatic hormones
  - Pituitary hormones
  - Hormones of adrenal cortex & medulla
  - Sex hormones
  - Gut hormones

## 6. Clinico- biochemical aspects of

- Galactoseuria
- Fructoseuria
- Pentosuria
- Amino acidourea
- Multiple myeloma
- Cystic fibrosis
- Tropical sprue

## 7. Blood:

- Composition, functions, blood group, factors affecting haemopoiesis, haemoglobin formation etc. Disorders of the above & diagnostic tools for assessment.
- Genesis of white blood cells, body's resistance to infections, inflammation, phagocytosis, antibodies & immunity disorders & diagnostic tools.

### Course Learning Outcomes:

- ❖ Get knowledge of various Biochemical functional test interpretation.
- ❖ Understand metabolic disorder, Blood function and aspect of clinico Biochemical function.

### References:

1. Murray, R.K., Granner, D.K., Myer, P.A. and Rodwell, V.W. (2000): 25<sup>th</sup> Ed. Harpers Biochemistry. Macmillan Worth Publishers.
2. Nelson, D.L. and Cox, M.M. (2000): 3<sup>rd</sup> Ed. Lehninger's Principles of Biochemistry, Macmillan Worth Publishers.
3. Devlin, T.M. (1997) : 4<sup>th</sup> Ed. Text book of Biochemistry with clinical correlations, Wiley Liss Inc
4. Tietz, N.W. (1976) Fundamentals of Clinical Chemistry. WB Saunders Co.
5. King, E.J. and Wootton, I.D.P. (1956). 3<sup>rd</sup> Ed. Micro-Analysis in Medical Biochemistry. J and A Churchill Ltd.
6. Plummer, D.T. (1987). 3<sup>rd</sup> Ed. An Introduction to Practical Biochemistry. McGraw- Hill Book Co.
7. Horald Varley (1988). Practical clinical biochemistry (4<sup>th</sup> ed.), New Delhi; CBS publishers & distributors.
8. Mukherjee K L (1988, Medical Laboratory Techniques – A procedure manual for routine diagnostic tests, New Delhi : Tata McGraw Hill Publishing Co. Ltd.
9. Deb A C (1998), Fundamentals of Biochemistry (9<sup>th</sup> ed.) Colcutta: Pub. New Central Book Agenc.

## **PGDD-109:PHYSIOLOGY**

**(Credits-3, 3hrs, Marks-100)**

### Objectives:

This course will enable students to:

- ❖ Understanding Structure of the cell, various tissues and organs of the body and their functions.

- ❖ Different systems of the body and their functions with special reference to the digestion, absorption, transport and uptake of nutrients and elimination of waste products.

### **Contents:**

#### **1. Cell**

- Structure & functions:

Membrane systems of cell, cell organelles, nucleus

- Cell division

Importance of mitosis & meiosis, Chromosomes & inheritance, Sex linked inheritance, abnormal heredity.

#### **2. Tissues**

- Structure, physiological properties and function of epithelial tissue,
- Structure, physiological properties and function of Muscle tissue,
- Structure, physiological properties and function of Nervous tissue,
- Structure, physiological properties and function of skeletal tissue (bone and cartilage).

#### **3. Body Fluids**

- Blood, Lymph, CSF, Ocular, Interstitial, Pleural, pericardial and Synovial fluids.
- Blood formation, composition, coagulation, factors affecting coagulation, homeostasis,
- Blood groups and to compatibility,
- Blood indices, Anemia.

#### **4. Gastrointestinal system and Hepato biliary system**

- Structure, physiology and functions of different organs and role of hormones and enzymes.
- Physiology of digestion & absorption
- Factors controlling secretion & expulsion of gastric juice, bile & their role
- Physiological role of vitamins
- Biological Aspects of Immunity, Innate, acquired and active immunity, Cell mediated immunity, humeral immunity and complement system,
- Tumor and transplantation,
- Auto immune disease, Immune deficiency disorders

#### **5. Heart and Circulation**

- Basic Structure, special junctional tissues, cardiac muscle properties.
- Cardiac cycle,
- Cardiac output, factors affecting cardiac output.
- Normal ECG, heart failure, Systemic, pulmonary, coronary and portal Circulation.
- Blood pressure, control and factors affecting blood pressure.
- Physiology of gaseous exchange

#### **6. Respiratory System**

- Structural components of Respiratory System.
- External and internal respiration,
- Mechanical, chemical & neural control of respiration
- Anoxia

#### **7. Excretory System**

- Components of Excretory System,
- Kidney: Structural and functional relation,
- Physiology of urine formation,
- Regulation of water balance, excreting dilute or concentrated urine,
- Regulation of acid base balance

#### **8. Endocrine System**

- Different endocrine glands and their major functions, pituitary, thyroid, parathyroid, adrenal, sex glands, dual gland
- Synergistic and antagonistic hormones,
- Chemical classification of hormones,
- Hormone-Receptors, mode of action, second messenger system, negative feed back control.

### **9. Reproductive System**

- Female Reproductive System  
Structure and Function of Ovary, Uterus, Hormonal control of spermatogenesis,
- Male reproductive system  
Structure and function of Testis, Hormonal control of spermatogenesis.

### **10. Brain and Nervous system**

- Autonomic nervous system,
- Organization, structure and properties of nerve,
- Transmission of Impulse, resting and action potential, reflex action, reflex arc.
- Physiology of sense organs of taste, smell etc.

### **11. Musculoskeletal system**

### **Course Learning Outcomes:**

- ❖ Get knowledge of various physiological changes of different organs system in human body.

### **References:**

1. West, J.B.: Best and Taylor's Physiological Basis of Medical Practice, 11<sup>th</sup> Edition.
2. Chatterjee, C.C. (1980): Human Physiology: Medical Allied Agency, Calcutta.
3. Gyton (1996): Text Book of Medical Physiology, 9<sup>th</sup> Edition, Prism Books Pvt. Ltd., W.B Sanders Company, USA.
4. Keel and Neil: Samson and Wright's Applied Physiology (12<sup>th</sup> edition), Oxford University Press. London.
5. Ross and Wilson: Anatomy and Physiology in Health and Illness, 8<sup>th</sup> edition Church Hill Livingstone, N.Y.
6. Best C H & Taylor (1989), The human body, New Delhi, Asia Publishing House
7. Chaurasia B.D (1992), Human Anatomy, ed Singh Indorbir, New Delhi: CBS publishers & distributors
8. Mukherjee K L (1988, Medical Laboratory Techniques – A procedure manual for routine diagnostic tests, New Delhi : Tata McGraw Hill Publishing Co. Ltd.

### **PGDD-110: COMMUNITY NUTRITION**

**(Credits-3, 3hrs, Marks-100)**

### **Objectives :-**

This course will enable students to

- ❖ Know the importance of RDA.
- ❖ Know the dietary modification for disease condition.

## **Contents:**

### **1. Nutrition and Health Education :**

Definition. importance. channels of nutrition education. nutrition education methods. planning for Nutrition and Health Education. Techniques of Nutrition Education. Evaluation of Nutritional Programmes. Role of Nutrition Education Programmes in eradication of malnutrition.

### **2. Nutritional problems in India**

Anemia, overweight, underweight, vito A- deficiency, PEM, goiter, thiamin deficiency.

### **3. Diet survey methods :**

Population sampling & duration of survey, diet survey methods, Questionnaire, Food list method, Interview method, Food inventory of log book method, Weightment of raw food, Weightment of cooked food, Analysis of cooked food method, Adult consumption units

### **4. Assessment of nutritional status:**

Population sampling, Anthropometry, Biophysical assessment, Radiographic examination, Nutritional adequacy of diet consumed, Clinical assessment, Biochemical assessment.

### **5. Role of National & International Agencies to overcome malnutrition :**

ICDS.UNICEF , WHO,F AO,ICAR.

### **6. Applied Nutritional Programmes :**

ANP.MMP.SNPJCDS.FWPJPP.BNP.

## **Course Learning Outcomes:**

- ❖ Describe about the nutrition and health education of Indian community.

## **References :**

1. Swaminthan M. 'Essentials of Food and Nutrition', Bangalore, printing and Publishing Co. Ltd.
2. Srilakshmi B. 'Dietetics' New Delhi, Newage International publishing Co. Ltd.
3. Joshi S. 'Nutriton and Dietetics' New Delhi, Tata McGraw Hill Publishing Co. Ltd.
4. Crampton E.W. and L.E.Lloyd, (1915), 'Fundamentals of Nutrition' W.H.Freeman, San Francisco.
5. Davidson S.R, Passmore and J.F. Brock, (1986), 'Human Nutrition and Dietetics' London 8th edition, Churchill, Livingstone.
6. Antia F.P, (1986), 'Clinical Dietetics and Nutrition' 3rd edition, Bombay Oxford University Press.
7. Devadas R.P. (1972) 'Nutrition in Tamil Nadu Sangam' Publishers.
8. Meyer J,Human (1972) 'Nutrition Charles Thomas'
9. King M. and Morley O, (1976), 'Nutrition for Developing Countries, Oxford University Press.

10. Lowenberg E.M. Todhunter N.E. Wilson Eva D Savage and Jane R. (1970), 'Food and Man Wiley' Eastern Pvt. Ltd.
- 11 Wesna D. (1981). 'Where There is No Doctor', The Voluntary Health Association of India.
- 12 Rajalakshmi R. (1981), 'Applied Nutrition Oxford & IDH Publishers' .
- 13 ICMR, 'Technical Report Series'.
14. Applied Nutritional Programmes ANP.MMP.SNPJCDS.FWPJPP.BNP.

**PGDD: 111 PRACTICALBASED ONPGDD-110**

**(Credits-2, 4hrs, Marks-100)**

**Objectives :-**

This course will enable students to

- ❖ Know the importance of society of Indian health and their diet status.
- ❖ Understand the planning and basic preparation of diet relevant to the dietary modification for disease condition.

**CONTENT:**

**• Practicals are to be done through the following:**

1. Assessment of physical fitness, food intake and nutritional status of the community  
-BMI , IBW, Antroparmetic measurement
2. Conducting a survey of low income pregnant lady and provide important nutrient same.
3. Preparation of low cost weaning foods for infants.
4. Preparation of diets for elder and old age community.
5. Assessment of most common diseases among community, Anemia, Overweight, Cancer, Diabetics mellitus,Hypertension, Underweight, Vito-A deficiency, PEM (Protein Energy Malnutrition), Goiter and Thiamin deficiency etc...

**PGDD:112MEDICAL NUTRITION THERAPY-I**

**Credits-3, 3hrs, Marks-100)**

**Objectives:**

The course will enable the students to:

- ❖ Understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
- ❖ Know the effect of the various diseases on nutritional status and nutritional and dietary requirements.



- ❖ Be able to recommend appropriate nutritional care for prevention / and treatment of the various diseases.

## **Contents:**

### **1. Introduction:**

- Applications of principles of diet therapy  
Tips for diet prescription, Dietetic care in hospital patients, Team approach to health care, Assessment of patient needs based on interpretation of patient data – clinical, biochemical, biophysical, personal etc.
- Therapeutic adaptations of the normal diet  
Soft diet, Liquid diet, Bland diet, Routine hospital diets
- Modes of feeding  
Enteral, Tube feeding, composition of tube feeds & their preparation, parenteral feeding, Indications for use

### **2. Diet, nutrient and drug interaction**

- Effect of drugs on ingestion,
- Digestion, absorption and metabolism of nutrients.
- Effect of food, nutrients and nutritional status on drug dosage and efficacy.

### **3. Nutritional support:**

- Recent advances in techniques and feeding substrates
- Diet for healthy living
- Risk factors for chronic degenerative disorders  
- Etiopathophysiology, metabolic and clinical aberrations, Complications, prevention and recent advances in the medical nutritional management of the following:

#### **1. Nutritional care for weight imbalance**

##### **(A) Obesity & overweight**

- Types of obesity,
  - Health Risks,
  - Causes: neural, hormonal, psychological,
  - Physiology of obesity,
- Dietary treatment, surgical treatment, Physical activity and exercise in the obese
- Types of diet & desirable rate of loss of weight
- Physical activity and exercise in the obese: Role of exercise & energy expenditure for various types of activities with respect to body weight.
- Activity pattern: Criteria & calculations using latest guidelines for classifying various types of activities eg. CDS, WHO

##### **(B) Underweight**

- Causes,
- Health risks,
- Dietary Treatment,
- Psychotherapy, Eating disorders
- Anorexia Nervosa and Bulimia

#### **2. G.I Tract Disorders**

- Diagnostic tests for G.I. disease,
- Pathophysiology and diet therapy of all G.I. disorders and their nutritional care,
- Disorders of esophagus,
- Disorders of stomach: Gastric & duodenal ulcers
- Disorders of small intestine & large intestine: Diarrhoea, diverticulars diseases, inflammatory bowel disease
- Malabsorption syndrome, Celiac sprue, tropical sprue, intestinal brush border deficiencies (Acquired Disaccharide Intolerance), protein losing enteropathy

- Parasitic infections, ulcerative colitis, irritable bowel syndrome, haemorrhoids, flatulence, constipation

### **3. Liver and Biliary System**

- Physiology and function of liver (normal & deranged) gall bladder and pancreas,
- Pathophysiology and its implications,
- Disorders, liver function tests & nutritional care in liver diseases
- Viral hepatitis,
- Cirrhosis,
- Alcoholic liver diseases
- Cholecystitis, cholelithiasis, cholecystectomy, pancreatitis
- Hepatic encephalopathy, Wilson's disease

### **4. Respiratory Disorders**

- Dietary management in following disorders – bronchitis, Respiratory distress syndrome, Cystic fibrosis, Chronic obstructive pulmonary disorder (COPD), Asthma, Aspiration, Pneumonia, TB, Lung cancer.

### **5. Anaemias & some special conditions**

#### (A) Anemias:

- Pathogenesis, nutritional anemias, sickle cell anemias, megaloblastic /pernicious anemia as a result of blood loss due to acute haemorrhages etc.

#### (B) Some special conditions requiring nutritional support

- Fabrice conditions: acute & chronic (thyroid tuberculosis)
- Infections & injury (sepsis, trauma & burns): physiological changes in relation to trauma, assessment of nutritional status in surgical & burn patients
- Pre & post operative care
- Bone disorders: osteoporosis, osteoarthritis, rheumatoid arthritis
- Burns patients: nutritional management
- Food allergies: Definition, symptoms, diagnosis, elimination of diets & selection of foods. Food allergies in infancy & their management
- Metabolic disorders: Diseases of the adrenal cortex, thyroid & parathyroid gland & gout.

### **Course Learning Outcomes:**

- ❖ Get knowledge about dietary control of various diseases.
- ❖ Understand the drug interaction with dietary modification.

### **References:**

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Ltd.
2. Shils, M.E., Olson, J.A, Shike, M. and Ross, A.C (1999) : Modern Nutrition in Health and Disease, 9<sup>th</sup> Edition, Williams and Wilkins.
3. Escott-Stump, S. (1998) : Nutrition and Diagnosis Related Care, 4<sup>th</sup> Edition, Williams and Wilkins.
4. Williams, S.R (1993) : Nutrition and Diet Therapy, 7<sup>th</sup> Edition, Times Mirror/Mosby College Publishing.
5. Walker, W.A and Watkins, J.B.(Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.

6. Guyton, A.C. and Hall, J.E. (1999): Textbook of Medical Physiology, 9<sup>th</sup> Edition, W.B.Saunders Co.
7. Ritchie, A.C (1990): Boyd's Textbook of Pathology, 9<sup>th</sup> Edition, Lea and Febiger, Philadelphia.
8. World Cancer Research Fund (1997). Food, Nutrition and the Prevention of Cancer- A Global Perspective, Washington E.D.WCRF.

**Journals and Other Reference Series:**

1. Nutrition Update Series
2. World review of nutrition and Dietetics
3. Journal of the American Dietetic Association
4. American Journal of Clinical Nutrition
5. European Journal of clinical Nutrition
6. Nutrition Reviews

**PGDD: 113 PRACTICALBASED ONPGDD-112**

**(Credits-3, 6hrs, Marks-100)**

**Objectives:**

This course will enable students to:

- ❖ Prescribe diets and counsel patients to provide appropriate therapeutic nutritional care and counseling
  - ❖ Develop standards of dietetic practice for each of the topics, focus on various diseases using a case study approach.
- Planning and preparation of diets for patients with common multiple disorders and complications and discharge diet plans.

**Contents:**

**1. Review of Hospitals diets**

Preparation of normal routine diets generally served in a hospital, Modifications in consistency and fiber, Different types of full fluid diet - liquid diets, clear fluid diet, Different types of semisolid / soft diets, bland diet — general mechanical and pureed, Low fibre diets, low residue diets, high fibre diets  
Diets for healthy living for males over 40 years & female over 60 years.

**2. Energy Modifications**

Assessment of weight status and estimating energy requirements. Energy Modification, Low calorie preparations, use of artificial sweeteners in deserts and Beverages and adjuncts, Low Calorie Diets, Adult weight reduction.  
Planning, preparation of diets for weight reduction: 800 Kcal, 1000 KCal, 1200 Kcal, 1400 KCal, Underweight

**3.High calorie diets**

High calories protein diets for underweight fevers, Anaemias and convalescing patients

**4. Bland diets**

High calories, high protein, fiber and residue restricted diets for peptic ulcer and ulcerative colitis etc. Hiatus hernia, gastritis, Irritable bowel, Achalasia etc.

5. High calorie, High Protein, moderate and fat restricted diet in Liver disease and disease of pancreas and gallbladder, Low protein diets in hepatic encephalopathy
6. Elimination diets for Allergy
7. Preparation of lists of foods rich in cholesterol, PUFA, MUFA, SFA content of various foods & oils. Glycemic index of foods.
- 8. Planning, preparing diets for Liver disorders:**
  - Diet for mild jaundice
  - Diet for moderate jaundice
  - Diet for severe jaundice
  - Diet for cirrhosis of liver with ascites
  - Diet for alcoholic liver diseases.

**PGDD-114: Food Production, Costing and Hospital Management (PRACTICAL)**

**(Credits-3, 6hrs, Marks-100)**

**Objectives:-**

This course will enable:

1. Develop excellent communication skills to disseminate knowledge.
2. Develop entrepreneurship skills.

**Contents:**

- 1.Foundation Ingredients:-** Carbohydrates, fats, Proteins, Minerals, Vitamins, Seasonings, Flavorings, Liquids, Thickening agents, Fats & Oils, Sweetening & Raisings agents.
- 2.Various cooking methods & Culinary terms (Western & Indian) :-**
- 3.Principles of cooking** food with special application to fish, egg, meat, vegetables, cheese, pulses & cereals.
- 4. Salads and Soups -** Importance, types, soup and common salad dressing.
- 5.Catering and Budget Management**
  - a] Food Production Management** – establishing purchase specification, volume forecasting, dealing with suppliers, receiving methods, stores organization,(Canteen,Food stall and College event catering) inventory control of stock, imienting portion control, yield testing standard recipes
  - B] Quantity Food Production :-**Objectives of food preparation, working methods, cooking methods, food preservation, food spoilage.
- 6. Learn Services**
  - Table Service, dining room management.
  - Delivery and service of food in different systems.
- 7. Development of new recipes and modified recipes.**

Healthy options, Party foods, Packed meals

**8. Organization** Organizational Chart, Organizational Charts of Dietary/food service department, line of staff, authority, responsibility, power, delegation of authority, centralization and decentralization of food service.

**9. Staffing and Personnel Management:** Manpower Planning, Recruitment, Selection, Induction, Performance Appraisal, Training Development,.

**10. Planning and Equipment Purchase, Layout Design:**

Physical Plant – Floor Planning and Layout, Physical features necessary for efficient and sanitary food service area, design and construction of building equipments and its installation, wall and floor surfaces, lighting and ventilation, cost, quality and quantity.

Factors affecting selection of equipment, features of equipment, installation operation and performance, care, maintenance and replacement.

Layout Design - space allowances, design development, space relationships, flow of traffic.

**Reference :**

1. Thangum Philip – (1994) Modern Cookery for Teaching and Trade (Volume 1 & II), Bombay Orient Langman's.
2. Shankuntala Mane – (1987) – Food Facts and Principles , Bombay, Willey Eastern Ltd.,
3. Angela Kay (1978) – Shining Cook Book, London Octopus Books Ltd.
4. B. B. Weste & L. Wood – (4th Ed.) – Food Service in Institutions - New York, John Willey & Sons,
5. Mohini Sethi & Surjeeet Mathan – (1993) – Catering Management & Integrated Approach, Bombay, Willey Eastern. Ltd.