

SYLLABUS

FOR

POST GRADUATE DIPLOMA

IN APPLIED NUTRITION

(PGDAN)

(Semester: I - II)

Session: 2022-23



DIRECTORATE OF OPEN AND DISTANCE LEARNING (ODL)
GURU NANAK DEV UNIVERSITY, AMRITSAR

(ESTABLISHED UNDER STATE LEGISLATURE ACT NO. 21 OF 1969)

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**POST GRADUATE DIPLOMA IN APPLIED NUTRITION (SEMESTER SYSTEM) under
Directorate of Open & Distance Learning, Guru Nanak Dev University, Amritsar**

Eligibility:

Graduate with 45% marks in aggregate or equivalent examination.

SEMESTER-I

Paper Code	Subject	Marks			Credits
		Internal Assessment	End Term	Total	
ODPAN – 101T	Basic Nutrition – I	20	80	100	4
ODPAN – 102T	Human Physiology	20	80	100	4
ODPAN – 103T	Nutrition through life cycle	20	80	100	4
ODPAN – 104T	Nutrition for health and fitness	20	80	100	4
Total Marks & Credits		80	320	400	16

SEMESTER-II

Paper Code	Subject	Marks			Credits
		Internal Assessment	End Term	Total	
ODPAN – 201T	Basic Nutrition – II	20	80	100	4
ODPAN – 202T	Therapeutic Nutrition	20	80	100	4
ODPAN – 203T	Community Nutrition	20	80	100	4
ODPAN – 204T	Sports Nutrition	20	80	100	4
Total Marks & Credits		80	320	400	16

ODPAN - 101T: Basic Nutrition - I**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section - A

1. Importance and functions of food
2. Classification of food
3. Food pyramid and My Plate

Section - B

Classification, structure, functions and sources of Macronutrients-

- a) Carbohydrates
- b) Fats
- c) Proteins

Section - C

1. **Vitamins**
 - a) Fat soluble vitamins
 - b) Water soluble vitamins
2. **Minerals**
 - a) Major minerals
 - b) Trace minerals

Section - D

1. Water- distribution and functions
2. Fiber- classification and functions

References:

1. Groff, James L & Gropper, Sareen S: Advanced nutrition and human metabolism. 3rd ed. Stamford : Wadsworth Publ, 1999.
2. Barasi, Mary E : Human nutrition : a health perspective. London : Arnold, c1997.
3. Present Knowledge in Nutrition. International Life Sciences Institute.
4. Eastwood, Martin & Edwards, Christine & Parry, Doreen : Human nutrition : a continuing debate. London : Chapman & Hall, c1992.
5. Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.
6. Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
7. Nutrient Requirements and Recommended Dietary Allowances for Indians- I.C.M.R. Publication 1999.
8. Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
9. Elenaor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
10. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
11. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
12. C. Gopalan, B.V. Ramasastri and S.C. Balasubramanian (1989)- Nutritive Value of Indian Foods. NIN ICMR Hyderabad 500 007.
13. <http://swayam.gov.in>
14. <http://edx.org> formerly <http://mooc.org>
15. <http://epgp.inflibnet.ac.in/>

ODPAN – 102T: Human Physiology**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A

1. Cells, tissues and organs.
2. Cell structure, transport through cell membrane, Classification of tissue.

Section – B

1. **Nervous system**-, Structure and properties of nerve, transmission of impulse
2. **Endocrine system** - Different endocrine glands and their hormones, major functions.
3. **Digestive system**- organs of GI tract and their major functions.

Section – C

Cardiovascular system- anatomy of heart and blood vessels. Cardiac cycle, cardiac output and blood pressure.

Respiratory system- anatomy, mechanism of respiration, lung volume and capacities.

Excretory system - anatomy, function, renal circulation. Urine formation.

Section – D

Reproductive system- Male reproductive system - Structure and Function.

Female reproductive system - Structure and Function, menstrual cycle

Immune system - Innate, acquired and active immunity, cell mediated and humoral mediated immunity. Auto immune disease and Immune deficiency disorder

References

1. Understanding Medical Physiology , R.L. Bijlani, (1995) J P Brothers Medical Publishers.
2. Text Book of Medical Physiology, Guyton Hall , (2003)Saunders publishers.
3. Principles of Anatomy and Physiology. Tortora (2003) . John Wiley and sons.
4. Human Physiology, by C.C.Chatterjee, (2002)Medical Allied Agency.
5. <http://swayam.gov.in>
6. <http://edx.org> formerly <http://mooc.org>
7. <http://epgp.inflibnet.ac.in/>

ODPAN – 103T: Nutrition Through Life Cycle**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A

Nutrition during infancy- Physiologic development, nutritional requirements, solid food introduction.

Nutrition in childhood- Growth and development, nutritional requirements and adequate diet.

Section – B

Nutrition in adolescence- Growth and development, nutritional requirements, factors influencing eating behaviours

Nutrition in the adult years- Energy requirements, calories and weight management

Section – C

Nutrition in pregnancy- Physiological changes, nutritional requirements.

Nutrition in lactation- Nutritional requirements

Section – D

Nutrition in old age- process of ageing, nutritional requirements

Nutrition related problems of old age.

References:

1. Gopalan C, Rama Sastri BV and Balasubramanian SC (1993) Revised and updated by Narasinga Rao BS, Deosthale YG and Paul KC, Nutritive Value of Indian Foods, Hyderabad: National Institute of Nutrition, Indian Council of Medical Research.
2. Sheel Sharma (2000) Human Nutrition and Meal Planning, Published by Mrs. S Chowdhary for JnanadaPrakashan (P&D) (JNANADA), 24, Daryaganj, N.Delhi.
3. Krause, M.V. and Mahan, L.K. (1986) Food, Nutrition and Diet Therapy, Alian R. Liss, Saunders Co., London.
4. Passmore, R. and Davidson, S. (1986) Human Nutrition and Dietetics, Livingstone Publishers
5. Robinson, C.H., Laer, M.R., Chenoweth, W.L., Garwick, A.E. (1986) Normal and Therapeutic Nutrition, Macmillan Publishing Company, New York.
6. Williams, S.R. (1989) Nutrition and Diet Therapy, 4th Ed., C.V. Mosby Co.
7. Shils, M.E., Oslon, J.A., Shike, M. Eds. (1994), Modern Nutrition in Health and Disease, 8th Edn., Lea and FebigerA Waverly Company.
8. <http://swayam.gov.in>
9. <http://edx.org> formerly <http://mooc.org>
10. <http://epgp.inflibnet.ac.in/>

ODPAN – 104T: Nutrition in Health and Fitness**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A**Nutrition for weight management-**

1. Management of obesity- Lifestyle modification, dietary modification.
2. Excessive leanness- Management, high energy diets for weight gain

Section – B**Nutrition in eating disorders-**

1. Anorexia Nervosa
2. Bulimia Nervosa

Section – C**Nutrition for-**

1. Bone health
2. Oral and dental health

Section – D**Nutrition for exercise-**

1. Nutritional requirements
2. Fluid requirements

References:

1. Mahan, L.K. and Stump, S. E. (2000) Krause's Food, Nutrition and Diet Therapy (11th Edition) Saunders, An Imprint of Elsevier, Pennsylvania, USA
2. Sizer F, Whitney E (2000) Nutrition-concepts and controversies, 8th Edition, Wassworth Thompson Learning.
3. Parizkova J (1997) Nutrition, physical activity and health in early life. Ed. Wolinsky, I, CRC Press
4. McArdle W, Katch F, Katch V (1996) Exercise, physiology, energy, nutrition and human performance. 4th Edition, Williams and Wilkins, Philadelphia.
5. <http://swayam.gov.in>
6. <http://edx.org> formerly <http://mooc.org>
7. <http://epgp.inflibnet.ac.in/>

ODPAN – 201T: Basic Nutrition - II**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A**Overview of digestive processes-**

1. Digestion in mouth
2. Digestion in stomach
3. Digestion in small intestine
4. Digestion in large intestine

Section – B**Energy metabolism-**

1. Energy value of foods
2. Energy production in the body
3. Energy utilization in the body

Section – C**Balanced diet-**

1. Principles of balanced diet
2. Low cost balanced diets

Section – D**Meal planning-**

1. Principles of meal planning
2. Budgeting of food and factors to be considered while budgeting of food

References:

1. Groff, James L & Gropper, Sareen S: Advanced nutrition and human metabolism. 3rd ed. Stamford : Wadsworth Publ, 1999.
2. Barasi, Mary E : Human nutrition : a health perspective. London : Arnold, c1997.
3. Present Knowledge in Nutrition. International Life Sciences Institute.
4. Eastwood, Martin & Edwards, Christine & Parry, Doreen : Human nutrition : a continuing debate. London : Chapman & Hall, c1992.
5. Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.
6. Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
7. Nutrient Requirements and Recommended Dietary Allowances for Indians- I.C.M.R. Publication 1999.
8. Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
9. Elenaor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
10. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
11. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
12. C. Gopalan, B.V. Ramasastri and S.C. Balasubramanian (1989)- Nutritive Value of Indian Foods. NIN ICMR Hyderabad 500 007
13. B. Srilakshmi (2014) Dietetics. New Age International Publishers. Delhi
14. <http://swayam.gov.in>
15. <http://edx.org> formerly <http://mooc.org>
16. <http://epgp.inflibnet.ac.in/>

ODPAN – 202T: Therapeutic Nutrition**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A**Modification of diet-**

1. Types of modification
2. Diet Therapy

Section – B**Nutrition in Gastro intestinal diseases.**

- a. Peptic ulcer
- b. Diarrhoeas
- c. Constipation

Nutrition in Cancer**Section – C****Nutrition in Liver Diseases**

- a. Infective Hepatitis
- b. Cirrhosis.

Nutrition in Diabetes Mellitus**Section – D****Nutrition in Cardiovascular disorders**

- a) Coronary heart disease
- b) Hypertension

Nutrition in Renal Disorders

- a) Renal failure
- b) Dialysis

References:

1. Donald Stewart Maclare, *Mal-Nutrition and the Eye* Academic Press, New York and London.
2. Williams and Wilkins Co, *Diabetes Mellitus*, U.S.A.
3. Mitchell, H.R., *Comparative Nutrition of Man and Domestic Animals: Vol. II*, Academic
4. Press, New York and London. 4. Bepert, L.J., *Nutrition and Physical Fitness*.
5. Mc. Durtt, Maxine, *Human Nutrition*.
6. Rajalakshmi, R., *Applied Nutrition*.
7. Dorothea, Turner, *Hand Book of Diet Therapy*.
8. Davidson, S., Passmore, R. Brock, J.F. and Truswell A. S., *Human Nutrition and Dietetics*.
9. Anita, F.P., *Clinical Dietetics and Nutrition*
10. Pyke, Maonus, *Food Science and Technology*.
11. Goodheart, R.S., Shills, *Modern Nutrition Health and Disease*, 1980.
12. Krause's, *Food Nutrition and Diet Therapy*, 10th Edition
13. <http://swayam.gov.in>
14. <http://edx.org> formerly <http://mooc.org>
15. <http://epgp.inflibnet.ac.in/>

ODPAN – 203T: Community Nutrition

Time: 03 Hours

Max. Marks: 100 Marks

Internal Assessment: 20 Marks

End Term: 80 Marks

Instructions for the Paper-Setter/examiner:

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A

Millennium Development goals

National Nutrition Policy

Section – B

Health, nutrition and family welfare through the XIIth Five-year plan

Programmes to control malnutrition

Section - C

The major nutritional problems prevailing in India

Special nutrition programmes

Section – D

Nutrition Education

- a) Methods used in nutrition education
- b) Teaching aids used in nutrition education

References

1. B. Srilakshmi (2018) Nutrition Science. New Age International Publishers. Delhi
2. D. Suryatapa (2018) Textbook of community nutrition. Academic Publishers. Delhi.
3. <http://swayam.gov.in>
4. <http://edx.org> formerly <http://mooc.org>
5. <http://epgp.inflibnet.ac.in/>

ODPAN – 204T: Sports Nutrition**Time: 03 Hours****Max. Marks: 100 Marks****Internal Assessment: 20 Marks****End Term: 80 Marks****Instructions for the Paper-Setter/examiner:**

1. Question paper shall consist of **Four sections**.
2. Paper setter shall set **Eight questions** in all by selecting **Two questions** of equal marks from each section. However, a question may have sub-parts (not exceeding four sub-parts) and appropriate allocation of marks should be done for each sub-part.
3. Candidates shall attempt **Five questions** in all, by at least selecting **One question** from each section and the **5th question** may be attempted from any of the **Four sections**.
4. The question paper should be strictly according to the instructions mentioned above. In no case a question should be asked outside the syllabus.

Section – A**Energy Systems-**

- a) Anaerobic energy system
- b) Aerobic energy system

Section – B**Nutritional requirements-**

- a) Energy
- b) Carbohydrates
- c) Fats
- d) Proteins
- e) Vitamins and Minerals

Section – C**Hydration****Pre-event and post-event meals****Section – D****Nutritional Supplements****Dietary Guidelines**

References

1. Rankin J W, Nutrition for very high intensity sports in Sports Nutrition: A Practice manual for professionals edited by Marie Dunford 2006
2. Maughan, R. J., & Burke, L. M. (2012). Practical nutritional recommendations for the athlete. In *Sports Nutrition: More Than Just Calories-Triggers for Adaptation* (Vol. 69, pp. 131-150). Karger Publishers
3. Gibala, M. J. (2013). Nutritional strategies to support adaptation to high-intensity interval training in team sports. In *Nutritional Coaching Strategy to Modulate Training Efficiency* (Vol. 75, pp. 41-49). Karger Publishers.
4. Manore, M., Meyer, N. L., & Thompson, J. (2009). *Sport nutrition for health and performance*. Human Kinetics.
5. Ranchordas, M. K., Rogerson, D., Ruddock, A., Killer, S. C., & Winter, E. M. (2013). Nutrition for tennis: practical recommendations. *J Sports Sci Med*, 12(2), 211-24.
6. Jeukendrup, A., & Gleeson, M. (2010). *Sport nutrition: an introduction to energy production and performance* (No. Ed. 2). Human Kinetics.
7. Sebohar, B. (2011). *Nutrition periodization for athletes: Taking traditional sports nutrition to the next level*. Bull Publishing Company.
8. Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. *Journal of sports sciences*, 29(sup1), S67-S77.
9. Helms, E. R., Aragon, A. A., & Fitschen, P. J. (2014). Evidence-based recommendations for natural bodybuilding contest preparation: nutrition and supplementation. *Journal of the International Society of Sports Nutrition*, 11(1), 20.
10. McArdle, W. D., Katch, F. I., & Katch, V. L. (2009). *Sports and exercise nutrition*. Lippincott Williams & Wilkins.
11. <http://swayam.gov.in>
12. <http://edx.org> formerly <http://mooc.org>
13. <http://epgp.inflibnet.ac.in/>