Level 4
Seventh-Term

Course	**Clinical Nutrition (2)**
Code Number	**Fod404**
Credit Hours	**2**
Prerequisite Course	**Dar306**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

Students should have acquired the

1- Knowledge of nutrition support and emphasize ins important in patient care.
2- Practical aspects of need and provision of nutritional support and also nutritional therapy in, cancer, cystic fibrosis, renal disease, HIV Infection and fever, burn patients, where nutrition support is of importance in reducing mortality and morbidity leading to early recovery.
3- Examination the role of nutrition in specific disease states
4- Presentation of case studies to help clarify

2) Scientific Contents

Role of branched chain amino acids in disease states, Branched chain amino acids and liver diseases, Branched chain amino acid supplementation studies in certain patient populations, Nutritional Aspects of disease affecting the skeleton, Nutritional and metabolic support in hematologic malignancies and hematopoietic stem cell transplantation, Diet planning for lung disease, The interaction between nutrition and infection, Nutritional support in patients with cancer, Nutritional considerations in cystic fibrosis, Nutritional aspects of kidney disease, Diet planning for the following patients: HIV, Infection, fever, burn, Enteral nutrition, Enteral formula selection, Nutrient composition, Nutrition intervention with Enteral feeding, Parenteral nutrition, Parenteral macronutrients, Parenteral additives, Physical characteristics of total parenteral nutrition solutions, Nutrition intervention, Total parenteral nutrition compounding, Discontinuing parenteral nutrition.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

1- Gibney, M. J, Elia, M., Ljunggvist, O. and Dowsett, J. (2005). Clincal nutrition. Wiley-Blackwell. 496 pages.

برنامج نظم التغذية
Dietetic Program

Course	**Molecular Nutrition**
Code Number	**Dar409**
Credit Hours	**2**
Prerequisite Course	**Dar101**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

Students should have acquired the

1- Presentation of important information on how individual differences affect nutrient needs and tolerances.
2- Consideration of the role of nutrition in regulating gene expression
3- Examination of new findings of nutrient-gene interactions in obesity and energy metabolism.

2) Scientific Contents

Nutrigenomics and Nutrigenetics: the basis of molecular nutrition, Dietary and hormonal regulation of the mammalian fatty acid synthase gene, Nutrition and adipocyte gene expression, Regulation of the stearoyl-CoA desaturase genes by dietary fat, Acyl-CoA synthetase 1: Regulation and role in metabolism, Nutritional regulation of fatty acid transport protein expression, Alcohol and gene expression in the central nervous system, Nutrient control of insulin-stimulated clucose transport in 3T3-L1, Prohormone processing and disorders of energy homeostasis, The Agouti gene in obesity, central and peripheral mechanisms and therapeutic implications, Body weight regulation, Uncoupling proteins, Vitamins and gene expression, Diet-Gene interaction in the development of diabetes, Pathogenesis of type 1 diabetes: role of dietary factors, Oxidative stress in diabetes: Molecular basis for diet supplementation, Impact of type 2 diabetes on skeletal muscle mass and quality, Mechanisms whereby whole grain cereals modulate the prevention of type 2 diabetes, Peroxisome proliferator-activated receptors (PPARs) in glucose control, High-fat diets and beta cell dysfunction: Molecular aspects, Native fruits, anthocyanins in nutraceuticals and the insulin receptor/insulin receptor substrate-1/AKt/Forkhead box protein pathway, Influence of dietary factors on gut microbiota: the role on insulin resistance and diabetes mellitus, Cocoa flavonoids and insulin signaling, Dietary proanthocyanidin modulation of pancreatic beta cells, Dietary whey protein and type 2 diabetes, Dietary fatty acids and C-reactive protein, Dietary long chain omega-3 polyunsaturated fatty acids and inflammatory gene expression in type 2 diabetes, Polymorphism, carbohydrates, fat, and type 2 diabetes, vitamin D status, Genetics, and diabetes risk, NRF2-Medated gene regulation and glucose homeostasis, Hepatic Mitochondria fatty acid oxidation and type 2 diabetes.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

Moussa, N. M. and Berdanier, C. D. (2001). Nutrient – gene interactions in health and disease CRC Press. 496.

Benkeblia, N. (2012). OMICs Technologices: Tools for food science. CRC press. 429.

Mauricio, D. (2015). Molecular nutrition and diabetes. Academic press. 400 pages.

Course	**Nutritional Status Assessment**
Code Number	**Fdt413**
Credit Hours	**2**
Prerequisite Course	**Fdt101**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

Students should have acquired the

1- Describe how a community assessment can be conducted including specification of the types of data that are relevant.
2- Describe the different methods for assessing nutritional status and health in the community.
3- Be familiar with sources of data for conducting community assessment, including those on the internet.
4- Apply knowledge from other disciplines such as epidemiology, anthropology and health education to a community nutrition assessment
5-
6- Understanding the tools used in recombinant DNA technology including restriction enzymes, Host-vector systems, Gene isolation and cloning
7- Description of the biological membrane, the role of free nucleotides in signal transduction control, and macromolecules involved in transmission of information from gene expression to the formation of functions.
8- Knowledge of basic principles of molecular biology and protein synthesis.
9- Studying the impact of molecular biology and nucleic acids in human health
10- Application of molecular biology in disease diagnosis.

2) Scientific Contents

Introduction, Clincal assessment of nutritional status, Anthropometric assessment of nutritional status, Biochemical indices of nutritional status, Immunologic assessment of nutritional status, Functional tests of malnutrition, Nutritional assessment tools in clinical decision making, Perspectives on the future.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

Coles, L. (2013). Functional foods: the connection between nutrition, health, and food science. Apple academic press. 422.

برنامج نظم التغذية
Dietetic Program

Course	**Clinical biochemistry**
Code Number	**Md412**
Credit Hours	**2**
Prerequisite Course	**Chm103**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Explain basics, methodology, tools an end ethics of scientific medical research.
2- Discuss the function & synthesis of red blood cells and the biochemical basis of related disease
3- Suggest accurately the possible investigations needed for diagnosis.
4- Compare properly the biochemical information from a variety of sources.
5- Recommend laboratory reagents and instruments that could be used in biochemistry.

2) Scientific Contents

The clinical biochemistry laboratory, The use of the laboratory, The interpretation of results, Point of care testing, Reference intervals, Fluid and electrolyte balance, Water and sodium balance, Hyponatraemia:Pathophysiology, Hyponatraemia: Assessment and management, Hypernatraemia, Hypokalaemia, Hypokalaemia, Intravenous fluid therapy, Investigation of renal function, Urinalysis, Proteinuria, Acute renal failure, Chronic renal failure, Acid-base: concepts and vocabulary, Metabolic acid-base disorder, Respiratory and mixed acid-base disorders, Oxygen transport, Acid-base disorders: Diagnosis and management, Proteins and enzymes, Immunoglobulins, Myocardial infarction, Liver function tests, Jaundice, Liver disease, Diagnosis and monitoring of diabetes mellitus, diabetic ketoacidosis, Hypoglycaemia, Hypercalcaemia, Bone disease, Osteooporosis, Dynamic function tests, Nutritional assessment, Therapeutic drug Monitoring, metal poisoning, Alcohol, Coma, Ascites and pleural fluid, Hypertension, Cancer and its consequences, Tumor markers, Hyperuricaemia, Myopathy, Biochemistry in the elderly, Screening th newborn for disease .

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

1- Gaw, A., Murphy, M.J., Srivastava, R., Cowan, R. A. And O'Reilly,D.J. (2013). Clinical Biochemistry-An illustrated color test. Churchill uvingstone.

برنامج نظم التغذية
Dietetic Program

Course	**Nutrition for athletes**
Code Number	**Dar410**
Credit Hours	**2**
Prerequisite Course	**Fdt204**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Develop a basic understanding of the relationship between dietary practices and overall health and wellness.
2- Explain the components of an effective nutrition assessment program.
3- Describe the factors that impact an athlete's dietary practices.
4- Determine an athlete's optimal body weight and resting metabolic rate.
5- Discuss the relationship between optimal body fat levels and an athlete's optimal body weight.
6- Predict an athlete's basal metabolic rate and total caloric need depending on their activity levels.

2) Scientific Contents

Introduction to sports nutrition, Physiology of sports, Dietary assessment of athletes, Physique assessment, Protein needs of athletes, Female athlete triad and low energy availability, Bone health, pre-competition, competition fluid and fuel, Recovery, Athletes with disabilities, Illness and injury, Special consideration for the endurance athlete, Nutrition supplementation, Protein needs for training, Fat needs for training, Carbohydrate needs for training, Hydration strategy, Vitamins, minerals and anti-oxidants for training and staying healthy.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

1- Burke, L. and Deakin, V. (2015). Clinical sports nutrition. Paperback. 848 pages

برنامج نظم التغذية
Dietetic Program

Course	**Nutrients interaction**
Code Number	**Fod405**
Credit Hours	**2**
Prerequisite Course	**-**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Discuss nutrient interactions effects on dietary intake and tissue nutrient levels
2- Examine the role of altered nutrition on various nutrient interactions.
3- Know the side effect of nutrient interaction on human health.

2) Scientific Contents

Energy-Nutrient interactions, Amino acid interaction, Mineral interactions in foods, chemical reactivity of minerals, Physicochemical reactions as determinants of bioavailability in food, Complex formation and chelation, Physiological interactions of minerals, Protein-Iron interactions, Vitamin-Mineral interactions, Lipid-vitamin-mineral interactions in the diet and in the tissues, Effect of variations in dietary protein, Phosphorus, electrolytes and vitamin D on calcium and zinc metabolism, Effect of Phosphorus on calcium metabolism, Effect of phosphorus on zinc metabolism, interactions between utilizable dietary carbohydrates and minerals, Fiber-Mineral and fiber-vitamin interaction, Interacting effects of carbohydrate and lipid on metabolism, Vitamin-vitamin interaction, Nutrient interactions and the toxic elements aluminum, cadmium and lead, Interactions of food additives and nutrients, A comparison of drug-nutrient and nutrient-nutrient interactions.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

1- Bodwell, C.E. and Erdman, J.W. (1988) Nutrient interactions. Taylor & Francis Inc. 408 pages.

Course	**Fundamentals of medical psychology**
Code Number	**Md413**
Credit Hours	**1**
Prerequisite Course	**-**
Course status	**Compulsory course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Introduce all the main approaches to psychology, including social, developmental cognitive, biological, individual differences and abnormal psychology.
2- Know psychological research methods
3- Understand behavior as a foundation for the study of psychiatry and clinical psychology.

2) Scientific Contents

Introduction to biological psychology, Introduction to cognitive psychology, Introduction to individual differences, Introduction to developmental psychology, Introduction to social psychology, Introduction to abnormal psychology, Psychotic disorders: Types, Treatment, and symptoms, Diagnosis and treatment of anxiety disorders, Personal disturbances, Neuropsychology, Organic mental disorder (OMD).

3) Teaching and learning methods

1- Lectures
2- Self learning
3- Cooperative learning
4- Case studies
5- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Mid – Term
3- Sheet examination
4- Oral examination

5) References

1- Eysenck, M.W. (2009). Fundamentals of psychology. Psychology press. 712 pages.

برنامج نظم التغذية
Dietetic Program

Course	**Quality control in hospital nutrition services**
Code Number	**Fod406**
Credit Hours	**2**
Prerequisite Course	**Dar302**
Course status	**Elective course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Know the basics of quality management in health care
2- Clarify the most important points that take into account when making health inspection on nutrition services in hospitals.
3- Apply different quality system for nutrition units in hospitals.
4- Use statistical methods for quality assurance.

2) Scientific Contents

Basics of quality management, Quality management in health care, Patient satisfaction: a mark of quality, Continuous quality improvement, Departmental systems and tools for quality management, Preparing to initiate a quality program, The nutrition services environment, Improving quality through group processes, Quantitative quality management tools, Quantitative quality. Management tools, Statistical methods for quality assurance

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

1- Schiller, R.M., Kovach, M. K. and Miller, M. A. (1994). Total quality management for hospital nutrition services. An Aspen publication.

Course	**Nutrition in critical care (2)**
Code Number	**Md 414**
Credit Hours	**2**
Prerequisite Course	**Md311**
Course status	**Elective course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Know the nutritional requirements of patients who are severely ill.
2- List key variables to consider in assessing nutritional risk in ICU patients
3- List strategies to improve nutritional adequacy in the critical care setting.

2) Scientific Contents

Critical illness and intestinal microflora: pH as a surrogate marker, Perioperative malnutrition: focus on scheduled surgery performed in adult patients, Top ten quality indicators of nutritional therapy, Micronutrient function, status and disposition in critical illness, Micronutrient supplementation for critically III adults: practical application, Magnesium and cardiac surgery in the critical care setting, Vasoactive substances and nutrition in critical care, Nutritional supplements for critically III patients: efficient tools to improve wound healing, Importance of n-3 polyunsaturated fatty acids in critical care, Transition from parenteral to Enteral nutrition in intensive care unit, Nutritional support in adult patient undergoing allogeneic stem cell transplantation following myeloablative conditioning, Probiotics prophylaxis of nosocomial pneumonia in critically III patients, Nutrition in abdominal aortic repair, Diet and nutrition in orthopedics, Brain trauma and nutritional support, Severe head trauma and omega-3 fatty acids, Parkinson's disease, Nutrition and surgery in context of critical care, Prolonged mechanical ventilation and nutritional support regimens, Preoperative nutrition in elderly patients and postoperative, Nutrition and critical care in very elderly stroke patients, use probiotics in preterm meonates, Dietary and nutritional aspects of zinc in critically III adult, Polyunsaturated fatty acids and cytokines: their relationship in acute lung injury, Sodium loading in critical care, Thiamine deficiency in intensive care, Vitamin B12 and mortality in critically III, Vitamin C, Extremity trauma and surgery, Intensive care and vitamin D status, Calorie and protein deficit in the ICU.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Sheet examination
5- Oral examination

5) References

1- Rajendram, R., Preedy, V.R., Patel, V.B. (2015). Diet and nutrition in critical care. Springer. 2137 pages.

برنامج نظم التغذية
Dietetic Program

Course	**.Maternal and pediatric nutrition**
Code Number	**Dar 412**
Credit Hours	**2**
Prerequisite Course	**Fdt202**
Course status	**Elective course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Explain nutritional assessment of the antepartum and maternal-infant weight relationship.

2- Know of Therapeutic maternal and pediatric nutrition.

2) Scientific Contents

Introduction, Nutritional assessment of the antepartum patient, Maternal-infant weight relationships, Iron-deficiency anemia in pregnancy, Understanding pica in pregnant women, Lactose intolerance during pregnancy: significance and solutions, Influence of maternal smoking on the course and outcome of pregnancy, Nutritional influence on brain development and behavior, the fetal alcohol syndrome, the nutritional management of diabetic pregnancy, caffeine and reproduction, Vitamins and minerals, Maternal phenylketonuria, Protein energy Malnutrition, Dietary modification in childhood obesity, Dietary management in malabsorption, Nutrition in diarrheal diseases, Diet in celiac disease, Diet in inflammatory bowel disease, Nutritional support in cystic fibrosis, Diet in constipation, Nutrition support in short bowel syndrome, Dietary management in fever and infections, Nutrition support in Juvenile diabetes mellitus, dietary management in hypoglycemia, The ketogenic diet in management of epilepsy, Inborn errors of metabolism, Diet in liver diseases, Diet in kidney diseases, Enteral nutrition in hospitalized patient, Nutritional support of the critically III child, Nutrition in childhood cancer, Nutrition support in children with HIV/AIDS, Diet in dental Health.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Case studies
6- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Oral examination

5) References

1- Luke, B. (1992). Principles and practice of maternal nutrition. The Parthenon Publishing Group.157 pages.

2- Sharma (2011). Therapeutic pediatric nutrition. Jaypee Brothers Medical publishers. 278 pages.

برنامج نظم التغذية
Dietetic Program

Course	**Free-radical in human health**
Code Number	**Chm406**
Credit Hours	**2**
Prerequisite Course	**Pha202**
Course status	**Elective course**

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Examine oxidation of organic compounds with metal-ion oxidants.
2- Know Methods of production of free radicals.
3- Know Methods for the detection of free radicals.

2) Scientific Contents

Production of reactive oxygen species and its implication in human diseases, Reactive oxygen species and cellular defense system, The noxious nanoparticles, Tools and techniques to measure oxidative stress, Impact of oxidative stress on human health, Gene-environment interaction on oxidative stress-induced pathologies, Oxidative stress-induced molecular and genetic mechanisms in human health and diseases, Hydrogen peroxide sensing and signaling, Oxidative stress-induced lipid peroxidation: role in inflammation, Oxidative stress and its biomarkers in cardiovascular diseases an overview, Free radicals and oxidative stress in neurodegenerative disorders, Thyroid gland in free radical-induced oxidative stress, Oxidative stress events and neuronal dysfunction in Alzheimer's disease:Focus on APE1/Ref-1-mediated survival strategies, ROS in carcinogenesis and anticancerous drug-induced toxicity, Oxidative stress in low birth weight newborns, Oxidative stress and diabetes, Oxidative stress and inflammation in cardiovascular diseases two sides of the same coin, Redox Biology of Aging: Focus on novel biomarkers, Antioxidant supplements: friend or foe?, Linking toll-like receptors signaling to oxidative damage: Potential role in cancer therapy, Management of inflammation using cellular redox modifiers, Oxidative stress, antioxidant status, and redox signaling in carcinogenesis, Interplay among bacterial resistance, biofilm formation and oxidative stress for nosocomial infections, Antioxidants and other potent strategies to reduce oxidative stress in semen, Nano-encapsulation of natural polyphenol.

3) Teaching and learning methods

1- Lectures
2- Practical lessons
3- Self learning
4- Cooperative learning
5- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Practical examination
3- Mid – Term
4- Oral examination

5) References

1- Rani, V. and Yadav, U. (2015). Free-radical in human health and disease. Springer India. 430 pages.

Course	Nutritional problems in developing countries
Code Number	Fod407
Credit Hours	2
Prerequisite Course	-
Course status	Elective course

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Understand of the common food problems in developing countries.
2- Know the prevalence of nutrient deficiency among infants in developing countries.
3- Study nutrition problems and their solutions in developing countries.

2) Scientific Contents

The causes of malnutrition, Economy and malnutrition, The responses to maternal and child undernutrition, Treatment of severe acute malnutrition and ready to use therapeutic food, The reinforcement of national systems to combat malnutrition, NUSAPPS (Nutrition, food security and public policy in the sahel) initiative, The improvement of the international system, Helping countries to detect, prevent and treat malnutrition in women of child-bearing age and children under two, Support to prevention and treatment of maternal and child undernutrition, Contributing to a more efficient international mobilization against malnutrition, Maternal mortality in developing countries, Low birth weight and perinatal mortality, Child growth and development, Diarrheal diseases, Acute lower-respiratory infections, Measles, malaria, Tuberculosis, Human immunodeficiency virus infection, Vitamin A deficiency, Zinc deficiency, Iron deficiency and anemia, Iodine deficiency disorders, The nutrition transition and its relationship to demographic change, The emerging problem of obesity in developing countries .

3) Teaching and learning methods

1- Lectures
2- Self learning
3- Cooperative learning
4- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Mid – Term
3- Sheet examination
4- Oral examination

5) References

1- Semba, R.D. and Bloem, M.W. (2001). Nutrition and health in developing countries. Humana press. 578 pages.

Course	Legislation and law regulation of food quality
Code Number	Fod408
Credit Hours	2
Prerequisite Course	Dar302
Course status	Elective course

1) General instructional objectives (GIO)

On completion of this course you will be able to

1- Develop food safety legislation and regulations.
2- Evaluate the effect of food legislation and regulations on food safety.
3- Present case studies to help clarify.

2) Scientific Contents

The legal framework of food regulation, A description of food safety authorities and enforcement procedures, A description of basic principles of food law (e.g. traceability, precautionary principle), An overview of selected regulation areas (e.g. food labeling, nutrition facts, health claims, food hygiene, food additives, flavors, genetically modified food, novel food), A brief overview of accountability regulations (product liability), Special topics and challenges, developments and perspectives, Main internet sources for food regulation and food safety authorities, Introduction to the food regulations of the following countries (USA, Egypt, China, Japan, Russia, Switzerland and Canada).

3) Teaching and learning methods

1- Lectures
2- Self learning
3- Cooperative learning
4- Office hours (tutorial)

4) – Student Assessment Methods

1- Written examination
2- Mid – Term
3- Sheet examination
4- Oral examination

5) References

1- Meier, E. K. and Baumgartner, T. (2014). Global food legislation: an overview. Wiley.VCH. 352 pages.