

REGISTRATION EXAMINATION FOR DIETITIANS
STUDY OUTLINE – 2017-2021
Effective January 1, 2017

DOMAIN I – PRINCIPLES OF DIETETICS (25%)

TOPIC A – Food Science and Nutrient Composition of Foods

1. Food science
 - a. Physical and chemical properties of food
 - (1) Water
 - (2) Vegetables and fruits
 - (3) Sugars
 - (4) Flour and cereals
 - (5) Milk and dairy products
 - (6) Eggs
 - (7) Meats, fish, poultry, meat alternatives
 - (8) Fats and oils
 - (9) Leavening agents
 - (10) Batters and doughs
 - (11) Beverages
 - (12) Functional foods
 - (13) Sensory evaluation of food
 - (14) Food preservation
 - (15) Food processing
 - (16) Food packaging
 - (17) Food biotechnology and genetic engineering
 - b. Scientific basis for preparation and storage
 - (1) Function of ingredients
 - (2) Techniques of food preparation
 - (3) Effects of techniques and methods on
 - (a) Aesthetic properties
 - (b) Nutrient retention
 - (4) Roles of food additives
2. Composition of food
 - a. Sources of data, labels
 - b. Macro and micronutrients sources
 - c. Phytochemicals
 - d. Nutrient databases
 - e. Nutrient analysis

TOPIC B – Nutrition and Supporting Sciences

1. Principles of normal nutrition
 - a. Function of nutrients and non-nutritive substances
 - b. Nutrient, energy needs and feeding patterns throughout the life span
 - c. Herbals, botanicals, and supplements
2. Principles of normal human anatomy, physiology, and biochemistry

- a. Gastrointestinal
 - (1) Ingestion
 - (2) Digestion
 - (3) Absorption
 - (4) Metabolism
 - (5) Excretion
 - b. Renal
 - c. Pulmonary
 - d. Cardiovascular
 - e. Neurological
 - f. Musculoskeletal
 - g. Reproductive
3. Health determinants and epidemiology (e.g., income, culture, social status, education, physical environment, social network, genetics, gender, race, and sexual orientation)
- a. Nutrition requirements and health promotion and disease prevention

TOPIC C – Education, Communication and Technology

- 1. Components of the educational plan
 - a. Targeted setting/clientele
 - (1) Cultural competencies and diversity
 - (2) In-service education (e.g., students and health and rehabilitative service providers)
 - (3) Patient/client counseling
 - (4) Group education
 - b. Goals and objectives (e.g., collaborate with partners and stakeholders)
 - c. Needs assessment (e.g., external constraints, competing programs, illness, and learning needs)
 - (1) Individual
 - (2) Group
 - d. Content (e.g., community resources, learning activities/methodology, references, handouts, and instructional materials)
 - e. Evaluation criteria
 - f. Budget development
 - g. Program promotion
- 2. Education Theories
 - a. Educational readiness
 - b. Human behavior and change management theory
- 3. Implementation
 - a. Communication
 - (1) Interpersonal
 - (2) Group process (e.g., interprofessional)
 - (3) Teach classes (e.g., culinary demonstrations and grocery tours)
 - b. Interviewing (e.g., techniques of questioning: open-ended, closed-ended, leading)
 - c. Counseling (e.g., techniques: motivational, behavioral, other)
 - d. Methods of communication
 - (1) Verbal/non-verbal
 - (2) Written (e.g., reports, grant proposals, other)
 - (3) Media (e.g., print, electronic, and social media)
- 4. Evaluation of educational outcomes
 - a. Measurement of learning

- (1) Formative
 - (2) Summative
- b. Evaluation of effectiveness of educational plan
- 5. Client Information
 - a. Records
 - b. Confidentiality
- 6. Documentation
- 7. Orientation and training
- 8. Healthcare and nutrition informatics systems/technologies
 - a. Telehealth and remote health monitoring systems
 - b. Electronic health records (e.g., meaningful use, privacy and protection for PHI, use for outcomes and use for NCP)
 - c. Food and nutrient analysis software and databases
 - d. Foodservice management software
- 9. Public policy advocacy and legislation

TOPIC D – Research Applications

- 1. Types of research
- 2. Research process (e.g., hypothesis testing, study design, Institutional Review Board (IRB), statistical analysis, results, and discussion)
- 3. Data collection, analysis, interpretation, and outcomes to make decisions
- 4. Application of statistical analysis
- 5. Analysis, interpretation, and integration of evidence-based research findings
- 6. Presentation of research data and outcomes
- 7. Reporting research findings (e.g., writing manuscripts)
- 8. Use of evidence analysis as the basis for practice decisions (e.g., Evidence Analysis Library)

DOMAIN II – NUTRITION CARE FOR INDIVIDUALS AND GROUPS (40%)

TOPIC A – Screening and Assessment

- 1. Nutrition screening
 - a. Purpose
 - b. Selection and use of risk factors and evidence-based tools
 - c. Parameters and limitations
 - d. Methodology
 - e. Participation in interdisciplinary nutrition screening teams
 - f. Cultural competence
 - g. Prioritize nutrition risk
- 2. Nutrition assessment of individuals
 - a. Dietary intake assessment, analysis, and documentation
 - b. Medical and family history
 - c. Obtain and assess physical findings
 - (1) Anthropometric data
 - (2) Nutrition-focused physical exam
 - (3) Intake and output

- d. Medication management
 - (1) Prescription and over-the-counter medications
 - (2) Medication/food interactions
- e. Obtain and assess biochemical data, diagnostic tests, and procedures
- f. Assessment of energy and nutrient requirements
- g. Physical activity habits and restrictions
- h. Comparative standards (e.g., energy requirements and growth)
- i. Economic/social
 - (1) Psychosocial and behavioral factors
 - (2) Socioeconomic factors
 - (3) Functional factors
- j. Educational readiness assessment
 - (1) Motivational level and readiness to change
 - (2) Educational level
 - (3) Situational (e.g., environmental, economic, and cultural)
- k. General wellness assessment
- 3. Nutrition assessment of populations and community needs assessment
 - a. Obtain and assess community and group nutrition status indicators
 - (1) Demographic data
 - (2) Incidence and prevalence of nutrition-related status indicators
 - (3) Prevalence of food insecurity
 - b. Review and utilize nutrition screening and surveillance systems (e.g., national, state, and local reference data, NHANES, BRFSS and YRBSS)
 - c. Availability of community resources
 - (1) Food and nutrition assistance programs
 - (2) Consumer education resources
 - (3) Health services
 - (4) Studies on food systems, local marketplace, food economics
 - (5) Public health programs

TOPIC B – Diagnosis

- 1. Relationship between nutrition diagnoses and medical diagnoses
 - a. Pathophysiology
 - b. Identifying medical diagnoses affecting nutrition care
 - c. Determining nutrition risk factors for current medical diagnoses
 - d. Determining nutrition factors for groups
- 2. Data sources and tools for nutrition diagnosis
 - a. Organizing assessment data
 - b. Using standardized language
- 3. Diagnosing nutrition problems for individuals and groups
 - a. Making inferences
 - b. Prioritizing
 - c. Differential diagnosing
- 4. Etiologies (e.g., cause/contributing risk factors)
 - a. Identifying underlying causes and contributing risk factors of nutrition diagnoses
 - b. Making cause and effect linkages
- 5. Signs and symptoms (e.g., defining characteristics)
 - a. Linking signs and symptoms to etiologies
 - b. Using subjective (symptoms) and/or objective (signs) data
- 6. Documentation

TOPIC C – Planning and Intervention

1. Nutrition care for health promotion and disease prevention
 - a. Identification of desired outcomes/actions
 - (1) Evidence-based practice for nutrition intervention
 - (2) Evaluation of nutrition information
 - (3) Food fads
 - (4) Health fraud
 - (5) Health and wellness promotion and risk reduction programs
 - b. Determination of energy/nutrient needs specific to life span stage
 - c. Implementing care plans
 - (1) Nutrition recommendations to promote wellness
 - (2) Communication and documentation
 - (a) Patient rounds
 - (b) Care conference
2. Medical Nutrition Therapy
 - a. Identify desired outcomes and actions
 - b. Relationship of pathophysiology to treatment of nutrition-related disorders
 - (1) Critical care and hypermetabolic states
 - (2) Eating disorders
 - (3) Food allergies and intolerance
 - (4) Immune system disorders, infections, and fevers
 - (5) Malnutrition (e.g., protein, calorie, vitamin and mineral)
 - (6) Metabolic, endocrine, and inborn errors of metabolism
 - (7) Oncologic and hematologic conditions
 - (8) Organ system dysfunction
 - (9) Orthopedic/wounds
 - (10) Obesity
 - c. Determine energy/nutrient needs specific to condition
 - d. Determine specific feeding needs
 - (1) Oral
 - (a) Composition/texture of foods
 - (b) Diet patterns/schedules; Diagnostic test meals
 - (c) Modified diet products and food supplements
 - (d) Adaptive equipment
 - (e) Breastfeeding
 - (2) Enteral and Parenteral Nutrition
 - (a) Formulas and calculations
 - (b) Routes, techniques, equipment
 - (c) Complications
 - (3) Integrative and functional care, herbal therapy
 - e. Implementing care plans
 - (1) Nutrition therapy for specific nutrition-related problems
 - (2) Basis for quality practice (e.g., evidence-based guidelines, standardized processes - NCP, regulatory and patient safety issues)
 - (3) Counseling and training (e.g., nutrition plans, medical devices and formula preparation)
 - (4) Communication and documentation

- (5) Discharge planning and disease management
 - (a) Recommend appropriate physical, social, behavioral or psychological services
 - (b) Referral to community resources (e.g., WIC and home-delivered meals)
- 3. Implementation and promotion of National Dietary Guidance
 - a. MyPlate and Dietary Guidelines for Americans
 - b. State and community resources and nutrition related programs
 - (1) Block grants to states
 - (2) Federal and state funded food and nutrition programs
 - (3) Community interventions
- 4. Development of programs and services
 - a. Identification and attainment of funding
 - b. Resource allocation and budget development
 - c. Provision of food and nutrition services to groups

TOPIC D – Monitoring and Evaluation

- 1. Monitoring progress and updating previous care
 - a. Monitoring and evaluating tolerance to interventions (e.g., medications, tube feeding, parenteral nutrition, and medical nutrition and dietary supplements)
 - b. Comparing outcomes to nutrition interventions
- 2. Measuring outcome indicators using evidence-based guides for practice
 - a. Explaining variance
 - b. Using reference standards
 - c. Selecting indicators
- 3. Evaluating outcomes
 - a. Direct nutrition outcomes
 - b. Clinical and health status outcomes
 - c. Patient-centered outcomes
 - d. Healthcare utilization outcomes
- 4. Relationship with outcomes measurement systems and quality improvement
- 5. Determining continuation of care
 - a. Continuing and updating care
 - b. Discontinuing care

DOMAIN III – MANAGEMENT OF FOOD AND NUTRITION PROGRAMS AND SERVICES (21%)

TOPIC A – Functions of Management

- 1. Functions
 - a. Planning
 - (1) Short and long range
 - (2) Strategic and operational
 - (3) Policies and procedures
 - (4) Emergency preparedness
 - b. Organizing
 - (1) Schedules and FTE allocations
 - (2) Department or unit structure
 - (3) Processes, procedures, and improving productivity

- (4) Resources
- c. Directing
 - (1) Coordination
 - (2) Delegation
 - (3) Communication
 - (4) Motivation strategies
 - (5) Leadership theories
 - (6) Management theories
- d. Controlling
 - (1) Establishing standards
 - (2) Monitoring established plans
 - (3) Developing corrective actions
- e. Staffing
 - (1) Forecasting personnel needs
 - (2) Alignment of personnel
- 2. Management Characteristics
 - a. Skills
 - (1) Technical
 - (2) Human
 - (3) Conceptual
 - b. Roles
 - (1) Informational
 - (2) Conflict resolution
 - (3) Problem-solving
 - (4) Decision-making
 - (5) Other
 - c. Traits
 - (1) Management styles
 - (2) Leadership styles
 - (3) Interpersonal styles
 - (4) Managing a diverse workforce
- 3. Scope of Practice and Standards of Professional Performance

TOPIC B – Human Resources

- 1. Employment laws and regulations
 - a. Regulatory compliance (e.g., EEOC, ADA or other)
 - b. Unions and contracts
- 2. Employment standards
 - a. Job analysis
 - b. Job specifications
 - c. Job descriptions
- 3. Employment processes
 - a. Recruitment and selection
 - b. Orientation and training
 - c. Performance improvement and development
 - d. Discipline
 - e. Grievance
 - f. Compensation
 - g. Retention and turnover
 - h. Personnel records

TOPIC C – Financial Management

1. Budgeting processes and fiscal periods
 - a. Budget procedures
 - b. Types
 - (1) Operational
 - (2) Capital
 - c. Methods
 - (1) Incremental
 - (2) Performance
 - (3) Zero-based
 - (4) Flexible
 - (5) Fixed
 - d. Components
 - (1) Types of expenses
 - (2) Revenue streams
 - (3) Profitability
 - e. Resources allocation
2. Financial monitoring
 - a. Accounting principles
 - b. Cash control and auditing
 - c. Financial statements
 - d. Financial analysis

TOPIC D – Marketing and Public Relations

1. Marketing analysis
 - a. Process
 - (1) Identification of target market
 - (2) Determination of needs/wants
 - (3) Marketing mix
 - (4) Customer satisfaction
 - (5) Documentation and evaluation
2. Pricing
 - a. Strategies
 - (1) Breakeven
 - (2) Revenue-generating
 - (3) Loss leader
 - b. Rationale
3. Public relations
 - a. Media relations
 - b. Social networking
 - c. Campaign development
 - d. Customer service
4. Marketing mix principles
 - a. Product
 - b. Place
 - c. Price
 - d. Promotion

TOPIC E – Quality Management and Improvement

1. Regulatory guidelines (e.g., federal, state, local and accreditation agencies)
2. Process, implementation, evaluation
 - a. Cost/benefit analysis
 - b. Productivity analysis
 - c. Program and product analysis

DOMAIN IV – FOODSERVICE SYSTEMS (14%)

TOPIC A - Menu Development

1. Menu
 - a. Patient/resident
 - b. Commercial
 - c. Non-commercial
2. Menu development
 - a. Master menu
 - b. Guidelines and parameters
 - (1) Aesthetics
 - (2) Nutritional adequacy
 - (3) Cost
 - (4) Regulations
 - c. Modifications
 - (1) Diet/disease states/lifespan
 - (2) Substitutions
 - (3) Nutritional adequacy
 - (4) Food allergies and sensitivities
 - (5) Cultural/religious
 - (6) Vegetarian/vegan
 - d. Satisfaction Indicators
 - (1) Customer evaluation
 - (2) Sales data
 - e. Operational influences
 - (1) Equipment
 - (2) Labor
 - (3) Budget
 - f. External influences
 - (1) Trends
 - (2) Seasonality
 - (3) Emergency management
 - (4) Product availability

TOPIC B - Procurement, Production, Distribution, and Service

1. Procurement, receiving, and inventory management
 - a. Procurement principles, concepts, and methods
 - (1) Bid process and contract implementation
 - (2) Specification development
 - (3) Group purchasing/prime vendor
 - (4) Ethics

- b. Procurement decisions
 - (1) Product selection/yield
 - (2) Product packaging
 - (3) Cost analysis
- c. Receiving and storage
 - (1) Equipment and methods
 - (2) Records
 - (3) Security
- d. Inventory management
 - (1) Control procedures (e.g., par levels, rotation and minimum/maximum)
 - (2) Issuing procedures
 - (3) Inventory technology
- 2. Principles of quantity food preparation and processing
 - a. Cooking methods
 - b. Equipment
 - c. Preservation and packaging methods
 - d. Modified food preparation
- 3. Food production control procedures
 - a. Standardized recipes
 - b. Ingredient control
 - c. Portion control and yield analysis
 - d. Forecasting production
 - e. Production scheduling
 - f. Food waste management
- 4. Production systems
 - a. Conventional
 - b. Commissary
 - c. Ready prepared
 - d. Assembly serve
 - e. Cook – chill
 - f. Display cooking
- 5. Distribution and service
 - a. Type of service systems
 - b. Equipment
 - c. Packaging

TOPIC C - Sanitation and Safety

- 1. Sanitation
 - a. Sanitation practices and infection control
 - (1) Personal hygiene
 - (2) Food and equipment
 - (3) Waste disposal
 - (4) Food handling techniques
 - b. Food laws and regulations (e.g., government and other agencies)
- 2. Food safety
 - a. Principles
 - (1) Contamination and spoilage
 - (2) Microbiological control
 - (3) Signs and symptoms of food borne illness

- b. Food safety management
 - (1) HACCP
 - (2) Time and temperature control
 - (3) Documentation and record keeping
 - (4) Recalls
 - (5) Operational emergencies
 - (6) Bioterrorism
 - (7) Employee behaviors and training
- 2. Safety
 - a. Employee
 - (1) Universal precautions
 - (2) Equipment use and maintenance
 - (3) Personal work habits
 - b. Practices
 - (1) Environmental conditions
 - (2) Regulations
 - (3) Fire safety
 - (4) Accident prevention
 - c. Documentation and record keeping

TOPIC D – Equipment and Facility Planning

- 1. Facility layout
 - a. Equipment and layout planning
 - (1) Menu
 - (2) Flow of food
 - (3) Service systems
 - (4) Safety and sanitation
 - (5) Privacy and accessibility
 - (6) Codes and standards
 - (7) Budget
 - b. Planning team
 - (1) Composition
 - (2) Roles and responsibilities
- 2. Equipment specifications and selection
- 3. Sustainability
 - a. Food and water
 - b. Non-food
 - (1) Supplies
 - (2) Equipment
 - c. Waste management
 - (1) Storage
 - (2) Reduce, reuse, recycle
 - (3) Disposal