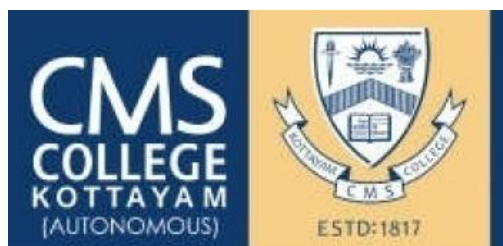


CMS COLLEGE KOTTAYAM
(AUTONOMOUS)

Affiliated to the Mahatma Gandhi University
Kottayam, Kerala



CURRICULUM FOR POST GRADUATE PROGRAMME

MASTER OF SCIENCE IN HOME SCIENCE
BRANCH X E: DIETETICS AND FOOD SERVICE MANAGEMENT

UNDER CREDIT AND SEMESTER SYSTEM (CSS)

(With effect from 2019 Admissions)

Approved by the Board of Studies on 12th April 2019

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First of all, we thank God Almighty for helping us in the successful restructuring of the syllabus of M.Sc. Dietetics & Food Service Management.

On behalf of the Department of Family & Community Science, I thank the Management, Principal and IQAC, CMS College for organizing umpteen sessions by experts and advisors from the National education arena to train us, the teachers in the science & art of Curriculum Design.

Board of Studies of Department of Home Science, CMS College, Kottayam gratefully acknowledge the unstinted support and guidance extended by the expert committee members and teachers in the restructuring & framing of post graduate syllabus, 2019. Their contributions & guidance played a crucial role in designing this curriculum to the present level.

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Dr. Miriam Mani
Chairman
Board of Studies

12.04.2019
Kottayam

PREFACE

The PG programme in Food Service Management and Dietetics aims to improve the health of people through nutrition. The mission is to provide students with a broad educational background in the science of food, nutrition, diet and food service management. Nutrition and Dietetics is a vital growing field and the opportunities and possibilities in this field are endless. The field of nutrition & dietetics is a multi dimensional field with practical application in our day-to-day lives. With its dynamic and interesting curriculum, this course aims at producing versatile candidates in the field of nutrition and dietetics

The Curriculum of M.Sc. Dietetics & Food Service Management was designed in such a way that it ensures academic consistency, professionalism in students and also provides a workable structure for the educator. The subjects covered in the post graduate programme are many with Dietetics, Human Physiology, Statistics, Public Health Nutrition, Sports Nutrition, Biochemical changes in diseases, Research Methodology, Food Microbiology, Food Facilities and Layout, Equipments, Food Service Management etc., with Project/dissertation and Internship.

The students undergo internship training as a part of their course curriculum in Hospitals and Star Hotels. Thus the curriculum throws light on each and every area of the core courses and also provides professional experiences in core subjects and thereby enhance skills of students to meet industry requirements and succeed in the professional environment.

The revised curriculum also ensures that after completing this master degree, student's knowledge and skills will be enhanced and they will be able to enter into any of the specialized areas learned through their curriculum or into a business market as an entrepreneur and/or may be start their own food service unit

REGULATIONS FOR POST GRADUATE PROGRAMMES UNDER CREDIT SEMESTER SYSTEM 2019

Preamble

CMS College Kottayam (Autonomous) was conferred with the Autonomous status as per UGC No.F.22-1/2016(AC) Dtd. 9th March 2016 and Mahatma Gandhi U.O.No.2732/VII/2016/Acad. Dtd.12th May 2016.

REGULATIONS

CMS College Kottayam (Autonomous) follows Credit Semester System (CSS) for the Post Graduate programmes from the Academic year 2019-20. The Post Graduate programmes of the college are being redesigned and revised in tune with the modifications effected at the UGC Curriculum Framework. This will be reflected in the scheme, course content and mode of examination and Evaluation system. The scheme and syllabus of all the programmes are being revised accordingly. The revisions were effected based on the recommendations made at the Curriculum Revision workshops conducted for the purpose besides several sittings of the Curriculum Revision Committee.

1. TITLE

- 1.1.** These regulations shall be called “**CMS COLLEGE KOTTAYAM (AUTONOMOUS) REGULATIONS FOR POST GRADUATE PROGRAMMES UNDER CREDIT AND SEMESTER SYSTEM 2019**”

2. SCOPE

- 2.1** Applicable to all regular Postgraduate Programmes conducted by the CMS College Kottayam (Autonomous) with effect from 2019 admissions.
- 2.2** Medium of instruction is English unless otherwise stated therein.

3. DEFINITIONS

- 3.1. Academic Week** is a unit of five working days in which the distribution of work is organized from day one to day five, with five contact hours of one hour duration on each day.
- 3.2. Semester** means a term consisting of **90** working days, within **18** five-day academic weeks for teaching, learning and evaluation.
- 3.3. Programme** means a two year programme of study and examinations, spread over four semesters, with a set of courses, the successful completion of which would lead to the award of a degree.
- 3.4. Course** comprises a set of classes or a plan of study on a particular subject which will be taught and evaluated within a semester of a study programme.

- 3.5. **Core course** means a course which should compulsorily be studied by a student as requirement in the subject of specialization within a degree programme.
- 3.6. **Elective Course** means an elective course chosen from the discipline/ subject, in an advanced area.
- 3.7. **Credit** is the numerical value assigned to a course according to the duration of the classes or volume of the syllabus of the course.
- 3.8. **Department** means any teaching department in the college.
- 3.9. **Dean of Academic Affairs** is a teacher nominated by the Academic Council to coordinate the academic affairs of the college relating to academic planning, curriculum implementation and review.
- 3.10. **Dean of Student Affairs** is a teacher nominated by the Academic Council to coordinate the admissions, grievances and other student related services.
- 3.11. **Department Council** means the body of all teachers of a department in the college.
- 3.12. **Department Coordinator** is a teacher nominated by a Department Council to coordinate the ^{1st}-Semester examination of the PG programme in that department.
- 3.13. **Faculty Advisor** means a teacher from the parent department nominated by the Department Council, who will advise the students of a class on academic matters.
- 3.14. **Course Teacher** means a teacher who is in charge of a course. If a course is taught by more than one teacher, one teacher should be assigned as course teacher, nominated by the HOD. The course teacher shall be responsible for the valuation of answer scripts of examinations and other continuous assessments.
- 3.15. **In-Semester Assessment (ISA)** means assessment consisting of Attendance, Assignment/Seminar/Viva voce and Examination (theory and practical).
- 3.16. **End Semester Assessment (ESA)** means Examination conducted at the end of each semester for all courses (theory and practical).
- 3.17. **Internal Examiner** means a teacher working in the college.
- 3.18. **External Examiner** means a teacher from outside the college.
- 3.19. **Grace Marks** shall be awarded to candidates as per the orders issued by Mahatma Gandhi University.
- 3.20. **Grade** means a letter symbol (A, B, C, etc.), which indicates the broad level of performance of a student in a Course/ Semester/Programme.
- 3.21. **Grade Point (GP)** is the numerical indicator of the percentage of marks awarded to a student in a course.
- 3.22. **College Average (CA)** means average mark secured (ISA+ESA) for a course at the college level.
- 3.23. Words and expressions used and not defined in this regulation shall have the same meaning assigned to them in the Act and Statutes of the University, UGC Regulations and the Constitution of the CMS College Kottayam (Autonomous).

4. ELIGIBILITY FOR ADMISSION AND RESERVATION OF SEATS

Eligibility for admission, norms for admission and reservation of seats for various Postgraduate Programmes shall be according to the regulations framed/orders issued by Govt. of Kerala, Mahatma Gandhi University and CMS College Kottayam in this regard.

5. PROGRAMME STRUCTURE

5.1 The nomenclature of all PG programmes shall be as per the specifications of University Grants Commission and the Mahatma Gandhi University.

5.2 Credit Semester System (CSS) will be followed for all PG Programmes from the academic year 2019– 2020.

5.3 All the PG Programmes will be of two-year duration with four Semesters. A student may be permitted to complete the Programme, on valid reasons, within a period of 8 continuous semesters from the date of commencement of the first semester of the programme.

5.4 There will be three/four/five courses in each semester and one viva voce and dissertation at the end of the fourth semester.

5.5 There will be three components for the programme viz. core course, elective course and project spread over four semesters.

5.6 The total credits required for completing a PG Programme is **80**.

5.7 The Syllabus for all courses in each semester has been divided into five modules based on certain thematic commonalities.

6. EVALUATION SYSTEM

- i. The evaluation scheme for each course shall contain two parts:
 - (a) In-Semester Assessment (ISA)
 - (b) End-Semester Assessment (ESA)
- ii. The proportion of ISA to ESA will be 1:3.
- iii. The marks secured for each course shall be converted as grades. The grades for different semesters and overall programme are assigned based on the corresponding semester grade point average and cumulative grade point average respectively.
- iv. A separate minimum of 40% is mandatory for both ISA and ESA to pass for every course.

6.1 EVALUATION OF THEORY COURSES

The marks allotted for theory courses in End-Semester Assessment shall be 120 and that for the In-Semester Assessment will be 40.

A. IN-SEMESTER ASSESSMENT

The In-semester assessment for theory is based on the marks obtained for Attendance, Assignment, Major Seminar and two Test Papers for a particular course.

(i) Attendance

Percentage of attendance	Mark
90 and above	6
85 - 89	5
80 - 84	4
76 - 79	3
75	2
Below 75	0

Maximum marks = 6

(ii) Assignment (One assignment per course)

Evaluation Component	Mark
Review of related literature	2
Content	3
Reference	2
Punctuality	1

Maximum marks = 8

(iii) Major Seminar

A student should present one Major Seminar in a Semester. The faculty advisor should allot students to the respective course teacher in a semester. The seminar topics shall be incorporated in the syllabus for each course/ declared in the beginning of each semester. The student shall prepare the seminar paper with the guidance of the course teacher. The student is expected to make a detailed presentation in a common session in the department, with students and all course teachers. The student shall also make a brief conclusion including the future scope of studying the topic. The teacher in charge of the particular course has to act as the moderator for the seminar.

The course teachers of that semester shall evaluate the seminar and give marks for their course or the average mark of all the evaluators shall be taken as the seminar mark for each course of a semester.

Evaluation Component	Mark
Involvement/punctuality	1
Review of related literature	1
Content	3
Presentation	3
Interactions/ justification	1
Conclusion	1

Maximum marks = 10

(iv) Test paper

For each course, two In-Semester examinations of total 16 marks shall be conducted. One of the test paper will be centralized examination of 8 marks and the remaining 8 marks will be awarded with one or more class tests conducted by the course teacher.

B. END -SEMESTER ASSESSMENT

End-Semester examinations for each course are conducted at the end of every semester with a maximum marks of 120. The examination for each course will have two components viz., descriptive test and an objective type test. Questions shall be set to evaluate the attainment of course outcomes. The question paper for each course will be generated from the Question Bank which is prepared by due mapping of Course outcomes and Program Specific Outcomes.

(i) Descriptive Test

A written examination with a maximum marks of 100 and of three hours duration will be conducted.

PATTERN OF QUESTIONS

A question paper shall be a judicious mix of short answer type, short essay/problem solving type and long essay type questions.

No.	Section	Type of questions	Total Questions	Number of questions to be answered	Mark for each question	Total Marks
1	Section A	Short answer type	8	5	4	20
2	Section B (One pair should be from each module)	Short essay/problem solving type	10 (Either/or)	5	8	40
3	Section C	Long essay type	4	2	20	40
	Total		22	12	-	100

(ii) Objective Test

A Multiple Choice Objective type Test shall be a component of the End-semester examination which will be conducted in the online mode for each course. The marks obtained shall be converted into 20. The objective type examination for all courses in a semester shall be conducted in a session of one hour. The number of questions in Arts stream will be 50 and that of Science and Mathematics stream will be 40. Questions should be equally distributed among the courses in a semester. There will be four choices for each question. Each question carries 4 marks for correct answer, zero marks for no answer and -1 marks for wrong answer.

6.2 EVALUATION OF PRACTICAL COURSES

Practical examination will be conducted at the end of each semester/ end of an academic year. The time of conduct of the practical examination will be decided by the respective BOS.

A. IN-SEMESTER ASSESSMENT

Evaluation Component	Mark
Attendance	6
Lab Involvement	8
Test	12
Record	8
Viva	6

Maximum Marks = 40

The components and the marks can be modified by the concerned BOS/Expert committee within the limit of maximum marks.

B. END- SEMESTER ASSESSMENT

Evaluation Component	Mark
Attendance	18
Lab Involvement	24
Test	36
Record	24
Viva	18

Maximum Marks = 120

The components and the marks can be modified by the concerned BOS/Expert committee within the limit of maximum marks.

6.3 EVALUATION OF PROJECT

An academic project work shall be done and a dissertation shall be submitted in the final semester of the programme. There will be both In semester and End semester assessment for the project work.

A. IN- SEMESTER ASSESSMENT

Evaluation Component	Mark
Relevance of the topic	5
Project content and report	15
Presentation	15
Project viva	10
Paper presentation* in Seminar/Conference or publications with ISBN/ISSN (*valid certificate to be submitted)	5

Maximum marks = 50

The components and the marks can be modified by the concerned BOS/Expert committee within the limit of maximum marks.

B. END -SEMESTER ASSESSMENT

The dissertation at the end of final Semester will be evaluated by a panel of one internal evaluator assigned by HOD and one external evaluator / a panel of two external evaluators, as may be decided by the respective BOS.

Evaluation Component	Mark
Relevance of the topic	15
Project content and report	45
Presentation	45
Project viva	30
Paper presentation* in Seminar/Conference or publications with ISBN/ISSN (*valid certificate to be submitted)	15

Maximum marks = 150

The components and the marks can be modified by the concerned BOS/Expert committee within the limit of maximum marks.

6.4 EVALUATION OF COMPREHENSIVE VIVA VOCE

A comprehensive viva voce shall be done at the end of the final semester. There will be both In-semester and End-semester assessment for the viva voce examination.

A. IN - SEMESTER ASSESSMENT

Evaluation Component	Mark
+2/ UG level questions	4
PG syllabus level questions	10
Subject of interest based questions	8
Advanced level questions	3

Maximum marks = 25

The components and the marks can be modified by the concerned BOS/Expert committee within the limit of maximum marks.

B. END- SEMESTER ASSESSMENT

The comprehensive Viva Voce Examination at the end of final Semester will be evaluated by a panel of one internal evaluator assigned by HOD and one external evaluator / a panel of two external evaluators, as may be decided by the respective BOS.

Evaluation Component	Mark
+2/ UG level questions	12
PG syllabus level questions	30
Subject of interest based questions	24
Advanced level questions	9

Maximum marks = 75

The components and the marks can be modified by the concerned BOS/Expert committee within the limit of maximum marks.

7. Grievance Redressal Mechanism

In order to address the grievance of students regarding In-Semester assessment, a two-level Grievance Redressal mechanism is established.

Level 1: Department Level: The Department cell is chaired by the HOD, Department Coordinator as member secretary and Course teacher in-charge as member. If the grievance is not redressed at the Department level, the student shall report the grievance to the College Level Grievance Redressal Cell.

Level 2: College level: College Level Grievance Redressal Cell has the Vice-Principal as the Chairman, Dean of Student Affairs as the Member Secretary and HOD of concerned Department as member.

8. Eligibility for End Semester Examination

A minimum of 75% average attendance for all the courses is mandatory to register for the examination. Condonation of shortage of attendance to a maximum of 10 days in a semester subject to a maximum of 2 times during the whole period of the programme may be granted by the College on valid grounds. Attendance may be granted to students attending University/College union/Co-curricular activities for the days of absence, on production of participation/attendance certificates, within one week, from the teacher in charge of the activity and endorsed by the Dean of Student Affairs. This is limited to a maximum of 10 days per semester. Monthly Attendance report will be published in the college website on or before the 10th of every month. Those students who are not eligible even with condonation of shortage of attendance shall repeat the semester along with the next batch after obtaining readmission.

9. Promotion to the next Semester

Those students who possess the required minimum attendance and have registered for the End Semester Examination during an academic semester are promoted to the next semester.

Those students who possess the required minimum attendance and progress during an academic semester and could not register for the semester examination are permitted to apply for Notional Registration to the examinations concerned enabling them to get promoted to the next semester.

10. Eligibility for Readmissions

An additional chance of readmission will be given to those students who could not register for the examination due to shortage of attendance. Readmitted students shall continue their studies with the subsequent batch of students. If an applicant for readmission is found to have indulged in ragging or any other misconduct in the past, readmissions shall be denied.

11. MARK CUM GRADE CARD

The College under its seal shall issue to the student a MARK CUM GRADE CARD on completion of each semester/programme, which shall contain the following information:

- (a) Name of the College
- (b) Title of the Postgraduate Programme
- (c) Name of the Semester
- (d) Name and Register Number of the student
- (e) Date of publication of result
- (f) Code, Title, Credits and Maximum Marks (ISA, ESA & Total) of each course opted in the semester.
- (g) ISA, ESA and Total Marks awarded, Grade, Grade point and Credit point in each course opted in the semester
- (h) College average (CA) of the marks of all courses
- (i) The total credits, total marks (Maximum & Awarded) and total credit points in the semester
- (j) Semester Grade Point Average (SGPA) and corresponding Grade.
- (k) Cumulative Grade Point Average (CGPA) and corresponding Grade.

The final Mark cum Grade Card issued at the end of the final semester shall contain the details of all courses taken during the study programme and the overall mark/grade for the total programme.

There shall be a College Level Monitoring Committee comprising Principal, Vice Principal as member-secretary, Dean of Academic Affairs, Controller of Examinations, IQAC Director and Administrative Assistant as members for the successful conduct of the scheme.

12. CREDIT POINT AND CREDIT POINT AVERAGE

Credit Point (CP) of a course is calculated using the formula:-

$CP = C \times GP$, where C is the Credit and GP is the Grade point

Semester Grade Point Average (SGPA) of a Semester is calculated using the formula:-

$SGPA = TCP/TC$, where TCP is the Total Credit Point of that semester, ie, $\sum_1^n CPI$;

TC is the Total Credit of that semester, ie, $\sum_1^n Ci$, where n is the number of courses in that semester

Cumulative Grade Point Average (CGPA) is calculated using the formula:-

$CGPA = TCP/TC$, where TCP is the Total Credit Point of that programme, ie, $\sum_1^n CPI$; TC is the Total Credit of that programme, ie, $\sum_1^n Ci$, where n is the number of courses in that programme

Grades for the different courses, semesters and overall programme are given based on the corresponding CPA as shown below:

CPA	Grade with Indicator
4.5 to 5.0	A+ Outstanding
4.0 to 4.49	A Excellent
3.5 to 3.99	B+ Very Good
3.0 to 3.49	B Good (Average)
2.5 to 2.99	C+ Fair
2.0 to 2.49	C Marginal
Up to 1.99	D Deficient (Fail)

13. TRANSITORY PROVISION

Notwithstanding anything contained in these regulations, the Principal shall, for a period of six months from the date of coming into force of these regulations, have the power to provide by order that these regulations shall be applied to any programme with such modifications as may be necessary.

The Principal is also authorized to issue orders for the perfect realization of the regulations.

Annexure I
(Model Mark Cum Grade Card)



CMS COLLEGE KOTTAYAM (AUTONOMOUS)
Affiliated to Mahatma Gandhi University Kottayam
(Autonomous College as per UGC order no.F.22-1/216(AC)dated 9th March 2016)

MARK CUM GRADE CARD

Section :
Name of the Candidate :
Unique Permanent Registration Number :
Degree :
Programme :
Stream :
Name of the Examination :
Date of Publication of Result :

Course Code	Course Title	Credits (c)	Marks						Grade Awarded (G)	Grade Point (GP)	Credit Point (C x)	College Average	Result
			ISA		ESA		TOTAL						
			Awarded	Maximum	Awarded	Maximum	Awarded	Maximum					

ISA - In - Semester Assessment, ESA – End - Semester Assessment

SGPA:

Checked by

SG:

Section Officer

Controller of Examinations

Date:

Annexure II



CMS COLLEGE KOTTAYAM (AUTONOMOUS)

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Affiliated to Mahatma Gandhi University Kottayam, Kerala
(Autonomous College as per UGC Order No.F.22-1/216 (AC) dated 9th March 2016)

CONSOLIDATED MARK CUM GRADE CARD

Name of the Candidate:

Unique Permanent Register Number (UPRN):

Degree:

Programme:

Stream:

Date of Birth:

Date of Eligibility for the Degree:

PHOTO

CMS COLLEGE KOTTAYAM (AUTONOMOUS)

Name:

UPRN:

Course Code	Course Title	Credits (C)	Marks						Grade Awarded (G)	Grade Point	Credit Point (CxGP)	College Average (CA)	Result
			ESA		ISA		Total						
			Awarded	Maximum	Awarded	Maximum	Awarded	Maximum					

Final Result

Cumulative Grade Point Average CGPA :
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Semester Summary

Sl.No	Semester	Credit	SGPA	Grade	Month/year	Result
	Semester 1					
	Semester 2					
	Semester 3					
	Semester 4					

Date:

Controller of Examinations

Annexure III



(Reverse side of the Mark cum Grade Card (COMMON TO ALL SEMESTERS))

Description of the Evaluation Process

Table 1

Grade and Grade Point

The Evaluation of each Course comprises of Internal and External Components in the ratio 1:3 for all Courses.

Grades and Grade Points are given based on the percentage of Total Marks (Internal + External) as given in Table 1

(Decimals are to be rounded mathematically to the nearest whole number)

Credit point and Credit point average

Grades for the different Semesters and overall Programme are given on a 7-point Scale based on the corresponding CPA, as shown in Table 2.

% Marks	Grade	GP
Equal to 88 and above	A+ Outstanding	5
Equal to 76 and < 88	A Excellent	4
Equal to 64 and < 76	B+ Very Good	3
Equal to 52 and < 64	B Good(Average)	2
Equal to 40 and below 52	C Marginal	1
Below 40	D Deficient (Fail)	0
	Ab Absent	

Table 2

Credit point (CP) of a paper is calculated using the formula $CP = C \times GP$, where **C is the Credit; GP is the Grade Point**

Semester or Programme (cumulative) Grade Point Average of a Course/Programme is calculated using the formula

$SGPA/CGPA = \frac{TCP}{TC}$, where **TCP is the Total Credit Point; TC is the Total Credit**

CPA	Grade with Indicator
4.5 to 5.0	A+ Outstanding
4.0 to 4.49	A Excellent
3.5 to 3.99	B+ Very Good
3.0 to 3.49	B Good (Average)
2.5 to 2.99	C+ Fair
2.0 to 2.49	C Marginal
Up to 1.99	D Deficient (Fail)

NOTE

A separate minimum of 40% marks each for internal and external (for both theory and practical) are required for a pass for a course. For a pass in a programme, a separate minimum of **Grade C** is required for all the individual courses. If a candidate secures **D Grade** for any one of the course offered in a Semester/Programme **only D grade** will be awarded for that Semester/Programme until he/she improves this to **C GRADE** or above within the permitted period.

CURRICULUM

GRADUATE PROGRAMME OUTCOMES (GPO) – POST GRADUATE PROGRAMMES

At the completion of the Post Graduate Programme, the student will be able to accomplish the following programme outcomes.

GPO No.	Graduate Programme Outcomes
GPO.1	Critical Thinking: Ability to engage in independent and reflective thinking in order to understand logic connections between ideas.
GPO.2	Effective Communication: Development of communication skills for effectively transmitting and receiving information that focuses on acquiring knowledge, problem solving, improving on arguments and theories thereby paving the way for better employability and entrepreneurship.
GPO.3	Social Consciousness: Acquire awareness towards gender, environment, sustainability, human values and professional ethics and understand the difference between acting, responding and reacting to various social issues.
GPO.4	Multidisciplinary Approach: Combining various academic disciplines and professional specializations to cross borders and redefine problems in order to explore solutions based on the new understanding of complex situations.
GPO.5	Subject Knowledge: Acquiring knowledge at a higher level that would help develop the necessary skills, fuel the desire to learn and contribute to the field of expertise thereby providing valuable insights into learning and professional networking with the aim of catering to the local, national and global developmental needs.
GPO.6	Lifelong Learning: Understanding the necessity of being a lifelong learner for personal enrichment, professional advancement and effective participation in social and political life in a rapidly changing world.

PROGRAMME SPECIFIC OUT COMES (PSO)

PSO No.	Intended Programme Specific Outcomes	GPO No.
	<i>Upon completion of MSc.Dietetics and Food Service Management Programme, the postgraduates will be able to:</i>	
PSO-1	Understand the basic concepts of Food Science, Nutrition, Dietetics, Biochemistry, Food Service management, Microbiology and Entrepreneurship	5,6
PSO-2	Outline the physiology and anatomy of human organ systems.	5
PSO-3	Gain an insight into theoretical and practical aspects of Food Science	5
PSO-4	Apply the theoretical and practical knowledge in nutrition and dietetics in various physiological, therapeutic and special conditions.	4,5
PSO-5	Communicate effectively in the context of nutrition, both individually and as part of a team for an organisation and community.	2,3
PSO-6	Recall the metabolic pathways & Critically evaluate the biochemical parameters, pathophysiology and drugs required in various disorders affecting the organ system.	1,4,5
PSO-7	Learn the microbiological and rheological aspects of various food commodities and its applications in food industry	4,5
PSO- 8	Examine current sports nutrition literature and be able to generate practical advice for athletes.	4,5
PSO-9	Conduct subject related dissertation using appropriate research methods, ethical procedures and data analysis.	2,5,6
PSO-10	Create abilities for being a successful entrepreneur and to bring awareness regarding the supporting institutions and organisations.	2,4,6
PSO-11	Demonstrate Professional attributes required to manage the facet of Hospitality Industry, Hospital, Food Industry and Community welfare Organisations	3, 4,5,6

PROGRAMME DESIGN

1.1 Theory Courses:

There are sixteen theory courses spread equally in all four semesters which includes twelve core courses and four elective courses. Elective courses are included in semester IV. These are compulsory courses common to all students. Each semester will have four core courses. Total credit for the programme is 80.

1.2 Practical:

All the four semesters will have a course on laboratory practical and there is one field placement practical in the fourth semester. All these four practical's are compulsory courses. The practicals and record should be evaluated at the end of each semester by one internal and one external examiner. The second, third semester will have internships in hospital sector & star hotels respectively and practical valuation of these semesters will include internship report/ project report /record.

1.3 Dissertation:

All students have to do a Dissertation in the 4th semester.

1.4 Viva-voce:

There is a general viva - voce conducted at the end of fourth semester by a panel of examiners

Sl.No	Course Type	No. of Courses	Total Credits
1.	Core Courses	12	48
2.	Core Practical	3	06
3.	Elective Courses	4	16
4.	Elective Practical	1	3
5.	Viva voce	1	3
6.	Dissertation	1	4
	Total	22	80

PROGRAMME STRUCTURE

	COURSE CODE	TITLE OF COURSE	TEACHING HOURS/ WEEK	CREDIT	TOTAL CREDIT
Semester 1	HS1921101	Nutrition and Diet in Health	5	4	18
	HS1921102	Applied Human Physiology & Anatomy	5	4	
	HS1921103	Food Facilities Layout and Equipment	5	4	
	HS1921104	Advanced Food Science	5	4	
	HS1921601	Advanced Food Science Practical	5	2	
Semester 2	HS1922105	Dietetics	5	4	18
	HS1922106	Biochemical Changes in Diseases	5	4	
	HS1922107	Nutrition in Special Conditions	5	4	
	HS1922108	Research Methods & Statistics	5	4	
	HS1922602	Dietetics Practical and Internship	5	2	
Semester 3	HS1923109	Food Service Management	5	4	18
	HS1923110	Quantity Food Preparation & Food Service Techniques	5	4	
	HS1923111	Hospitality Administration	5	4	
	HS1923112	Scientific Writing and Project Formulation	5	4	
	HS1923603	Food Service Management Practical and Field Experience	5	2	
Semester 4	HS1924301	Public Health Nutrition	5	4	26
	HS1924302	Food Microbiology and Sanitation	5	4	
	HS1924303	Nutrition for Sports and Fitness	5	4	
	HS1924304	Entrepreneurship Management	4	4	
	HS1924701	Public Health Nutrition Practical and Field Work	6	3	
	HS1924801	DISSERTATION	-	4	
	HS1924901	VIVA- VOCE	-	3	
TOTAL					80

Other electives offered:

Elective 6- HS1924305 Nutrition Education and Dietetic Counseling

Elective 7- HS1924306 Nutrition in Critical Care

Elective 8 – HS1924307 Nutrition in Emergencies and Disasters

Elective 9 –HS1924308 Sensory Evaluation

DETAILED SYLLABUS OF ALL COURSES

SEMESTER I

CORE

Course	Details				
Code	HS1921101				
Title	NUTRITION AND DIET IN HEALTH				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/I				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Recall the terms nutrition, health and RDA	R	1,4
2	Outline the basics of nutrition	U	1,4
3	Understand nutrition in life cycle and various physiological conditions	U	1,4
4	Apply the principles of nutrition in life cycle	Ap	1,4
5	Discuss the nutritional problems in various conditions	U	1,4
6	Assess the nutritional status of the individuals	E	1,4
7	Plan and formulate diet according to individual requirements	C	1,4

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO. No.
1.0	Concept of Nutrition and Health	10	
1.1	Definition of terms - Nutrition, Malnutrition, Health	1	1
1.2	Scope of Nutrition and recent trends in nutrition.	3	2
1.3	Nutrients - Macro and Micro Nutrients- Functions and its role in maintaining nutritional status.	3	2
1.4	Vital link between nutrition and health	1	1
1.5	Assessment of Nutritional Status – ABCD methods	2	6
2.0	Recommended Dietary Allowances (RDA) for Indians	9	
2.1	ICMR recommended allowances for Indians	1	2
2.2	Factors affecting RDA, Principles of deriving RDA	2	2
2.3	Concept of reference man and woman, Reference body weight	1	2
2.4	Basis of requirements for energy, protein, fats, minerals and vitamins	1	4
2.5	Balanced diet and basic principles of meal planning	2	2
2.6	Dietary guide lines – ICMR five food groups, food guide pyramid, USDA My plate	2	2
3.0	Nutrition in pregnancy	12	
3.1	Physical, physiological and hormonal changes during pregnancy	2	3
3.2	Effect of nutritional status on pregnancy outcome, nature of weight gain	2	6
3.3	Nutritional requirements and dietary modifications	3	7
3.4	Complications of pregnancy with dietary implications – Gestational Diabetes Mellitus, Toxaemia, IUGR, Constipation, anaemia	4	5
3.5	Adolescent pregnancy	1	3
4.0	Nutrition in lactation	8	
4.1	Physiological adjustments during lactation, hormonal controls & reflex action	3	3
4.2	Lactation in relation to growth and health of infants	1	4
4.3	Problems of breast feeding	1	5
4.4	Nutritional components of colostrum and breast milk – foremilk, hind milk,	3	2

	Lactogogues		
5.0	Nutrition through Life cycle	51	
5.1	Nutrition in Infancy Growth of infants, growth monitoring	1	7
5.2	Nutritional requirements, basis and recommended dietary allowances for the infants	3	4
5.3	Breast- feeding vs. formula feedings, advantages of breast feeding	2	3
5.4	Weaning – Need for weaning, supplementary foods and stages of progression in weaning foods	3	4
5.5	Birth weight of infants – LBW, VLBW,preterm infants and their feeding practices	3	5
5.6	Nutrition in Pre- School Age Growth and development of preschool children	1	3
5.7	Nutritional requirements, RDA and dietary guidelines, food habits	3	4
5.8	Nutritional problems in preschool period – PEM, VAD, Pica, Dental problems.	3	5
5.9	Nutrition During School Age Physical growth, nutritional status of school age children.	2	3
5.10	Food habits and nutritional requirements, basis and recommended dietary allowances	4	7
5.11	Packed lunch	1	2
5.12	Nutrition During Adolescence Physical, physiological and psychological changes in adolescents	3	6
5.13	Nutritional requirements and dietary guidelines, food habits and promotion of desirable eating habits in adolescents	4	7
5.14	Eating disorders in adolescents – anorexia nervosa, bulimia nervosa, binge eating disorder, obesity, under nutrition, predisposition of osteoporosis and anaemia	4	5
5.15	Nutrition for the Adult&Elderly Nutrition for the adult, nutritional requirements and basis for deriving RDA	3	3
5.16	Dietary guidelines, nutrition related risk factors	3	5
5.17	Physiological and psychological changes during old age	2	6
5.18	Nutritional requirements and dietary modifications, factors affecting food intake	2	7
5.19	Common nutritional problems in old age.	2	5

Related Experience

Planning diets to meet the nutritional requirements for the following stages in life at different incomes levels.

- Pregnancy
- Lactation ,Weaning .
- Infancy
- Pre-school age
- School age
- Adolescence
- Adulthood
- Old age

References:

- Bamji S.M., Rao N.P., and Reddy V.(1998): (editors) Textbook of Human Nutrition. Oxford & IBH Publishing Co., New Delhi.
- Davidson, Passmore., Brock J.K.(1993) Human Nutrition & Dietetics, F & S Livingston Ltd., Edinburgh & London.
- Gopalan, C., Rama Sastri, B.V., and Balasubramanian S.C.,(2010): Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR .
- Joshi A.S., Nutrition and Dietetics 2nd edition Tata McGraw hill Publishing Company, New Delhi.
- Mahan L.K & Sylvia Escott-Stump. (2008) Krause Food Nutrition & Diet Therapy, 12th edition, Saunders Company.
- Reddy V., Rao P., GowrinathSastry, J.P and Kasinath K.C.(1993): Nutrition Trends in India, National Institute of Nutrition.
- Robinson C. H., Lawler M.R., Chenoweth W.L., Garwich A.E(1986): Normal and Therapeutic Nutrition, 17th edition, Mac Milan Publishing Co., New York.
- Shills M.E.,Olson J.,Shike,M and Ross,C .(1998):Modern Nutrition in Health and Disease 9th Edition. Williams and Williams A Beverly Co. London
- Srilakshmi B.(2002): Nutrition Science, New Age International P. Ltd. Publishers, New Delhi

CORE

Course	Details				
Code	HS1921102				
Title	APPLIED HUMAN PHYSIOLOGY & ANATOMY				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/I				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Explain the anatomy of various human physiological systems	U	2
2	Learn the working & functions of organ systems	U	2
3	Discuss different hormonal and enzymatic actions of organ systems and their functions	E	2
4	Analysis of body fluids for its composition and functions	An	2
5	Interpret biochemical parameters for disease identification	Ap	2
6	Devise common emergency care plan	C	2
7	Understand the elementary composition of human body	U	2
8	Discuss various disorders associated with systems in human body	U	2
9	Familiarise students with upcoming field of nutrigenomics	U	2

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember; U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	General principles of physiology and cardiovascular system	31	
1.1	Elementary Composition of Human Body - Proximate principles – Proteins, Lipids, Fats, Carbohydrates, Enzymes and Co-enzymes	4	7
1.2	Introduction to Haematology - Haematology, Composition & Functions of blood.	2	2
1.3	Functions of plasma proteins	2	4
1.4	Erythrocytes, Haemoglobin, Iron, Important indices of RBC and Hb	4	5
1.5	WBC – Functions	1	4
1.6	Blood groups. Blood Transfusion - Medical ethics	1	4
1.7	Importance of stem cells, Scientific and potential use of stem cells	2	6
1.8	Immune system- Cell mediated and humeral Immunity	1	2
1.9	Cardiovascular System -Anatomical consideration of heart and CV system, cardiac cycle	3	1
1.10	Heart sounds, ECG and its interpretation, heart rate and regulation	5	5
1.11	Blood pressure, Significance and physiological variations	1	5
1.12	Haemorrhage, Compensatory changes after haemorrhage, Cardiovascular modification during exercise	3	8
1.13	CAG,CABG in cardiology	1	8
1.14	Pacemaker, Heart block	1	8
2.0	Digestive & Excretory Systems	20	
2.1	Digestive System- Anatomy, Functions of digestive system	1	1
2.2	Composition and functions of salivary, gastric, intestinal & pancreatic secretions, Functions of bile salts	4	4
2.3	Mechanism of secretion of digestive juices and its regulation	3	4
2.4	Movements of alimentary canal, villi, defecation, emesis	2	2
2.5	Liver - anatomy and physiology, fatty liver, Jaundice.	2	1
2.6	Renal system -Kidney - Structure and functions of kidney, Structure of nephron, GFR	4	2
2.7	Functions of renal tubule, Regulation of reabsorption.	4	2
3.0	Respiratory System	12	
3.1	Functional anatomy, Mechanics of breathing, Lung volumes and capacities	4	2

3.2	Respiratory dead space, Transport of oxygen and carbon dioxide, diffusion, perfusion	4	2
3.3	Control of respiration – nervous and chemical, Mechanism of rhythmic respiration	2	2
3.4	Non respiratory functions of the lungs	1	2
3.5	Resuscitation and its methods	1	6
4.0	The Musculo-Skeletal System	9	
4.1	Importance of musculo-skeletal system, connective tissue-bones and cartilages. - Structure, functions & types.	4	4
4.2	Bone cells, Bone remodelling.	2	4
4.3	Muscle – structure, types, functions and mechanism of muscle contraction.	3	4
5.0	Control Systems of human body	18	
5.1	Nervous System -Structure of nervous system, neuron – structure and types	2	2
5.2	Synapse, synaptic conduction and transmission of impulses, properties of synapse, neurotransmitters	4	2
5.3	Resting potential, Action potential	2	2
5.4	Reflex action.	1	2
5.5	Endocrinology -Endocrine glands, secretions	3	9
5.6	Role and regulatory function of endocrine, site of secretions, regulation of secretions.	4	9
5.7	Nutrigenomics - concepts and principles, applications.	2	9

Reference:

- Best, H. And Taylor, B (1991) The Physiological Basis for Medical Practice, 8th Edition, The Williams and Wildins Company.
- Berne, M.R., (1998):Physiology.Amazon.UK.
- Burke and Taylor (1986) The Living Body, Saunders Company
- Chatterjee C C (1987) Human Physiology, Volume I and II, Medical Allied Agency
- Guyton J. E (1991), Textbook of Medical Physiology, WB Saunders Publications, Philadelphia
- Michael J Gibney (2003) Ian A MacDonald, Helan M Roche, Nutrition and Metabolism, Blackwell Publishing.
- Samson and Wright (1989), Applied Physiology, Tandon Publications

CORE

Course	Details				
Code	HS1921103				
Title	FOOD FACILITIES, LAYOUT & EQUIPMENT				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/I				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the principles of plant layout	U	11
2	Recall the concepts of food service establishments	R	11
3	Apply the knowledge of space allocation in food plant	Ap	11
4	Identify the layout of various food service establishments	An	11
5	Assess the suitability of equipments, finishes & lighting for various food service establishments	E	11
6	Design suitable plant layout according to product flow process & safety requirement.	C	11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Introduction to Food Service institutions & equipments	33	
1.1	Introduction to Food Service Institutions. A brief introduction on food service institutions and equipments.	4	2
1.2	Equipment Used in Food Service Classification of equipment	4	5
1.3	Factors affecting the selection and use of equipment in food service institutions	3	5
1.4	Electrical and non-electrical equipments used for food storage, food preparation.	4	5
1.5	Electrical and non-electrical equipments used for holding and service.	4	5
1.6	Dish washing, & modular equipments.	3	
1.7	Care and maintenance of equipment.	3	5
1.8	Materials Used Base materials, materials used for equipments and accessory parts.	4	5

1.9	Strength and limitations of materials.	4	5
2.0	Food plant - Food Plant and layout	29	
2.1	Layout and Space allocation of food plant according to different capacities- Restaurants, dietary kitchen, cafeterias, banquet space.	4	3
2.2	Flow of traffic - receiving food, preparing food, storage and serving, dishwashing, hand washing.	4	1
2.3	Traffic of guest- entrances and exit.	4	6
2.4	Kitchen Planning Developing kitchen plan. Designing kitchen and types of kitchen layout.	4	4
2.5	Planning kitchen in relation to equipment, different work centres – preparation area, cooking area, serving area and washing area.	6	1
2.6	Work surfaces – work area, workers area of reach, work triangle.	4	3
2.7	Modular kitchens.	3	
3.0	Lighting	11	
3.1	Need for proper lighting, types of lighting.	3	5
3.2	Lighting suitable for Restaurants, Dietary kitchen	4	5
	Lighting suitable for Cafeterias, banquet space.	4	
4.0	Ventilation	7	5
4.1	Ventilation - purpose	3	5
	Types of ventilation suitable for different food service establishments.	4	5
5.0	Finishes	10	5
5.1	Finishes used for equipment	5	5
5.2	Finishes used for walls and floors	5	5

Reference:

- Dennis L Foster (1995), An Introduction to Hospitality, McGraw Hill International Edition.
- Dennis, R. Lillcrap, Jnan, A.Cousins (1993), ì Food and Beverage Serviceí, Older and Stoughten Publishers Ltd, England, IV Edition.
- Jack D. Ninemeier (1995), Food and Beverage Management, 2nd Edition, American Hotel and Motel Association, U.S.A.
- Khan, M.A. (1987): Food Service Operations, AVI Publishing Inc Westport, Connecticut.
- Marian C. Spears(1995), Food Service Organistioní, IIIrd Edition, Prentice Hall Inc., USA
- MohiniSethi and SurjeetMalhan (1993), ëCatering Management- An Integrated Approachí, 2nd Edition, Wiley Publication, Mumbai
- Sudhir Andrews (1997), Food and Beverage Service- Training Manual, 23rd Reprint, Tata McGraw Hill Publishing Co.
- Taylor, E. and Taylor J. (1990): Mastering Catering Theory. Mac Millan Press Ltd. London.
- West B.B and Wood L. (1988): Food service Institutions, 6th edition, Mac Millian Publishing

CORE

Course	Details				
Code	HS1921104				
Title	ADVANCED FOOD SCIENCE				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/I				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the principles , physical and chemical components of food	U	1,3
2	Apply the principles of food chemistry in practical cooking	Ap	1,3
3	Evaluation of food sensory, and discuss the main food quality attributes as perceived by the senses	E	1,3
4	Recall food adulteration, additives, food laws and standards	R	1,3,7
5	Examine the techniques available for processing and preservation of various food items.	E	1,3,7
6	Plan different methods for nutritional enhancement	C	1,3,7
7	Recognize and describe various food groups in terms of selection, composition and grading.	R	1,3
8	Familiarise the new fields of food science and equip them to work in an industrial sector	Ap	1,3,7,11
9	Learn the basics of packaging of food items& Food labeling	U	1,3,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember; U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Acceptability testing	9	
1.1	Evaluation of food by sensory and objective methods	3	3
1.2	Factors affecting acceptability of food	1	3
1.3	Selection of taste panel	2	3
1.4	Product development- needs and stages.	2	8

1.5	Physico- chemical changes in relation to cookery	2	1
2.0	Processing of foods	59	
2.1	Study of cereals and cereal products- Cereal structure, components & its nutritional importance	3	7
2.2	Starch – structure, native, modified, resistant starches & their application in industrial sector	3	2
2.3	Changes in cereals -Gelatinization of flours - Gelatinization temperature, Syneresis, Dextrinisation, Retrogradation	3	5
2.4	Wheat- Classification and grading, Wheat Flour- Constituents, Processing, Functions and behavior of flour components in dough	3	7
2.5	Rice- Quality Classification, processing, parboiling	2	7
2.6	Corn- Processing of corn flakes	1	5
2.7	Malting, popping and puffing of cereal grains	1	5
2.8	Baking – Role of ingredients in cake and bread making	2	5
2.9	Extruded Foods	1	8
2.10	Legumes, oilseeds and nuts- Selection and grading, Anti Nutritional factors	2	7
2.11	Edible flours- protein concentrates and protein isolates, Novel proteins	3	5
2.12	Germination ,fermentation	2	6
2.13	Uses of oil seed meal	1	5
2.14	Changes in protein- gluten formation, Denaturation of protein	2	1
2.15	Beverages and spices - Classification, grading , composition, Active compounds & Pigments	2	7
2.16	Spices and condiments- Classification, composition, functional components and uses	2	7
2.17	Processing of perishable foods - Fruits and vegetables- Constituents, pigments, role of pectic substances, fruit preservation- Jam, Jelly, squashes marmalade, wine and pickle, Enzymatic and Non enzymatic browning	4	5
2.18	Meat , Egg, Poultry and Seafood - Selection, composition and cooking methods	4	5
2.19	Milk and milk products- Constituents in milk, processing of milk and milk products.	4	5
2.20	Fats, Oils and Sugars - Classification, physical and chemical properties	3	7
2.21	Rancidity, reversion- changes during fat storage	2	2
2.22	Changes during frying and trans fatty acids., Role of fat in the development of cakes and salad dressings.	4	2
2.23	Use of fats and recent developments, Emulsions-	3	8

	Definitions and types		
2.24	Stages of sugar cookery- fondant, fudge	2	5
3.0	Food Adulteration, Food additives	7	
3.1	Food Adulteration - Definition, Types, Common adulterants and tests to detect it	3	4
3.2	Food Additives - Definition acids, bases, buffer systems and salts, chelating agents, antimicrobial agents, sweeteners, stabilizers and thickeners, fat replacers, firming agents, texturizers, appearance control and clarifying agents. Flavour enhancers, Flour improvers, sugar substitutes, antioxidants, Anticaking agents, bleaching agents, protective gases.	4	4
4.0	Food laws and standards , Food Packaging & labeling	8	
4.1	Food laws and standards- Voluntary, Mandatory	2	4
4.2	Food Packaging – Definition, Importance, Types, MAP & CAP	3	9
4.3	Labeling- Definition, importance, signs & symbols used in packaging & labeling	3	9
5.0	Functional Foods and nutraceuticals	7	
5.1	Functional Foods -Definition and classification, Commonly consumed functional foods and their action	2	8
5.2	Nutraceuticals - Definition and classification based on food source, mechanical action and chemical nature	3	8
5.3	Pre-biotics and Pro-biotics - Definition, sources, bio- availability, effect on human health and application in risk reduction of diseases (non-digestible carbohydrate- oligosaccharides, dietary fibre, gums.)	2	8

References

- Fox B.A.(1997): Food Science, Nutrition and Health, Edward Arnold, London, VI Edition.
- Many S.N., and Shadaksharaswamy, M.N.(1998) Foods- Facts and principles, Wiley Eastern Ltd., New Delhi.
- Peckham, C.G and Graves H.J.,(1979): Foundation of food preparation, Mac Milan publishing Co., New Delhi.
- Potter, N., Hotchkiss, H.J. (1996): Food Science (5th ed) CBS Publishers and Distributors. New Delhi.
- Srilakshmi,B.(1997) Food Science, New Age International (p) Ltd, Chennai.
- Sumati,R .(1997):Food Science New Age International (p) Ltd. Publishing House.
- Swaminathan M. (1999): Handbook of Food and Nutrition. The Bangalore Printing and Publishing Co.Ltd.
- Roday,S., Food Science and Nutrition, Published by Oxford University Press, 2007.

CORE- PRACTICAL

Course	Details				
Code	HS1921601				
Title	ADVANCED FOOD SCIENCE - PRACTICAL				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/I				
Credits	2	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Application of theoretical knowledge of Food science & Food chemistry in practice	Ap	1,3
2	Develop insight on the practical aspects of experimental cookery	C	1,3,11
3	Understand the different stages of cookery of common foods	U	1,3
4	Judge the food characteristics using evaluation techniques	E	1,3,11
5	Enable students' acquisition of practical laboratory and analytical skills relevant to theory and practice of Food science	An	1,3,7,11
6	Recall food preservation techniques	R	1,3,11
7	Apply the knowledge of food science & packaging in developing a new product	Ap	1,3,7,10,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Physico Chemical Changes in Cookery	8	
1.1	Gluten formation and baking quality of gluten.	5	1
1.2	Preparation of Emulsion (Oil/ Water and Water/Oil)	3	2
2.0	Cookery of Perishables and Non perishables	54	
2.1	Cereal Cookery -Development of bread.	4	1
2.2	Estimation of flour characteristics	4	5
2.3	Pulse Cookery -Development of recipes using sprouted greengram.	4	2
2.4	Estimation of Protein quality in pulses (Chemical Score Computation, NDP Cal %)	4	5
2.5	Milk Cookery - Preparation of paneer, khoa, Ice cream	4	6
2.6	Estimation of Specific gravity, pH in Milk	4	5

2.7	Estimation of Protein and Lactose in Milk	4	5
2.7	Egg Cookery Factors affecting formation of egg white foams (beating time, vessel, temperature, acid, fat, salt, water, sugar)	4	1
2.8	Development of cakes.	4	6
2.9	Factors affecting denaturation of egg white protein (effect of acid, Dry heat, alkali, alcohol, mechanical action)	4	2
2.10	Sugar Cookery -Stages of sugar cookery	4	3
2.11	Development of recipes with the different stages of sugar cookery.	4	6
2.12	Fat Cookery -Determination of smoking point.	3	1
2.13	Demonstration of fat estimation in food stuffs (any two)	3	5
3.0	Food Preservation Methods	13	
3.1	Preservation using sugar -Preparation of Jam, Jelly, Squash, Marmalade	3	6
3.2	Testing for doneness of jam preparation, Estimation of brix using refractometer	2	3
3.3	Preservation using salt - Brining, pickling	3	6
3.4	Preparation of wine	3	6
3.5	Effectiveness of Blanching by peroxidase inactivity test	2	5
4.0	Commercial product Development & Evaluation in terms of sensory parameters & shelf life	10	
4.1	Development of new product- Acceptability of a new product	5	7
4.2	Shelf life study of the new product with different packaging materials	5	7
5.0	Market Survey	5	
5.1	Processed Foods (Weaning foods, supplementary foods, Ready to cook/ eat)	5	5

References

- Sumati, M.R., Food Science, New Age International (P) Ltd Publishing House, New Delhi 2001.
- Shakuntala Manay, N., Shadaksharaswamy .M., Food Facts and Principles, New Age International (P) Ltd., Publishers, Second Edition, 2001.
- Mirajkar, Food Science and Processing Technology, Biochemistry of Food and Nutrition, Kanishkha Publications 2002.
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- Brown, A., Understanding Food Principles and Preparations, Wadsworth Publishers, U.S, 2006
- Sharma .A., Text Book of Food Science and Technology , Published by International Book Distributing Co., First Edition, 2006.
- Sri Lakshmi, B., Food Science, New Age International (P) Ltd Publishing House , New Delhi 2007.
- Potter,N.M., Food Science, The AVI Publishing Company, Inc, West Port Connecticut, USA, 2007.
- Roday,S., Food Science and Nutrition , Published by Oxford University Press, 2007.

SEMESTER II

CORE

Course	Details				
Code	HS1922105				
Title	DIETETICS				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/II				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Compare the adequacy of nutritional intake of patients with current RDA	An	4, 5,11
2	Recognize the physiological factors to be considered while planning a diet	R	4,5,11
3	Memorise the basics of therapeutic diet	R	4,5,11
4	Assessment of nutritional therapy in patient care	E	4,5,11
5	Demonstrate the ability to plan and manage nutritional needs of different groups in society and ability to educate and inform about diet and health	U	4,5,11
6	Apply the knowledge and principles of diet therapy in real life situations	Ap	4,5,11
7	Formulate different dietary plans and supplementary feeds appropriate to different therapeutic conditions	C	4,5,11
8	Develop the ability to take dietetics as a professional approach	C	4,5,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	NUTRITIONAL CARE PROCESS & NUTRITIONAL INTERVENTION	14	
1.1	Nutritional Care Process Nutritional screening, Nutritional Care Plan- setting goals and objectives- short term and long term. Assessment and therapy in patient care	3	6
1.2	Implementation of nutritional care- counselling and patient education, diet prescription.	3	8
1.3	Role of dietitian as part of medical team in hospital, community and outreach services. Types, professional ethic, responsibilities.	2	7
1.4	Indian dietetic association- Objectives, membership, chapters, registration	1	8
1.5	Nutritional Intervention - Diet Modifications Adequate normal diet as a basis for therapeutic diets; Diet Prescription; Modification of Normal Diet	2	7
1.6	Importance of Exchange list, standardisation and portion size	2	7
1.7	Psychological factors in feeding the sick person	1	2
2.0	MODIFICATIONS OF DIETS IN STRESS CONDITIONS AND METABOLIC DISORDERS	16	
2.1	Physiological stress conditions Febrile Conditions -Acute, chronic and recurrent fevers-	2	6
2.2	Typhoid, rheumatic fever, Dengue fever, cholera, and malaria.	3	2
2.3	Metabolic stress conditions Metabolic response to stress,Sepsis, Trauma, Burns, Surgery, determination of nutrient requirements	3	1
2.4	Pre operative and postoperative diet	2	4
2.5	Metabolic Disorders Pathophysiology, types, symptoms, Predisposing factors and modification of diet in diabetes mellitus, hypo and hyper glycemia, galactosemia and pentosuria	3	3
2.6	Hypothyroidism, Hyperthyroidism and gout.	3	5
3.0	MEDICAL NUTRITION THERAPY FOR DISEASES OF CIRCULATORY & EXCRETORY SYSTEMS	30	
3.1	Circulatory System General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and	4	7

	modification of diet, nutritional management, life style management of common circulatory disorders – Atherosclerosis, Hyper lipidemia, Ischemic heart disease, Rheumatic heart disease (<i>RHD</i>), Acute and Chronic Cardiac Disease, Congestive Heart failure (CCF)		
3.2	Cardiac surgeries – CABG, and transplant	2	6
3.3	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet in Hyper tension, Cerebrovascular diseases in brief.	3	3
3.4	Pulmonary system Relationship between Nutrition and Pulmonary System, Impact of Malnutrition on Pulmonary System	2	1
3.5	Nutrition therapy for:-Asthma, Tuberculosis, Pneumonia	2	2
3.6	Nutrition therapy for Chronic lung disease, Chronic Obstructive pulmonary disease,	2	7
3.7	Nutrition therapy for Cystic fibrosis, Lung Cancer, Respiratory Failure	2	8
3.8	Renal system General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors & dietary modification in acute renal failure, chronic renal failure	3	2
3.8	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet acute and chronic glomerulonephritis, nephrosis, nephrosclerosis,	3	3
3.9	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet Uraemia, nephrolithiasis, End stage renal disease.	3	6
3.10	Renal transplants. Dialysis and types -hemodialysis, Peritoneal Dialysis, Continuous Ambulatory Peritoneal Dialysis (CAPD).	1	8
3.11	Dietary Management, conservative treatment, dialysis and after renal transplantation	3	1
4.0	DISEASES OF DIGESTIVE & INTESTINAL DISEASES	20	
4.1	Gastric Diseases General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet Diseases of esophagus, Gastro esophageal Reflux and Esophagitis	2	4

4.2	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors modification of diet Diseases of stomach-Indigestion and Dyspepsia,	2	3
4.3	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet Gastritis, Gastric and duodenal ulcers,	2	6
4.4	Carcinoma of the Stomach, Gastrectomy, Dumping syndrome	2	8
4.5	Intestinal Diseases Flatulence, Constipation,	2	7
4.6	Irritable Bowel Syndrome, Hemorrhoids.	2	3
4.7	Diarrhoea, Steatorrhea,	2	6
4.8	Diverticular disease, Inflammatory Bowel Disease, Ulcerative Colitis.	2	3
4.9	Malabsorption Syndrome Celiac Sprue, Tropical Sprue, Intestinal Brush border deficiencies (Acquired Disaccharide Intolerance) Protein Losing Enteropathy	4	8
5.0	DISEASES OF LIVER, PANCREAS AND BILIARY SYSTEM	10	
5.1	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet, Dietary Care & Management in Viral Hepatitis,	2	3
5.2	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet Cirrhosis of Liver, Hepatic Encephalopathy, Liver transplantation, Wilson's disease.	3	2
5.3	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet Dietary care and management in diseases of Gall bladder and Pancreas. Biliary Dyskinesia, Cholelithiasis, Cholecystitis, Cholecystectomy,	3	3
5.4	General aspects, Pathophysiology, types, symptoms, Predisposing/risk factors and modification of diet Pancreatitis, Zollinger-Ellison syndrome.	2	6

References:

- Antia F.P.(1997):Clinical Dietetics and Nutrition,(4th Edition).,Oxford University Press, New Delhi.
- Bamji S.M., Rao N.P., and Reddy V. (editors). (1998): Textbook of Human Nutrition. Oxford & IBH Publishing Co., New Delhi.
- Davidson, Passmore, Brock J.K. (1993): Human Nutrition & dietetics, F & S Livingston Ltd. , Edinburgh & London.
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- Gopalan, C., Rama Sastri, B.V and Balasubramanian S.C (2010): Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR.
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- Reddy V., Rao P.,GowrinathSastry J.P and Kasinath K.C.(1993): Nutrition Trends in India, National Institute of nutrition.
- Robinson C. H., Lawler M.R., Chenoweth W.L., Garwich A.E.(1998): Normal and Therapeutic Nutrition, 17th edition, Mac Milan publishing Co., New York
- Shills M. E., Olson J:-Shike, M and Roos, C (1998) Modern Nutrition in Health and Disease 9th Edition. Williams and Williams A Beverly Co. London
- Srilakshmi B. (2008): Nutrition Science, New age international P.Ltd. Publishers, New Delhi

CORE

Course	Details				
Code	HS1922106				
Title	BIOCHEMICAL CHANGES IN DISEASES				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/II				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Memorize the metabolism of macronutrients taking place in the healthy human	R	1,6
2	Understand the biochemical and pathological changes in diseases	U	1,6
3	Learn the Essentials of Pharmacology & drug nutrient interactions	U	6
4	Understand the drugs required in different pathological condition and their interactions with the nutrients	U	6
5	Discuss Medical Management of Various Disease Conditions	E	6
6	Acquire practical skills in diagnosis of disease	Ap	1,6
7	Diagnose the biochemical parameters associated with different diseases	E	1,6
8	Understand Acid Base Homeostasis in Body	U	1,6
9	Recognize the role of body electrolytes	R	1,6

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No
1.0	Essentials of Pharmacology	11	
1.1	Fundamental concepts	1	3
1.2	Routes of drug administration	1	3
1.3	Drug action- Infections and Cancer chemotherapy Local anesthetics,	4	4
1.4	Drug action- Anti anaemic, immune suppressant drugs, hormones & related drugs,	5	4
2.0	Drug Nutrient Interactions	5	
2.1	Nutrient and Drug Interaction: Basic Concept	1	3
2.2	Effect of Nutrition on Drugs	2	3
2,3	Drug Effects on Nutritional Status	2	3

3.0	Diseases affecting metabolism	32	
3.1	Carbohydrate Metabolism -Review of Normal carbohydrate metabolism-Glycolysis, Citric Acid Cycle, Hexose Mono Phosphate pathway, Gluconeogenesis, Glycogenesis, Glycogenolysis	6	1
3.2	Metabolic & biochemical aspects of the following disorders – Hyper & hypo glycemia, galactosemia, glycogen storage diseases, pentosuria.	3	2
3.3	Clinical significance of Glucose levels glucose in serum, urine & CSF	2	7
3.4	Medical management - Hyper & hypo glycemia	2	5
3.5	Lipid Metabolism -Review of normal metabolism – Beta oxidation, Denovo synthesis, Cholesterol synthesis	4	1
3.6	Metabolic & biochemical aspects, of the following disorders – Atherosclerosis, Hyper lipidemia; Ischemic heart disease, Acute and Chronic Cardiac Disease, Congestive Heart failure (CCF).	4	2
3.7	Clinical significance of Serum total cholesterol, triglycerides and lipoproteins, phospholipids, glycolipids	2	7
3.8	Protein Metabolism -Nitrogen metabolism with reference to urea, uric acid, creatinine, creatine.	3	1
3.9	Metabolic & biochemical aspects of PEM & Gout	2	2
3.10	Clinical significance of protein concentration in blood, Cerebrospinal fluid and other body fluids - urine, synovial fluid, pleural fluid, transudate and exudate	3	7
3.11	Medical Management - Gout	1	5
4.0	Disorders Associated With Organ Systems	33	
4.1	Common Disorders Associated With Gastric Mucosa - diarrhoea, constipation diverticulitis, diverticulosis, flatulence, gluten- sensitive enteropathy, inflammatory bowel disease, irritable bowel syndrome,	4	2
4.2	lactose intolerance, short bowel syndrome, steatorrhea, ulcerative colitis & Peptic ulcer.	4	2
4.3	Medical management – Constipation, Diarrhoea, Peptic Ulcer, Antacids	3	5
4.4	Gastric function tests, endoscopy, gastric stimulation tests.	2	6
4.5	Metabolic & Biochemical aspects of disorders associated with Liver, Gall Bladder and Pancreas -Hepatitis, Jaundice, Cirrhosis, Hepatic Encephalopathy, Biliary Dyskinesia, Cholelithiasis, Cholecystitis, Cholecystectomy, Pancreatitis,	4	2
4.6	Liver, Gall bladder and pancreas function tests.	4	6
4.7	Medical Management of liver, pancreatic & gall bladder disorders	2	5

4.8	Metabolic & biochemical aspects, of kidney disorders – nephrosis, nephritic syndrome, acute & chronic renal failure, glomerulonephritis, nephrosclerosis, nephrolithiasis, End stage renal disease.	4	2
4.9	Medical & management – Diuretics, Anti hypertensives	3	5
4.10	Concept of renal clearance, excretion of creatinine, urea, uric acid,	3	6
5.0	Body Electrolytes	9	
5.1	Law of electron neutrality,	1	8
5.2	Maintenance of PH, buffer system in the body, regulation of acid base balance, respiratory control and renal control.	4	8
5.3	Role of sodium, potassium and chlorine. Estimation of body electrolytes.	4	9

Related Experience

1. Quantitative estimation of glucose in blood and urine, Qualitative tests for sugar in urine.
2. Quantitative estimation of cholesterol in blood. Qualitative tests for acetone and acetoacetic acid
3. Quantitative analysis of urine for urea, protein, uric acid, creatinine and albumin - Quantitative estimation of urea in blood and urine.
4. Demonstration experiment on serum bilirubin.
5. Observation of dialysis.

References

- Basu, D.K, Essentials of pharmacology, CBS Publishers Asia, Printograph ñ Shahdara, Delhi.
- Chatterjee, M.N and Shinde, R.(1994): Text book of Medical Biochemistry, Jay Ree Brothers Medical pub Pvt Ltd, New Delhi.
- Lahniger, A.L, Nelson,D.C and Cox, M.M., Principles of Biochemistry, CBS Publishers and Distributors, Jain Bhawan Bhala Natu Nagar.
- Mukherjee, K.L.(1994): Medical Laboratory Technology, Tata McGraw Hill Publishing Co.Ltd, New Delhi.

Journals

- Current Science
- Indian journal of nutrition and dietetics
Trends in biochemical science

CORE

Course	Details				
Code	HS1922107				
Title	NUTRITION IN SPECIAL CONDITIONS				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/II				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the special conditions which require nutritional support.	U	1
2	Recall the pathological changes of special therapeutic conditions	R	1
3	Plan diets as per special conditions	C	4
4	Equip the students to formulate enteral formulas & feeds.	C	4
5	Apply the knowledge of nutrition for personnels in defence, space crafts & emergency situation	Ap	11
6	Recommend nutrition therapy for neurological disorders, illectual& developmental disabilities & psychiatric conditions.	E	11
7	Identify food allergens through elimination diet.	An	11
8	Equip the students to compare the pre and post nutritional status of the patient after nutrition counselling.	An	11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Nutrition for Muscular Skeletal System & Dental Health	12	
1.2	Muscular Skeletal System Nutrition and bone, Bone mineral density	2	8
1.3	Osteopenia and osteoporosis,	2	8
1.4	Musculo skeletal system disorders-- muscular dystrophy, osteoporosis, osteoarthritis and	2	8

	rheumatoid arthritis.		
1.5	Oral and Dental Health Nutritional factors in tooth development,	2	8
1.6	Dental caries, preventive care, periodontal disease, early childhood caries,	2	8
1.7	Tooth loss and dentures, oral manifestations of systemic disease.	2	8
2.0	Nutrition in special conditions	42	
2.1	Nutrition Therapy for Critically Ill Patients Critical care nutritional assessment. Enteral Nutrition (EN)-Definition, Principles, Routes of administration,.	2	7
2.2	Delivery of enteral nutrition, Hyperalimentation, Enteral formulas and feeds	2	7
2.3	Parenteral Nutrition (PN)- Indication for total Parenteral Nutrition, Purpose,	2	7
2.4	Parenteral Nutrition formulas, content of TPN solution. Calculation of nutrient allowances	2	7
2.5	Requisites for energy, fatty acids, nitrogen, vitamins, electrolyte and trace elements	2	7
2.7	Enteral Vs parenteral Nutrition	2	7
2.8	Immuno nutrition	1	7
2.9	Nutrition Therapy for Allergic Conditions Food Allergy, symptoms, common food allergens, food intolerance - food additives,.	3	
2.10	Carbohydrate intolerance, food elimination diet, immunologic basis,	3	3
2.11	Allergic reactions, risk factors for the development of food allergy	2	3
2.12	Nutrition Therapy for HIV Disease Pathophysiology, etiology and classification,	3	1
2.13	Opportunistic infections, complications and malnutrition,	3	1
2.14	Women and HIV, pediatric consideration, medical nutrition therapy	3	1
2.15	Nutrition in Cancer: Nutrition in the Etiology of Cancer Types& symptoms, Cancer therapies and treatment - side effects and nutritional implications	2	2
2.16	Goals of care and guidelines for oral feeding, Accommodating side effects, Feeding and blend preparation for cancer.	3	2
2.17	Enteral tube feeding - Nasogastric, Gastrostomy, Jejunostomy, Parenteral Nutrition	2	2
2.18	Pediatric patients with cancer, The terminal cancer patient	2	2
2.19	Antioxidants during Anti cancer therapy	2	2

2.20	Bone marrow transplant	1	2
3.0	Nutritional Guidelines for Neurological Disorders, Intellectual and Developmental Disabilities & Psychiatric Conditions	18	
3.1	Nutrition Therapy for Neurological disorders neuropathies, migraine, stroke,	3	6
3.2	Parkinson's disease, Alzheimer's disease, Epilepsy.	3	6
3.3	Intellectual and Developmental Disabilities	3	6
3.4	Definition, etiology, principles of nutrition care.	3	6
3.5	Psychiatric Conditions	3	6
3.6	Mental illnesses access I and access II Disorders	2	6
3.7	Nutritional aspects of Brain and Nervous system	1	6
3.8	Nutrition recommendations for psychiatric conditions.	1	6
4.0	Nutritional Considerations in Brief for the Following:	12	
4.1	Military (army, war), naval personnel	2	5
4.2	High Altitudes, Low Temperature, Submarines	2	5
4.3	Emergencies such as drought, famine, floods etc.	2	5
4.4	Space Nutrition -Space Physiology&Types of space foods-Rehydratable Food, Thermostabilized Food, Intermediate Moisture Food	2	5
4.5	Natural Form Food, Irradiated Food, Frozen Food, Fresh Food, Refrigerated Food	2	5
4.6	Dietary intake during Space Flight.	2	5
5.0	Nutrition in inborn errors of metabolism	6	
5.1	Nutrition in inborn errors of metabolism - CHO, Protein, Fat	3	7
5.2	Diet(MMA, PKU, MSUD, Lactose Intolerance, Pompey's disease).	3	7

Related experience:

- Visit to hospital to familiarize different types of feeds, enteral feed preparation & feeding tubes.

References

- Garrow J.S and James W.P.T. (1993): Human Nutrition and Dietetics. Churchill Livingstone.
- Mahan L.K & Sylvia Escott-Stump.(2008): Krause's Food Nutrition & Diet Therapy, 12th edition, Saunders Company.
- Robinson C. H., Lawler M.R., Chenoweth W.L., Garwich A.E.(1996): Normal and Therapeutic Nutrition, 17th edition, Mac Milan publishing Co., New York.
- Shills M.E., Olson J., Shike, M and Roos, C.(1998): Modern Nutrition in Health and Disease 9TH Edition. Williams and Williams A Beverly Co. London.

CORE

Course	Details				
Code	HS1922108				
Title	RESEARCH METHODS AND STATISTICS				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	I/II				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Apply the appropriate statistical techniques to analyse numerical data & draw inferences	Ap	1,9,10
2	Develop the ability to construct data gathering instruments appropriate to research design.	C	1,9,10
3	Judge the accuracy of results by statistical measures.	E	1,9,10
4	Understand the basics of research methods & statistics	U	1,9,10
5	Identify types, tools & sampling techniques appropriate to a research question	An	1,9,10
6	Visualise the sampling & non – sampling errors associated with the research design.	U	1,9,10

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember; U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Introduction to Research	10	
1.1	Research-Definition, Objectives and Characteristics of research	3	2
1.2	Types of Research - Basic, Applied and Action research,	3	2
1.3	Exploratory and Descriptive,	2	2
1.4	Ex-post facto research	2	2
2.0	Identification of Research Problem	16	
2.1	Sources of research problem,	2	4
2.2	Criteria for the selection of research problem.	2	4
2.3	Research design	3	4
2.4	Rationale, Statement of problem, Setting	2	4

	objectives		
2.5	Definition of concepts, operational definition	1	4
2.6	variables - independent and dependent, control and intervening variables, limitations and delimitation	2	4
2.7	Hypothesis - Meaning and importance, types of hypotheses	4	4
3.0	Sampling ,Research methods & Tools	19	
3.1	Sampling- Population and Sample	2	5
3.2	Sampling techniques.	3	5
3.3	Size of sample, Merits and Limitations of sampling.	2	5
3.4	Sampling and Non sampling errors.	2	5
3.5	Research methods and tools Methods - Survey, observation, interview, experimental, clinical methods.	5	6
3.6	Tools -Questionnaire, Schedule (for interview and observation) Rating Scales, Attitude Scales.	3	6
3.7	Reliability and validity.	2	6
STATISTICS			
1.0	Descriptive Statistics:	7	3
1.1	Measures of Central Tendency - Mean, Median, Mode; Partition Values , Quartiles, Deciles and Percentiles,	3	3
1.2	Measures of Dispersion Range, Quartile deviation, Standard deviation. Absolute and Relative measures of dispersion, Coefficient of variation.	4	3
2.0	Correlation and Regression	11	5
2.1	Correlation and Regression. Scatter diagram, Correlation	3	5
2.2	,Coefficient of Correlation – Karl Pearson and Rank Correlation Coefficients. Interpretation of Calculated coefficients.	3	5
2.3	Concept of Regression,	2	5
2.4	Regression Lines and their estimation	3	5
3.0	Concept of Probability and Random Variable	8	1
3.1	Concept of Probability and Random Variable.	2	1
3.2	Normal distribution and its properties. Standard normal distribution and calculation of probability of events.	5	1
3.3	Importance and use of distribution in research	1	1
4.0	Sampling distributions	19	
4.1	Sampling distributions, F and χ^2 distributions.	2	6
4.2	Central Limit theorem, Standard error and its importance and applications.	3	6
4.3	Testing of Hypothesis ñ Hypothesis, Null and Alternative hypothesis.,.	3	6
4.4	Type I and Type II errors	2	6

4.5	Significance Level and size of test, Critical Region, testing Procedure	3	6
4.6	concept of P Value in testing	2	6
4.7	Large and small sample tests (Z, t, F and χ^2 statistics).	4	6

Related Experience

- Five day training in using SPSS or similar package used in statistical analysis of data.

References

- Bandarkar, P.L. and Wilkinson T.S. (2000) : Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.
- Batnagar, G.L. (1990): Research Methods and Measurements in Behavioural and Social Sciences, Agri. Cole Publishing Academy, New Delhi.
- Dooley, D. (1995) : Strategies for Interpreting Qualitative Data: Sage Publications, California.
- Gay, L.R. (1981, 2nd Ed): Educational Research, Columbus, Ohio.
- Long, J.S. (Ed) (1988): Common Problems Proper Solutions: Avoiding Errors in Quantitative Research, Beverly Hills, Sage Publications, California.
- Mukherjee, R. (1989): The Quality of Life: Valuation in Social Research, Sage Publications, New Delhi.
- Stranss, A. and Corbin, J. (1990): Basis of Qualitative Research: Grounded Theory Procedures and Techniques, Sage Publications, California

CORE- PRACTICAL

Course	Details				
Code	HS1922602				
Title	DIETETICS PRACTICAL AND INTERNSHIP				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	1/II				
Credits	2	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Develop skills in the formulation of therapeutic diet	C	4
2	Incorporate critical thinking skills in over all practice	AP	4
3	Calculate and recommend diets according to various medical condition	AP	4
4	Reproduce the dietary principles , suiting the therapeutic condition	R	4
5	Understand the method of diet planning calculation and implementation	U	4
6	Evaluate clinical , nutritional and biochemical profile of the patients	E	4

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Practical experience in weights and measures and portion size	3	1
1.1	Standardisation of any 10 traditional Kerala dishes and finding out its nutritive value with exchange list and nutritive value calculation	4	5
2.0	Planning of diet Pnuomonias ,constipation, diarrhea, cholelithiasis, hypo and hyper thyroidism, gout	5	3
3.0	Plan and preparation of diet	30	
3.1	Pulmonary diseases-Tuberculosis, Pneumonia	4	3

3.2	Surgical conditions and burns	2	3
3.3	Gastrointestinal disorders- constipation, diarrhoea, ulcerative colitis, peptic ulcer.	4	3
3.4	Liver and gall bladder disorders - Hepatitis, cirrhosis, Cholelithiasis	4	6
3.5	Metabolic disorders- diabetes, hypo and hyperthyroidism, gout	4	4
3.6	Cardio vascular disorders- arteriosclerosis, hypertension.	4	2
3.6	Renal disorders- nephritis, renal failure, nephrolithiasis, dialysis	4	1
3.7	Pediatric diets:- lactose intolerance, Juvenile Diabetes	4	3
4.0	Dietetics Internship and case study	48	
4.1	Hospital internship in an established dietary for one month.		3
5.0	Case Study		5

References:

- Bamji S.M., Rao NP and Reddy V. 1998. Text book of Human Nutrition. Oxford and IBH Publishing C. New Delhi.
- Fink H.H., Mikesky E.A and Burgoon A.L. 2012. Practical Applications in Sports Nutrition. 3rd ed. Jones and Barlett Learning, USA.
- Gibney J.M. Macdonald A.I and Roche M.H. 2003. Nutrition and Metabolism. Blackwell Publishing.
- Modern Nutrition in Health and Disease edited by Maurice B Shils, Moshe Shike, A. Catherine Ross, Benjamin Cabellero, Robert J Cousins, Lippincott Williams and Wilkins 2006.
- Nutrition for Health, Fitness and Sport, eighth edition, by Melvin Williams, 2007 McGraw-Hill.
- Practical Nutrition for a Fit Life, by Cherie Moore, 2004, Kendall-Hunt Publishers
- WHO. 1995. Physical Status: The Use and interpretation of Anthropometry. Report of a WHO Expert Committee, Geneva.

SEMESTER III

CORE

Course	Details				
Code	HS1923109				
Title	FOOD SERVICE MANAGEMENT				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/III				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the principles & functions of management.	U	1,,10,11
2	Categorize food service establishments according to their function	An	1,10
3	Impart necessary expertise to function as a Food Service Manager	Ap	1,10,11
4	Develop skills in organising & establishing a food service unit	C	1,10,11
5	Demonstrate professional behaviour expected within the food service industry	U	11
6	Evaluate the plan & layouts of different food service establishments for its appropriateness	E	1,10
7	Prepare & analyse available funds, budget & the records maintained in a Food Service Establishment	An	1,10,11
8	Analyse the managerial problems in food service establishments & study the techniques to tackle the problems.	An	1,10,11
9	Define tools of management	R	1,10,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	History and Development of Food Service System	4	
1.1	History & Development Food service establishments	1	2
1.2	Types-commercial and non-commercial, their characteristics	3	2

2.0	Principles & Functions of Food Service Management	69	
2.1	Principles of Management- Fayol's 14 principles	3	1
2.2	Functions of management - Planning a Food Service Unit	3	6
2.3	Sources of finance for Investment	3	7
2.4	Project report, registration	2	4
2.5	Organising - Managing an organization, Process involved	4	4
2.6	Organisation chart	3	9
2.7	Human Resource Management - Manpower planning - selection,	2	3
2.8	Recruitment and training	3	3
2.9	Wages, salaries, incentives, promotion, demotion,	3	1
2.10	Transfer, dismissal	2	1
2.11	Direction, leadership styles, delegation	3	1
2.12	Decentralization, centralization, supervision	3	1
2.13	Authority and responsibility	3	1
2.14	Motivation, communication	4	1
2.15	Coordination and Control	4	1
2.16	Records for functional areas -Maintenance of accounts, Daily, weekly, monthly accounts	3	1
2.17	Records maintained in receiving, storage , production and service area.	3	1,7
2.18	Budget -Budgetary control, non budgetary control	3	1,7
2.19	Cost control, fixed, variable cost,	4	7
2.20	marginal and unit cost	4	7
2.21	Break-even analysis, production planning control	3	7
2.22	Evaluation of personnel- Staff Appraisal – needs & methods.	4	1
3.0	Tools of Management & Personal Functions	9	
3.1	Tools of Management- Tangible tools & Intangible tools	3	9
3.2	Work study – Methods of work study	2	9
3.3	Work simplification	2	9
3.4	Work design, and Job design	2	9
4.0	Total quality Management	3	

4.1	TQM- Definition, Features,	1	5
4.2	Tools & Techniques used	2	5
5.0	Managerial problems in food service establishment	5	
5.1	Common Managerial problems in food service establishment.	3	8
5.2	Methods to tackle problems	2	8

References

- Khan, M. A.(1987): Food Service Operations, AVI Publishing INC,Connecticut)
- Malhan, S and Sethi, M. (1987): Catering management, An Integrated Approach, Wiley Eastern Ltd.New Delhi.
- Malhotra, R. K.(2002):Food Service and catering Managemebnt,Anmol Publication Pvt Ltd.
- Minor L J and Cichy R. F.(1984): Food Service System Management,AVI Publishing INC,Connecticut.
- Sullivian, C.F. (1990): Management of Medical Food Service, Van Nostrand Reinhold, Newyork.
- Taylor, E., and Taylor, J. (1990): Mastering Catering Theory, Macmilan press Ltd.

CORE

Course	Details				
Code	HS1923110				
Title	QUANTITY FOOD PREPARATION AND FOOD SERVICE TECHNIQUES				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/III				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the objectives of different types of food service establishments, cuisines and types of service	U	11
2	Recall various food processing methods	R	11
3	Create skills in quantity food preparation and control techniques	C	11
4	Create skills in controlling quantity food preparation, service & cost.	C	11
5	Creating the skills for purchasing and receiving the raw materials	C	11
6	Modification & Formulation of recipes for specific purposes, such as nutrient enhancement, quality improvement & ingredient substitution	Ap	11
7	Understand the raw material storage and inventory control	U	11
8	Evaluation of the adequacy of quality & safety of food as per the rules and regulations of government	E	11
9	Understand the production forecasting and scheduling	U	11
9	Application & economical considerations of various fuels & equipments.	Ap	11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Catering systems Traditional, Cook chill and Cook freeze systems	4	5
2.0	Menu Planning- The Primary Control of Food Service	14	
2.1	Menu – Definition, Functions, Types,	3	3
2.2	Factors affecting menu planning,	3	3
2.3	Menu Cover, Layout, Pattern, Presentation,	4	4
2.4	Menu pricing and Evaluation.	4	4
3.0	Purchasing, Receiving and Storage	20	

3.1	Purchasing Procurement, product selection, specification	4	8
3.2	Methods of purchasing- formal and informal and purchasing process.	4	8
3.3	Receiving- elements, process.	4	4,
3.4	Storage- types	4	8
3.5	Inventory control – types, tools.	4	8
4.0	Quantity food Production	32	
4.1	Production Planning and Standardization of Recipes Standardization- definition, importance,	4	4
4.2	Steps and methods,	4	6
4.3	Portion control- definition, need, tools.	4	4
4.4	Production forecasting	3	8
4.5	Production scheduling.	3	9
4.6	Quantity Food Production and Quality Control Objectives of food production	2	2
4.7	Methods of production- Dry and moist methods.	4	
4.8	Product standards production control,	4	8
4.9	Steps to maintain quality control.	4	8
5.0	Distribution and Service of Food	20	1
5.1	Types of cuisine and food service,	4	1
5.2	Styles of Food service,	4	1
5.3	Service management and Service equipment.	4	1
5.4	Beverages- Service and control measures- Alcoholic (Wine, beer, rum, brandy, whisky, gin and vodka)	4	7
5.5	Non Alcoholic beverages (Water, coffee, tea, fruit juices, squash, soup)	4	2

References

- Khan, M.A. (1987): Food Service Operations, AVI Publishing Inc Westport, Connecticut.
- Peckham, G.C.(1994): Foundation of Food Preparation. The Mac Milan Company, London .
- Taylor, E. and Taylor J.(1990): Mastering Catering Theory. Mac Millan Press Ltd. London.
- West, B.B and Wood L.(1986): Food service Institutions, 6th edition, Mac Millian Publishing Co.

CORE

Course	Details				
Code	HS1922111				
Title	HOSPITALITY ADMINISTRATION				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/III				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Develop skill in managing accommodation department & dealing with the procedures	C	1,3,5
2	Understand the organisational & procedural aspects of front office & housekeeping departments of hospitality functions	U	1,3,5
3	Identify the need and use of different tools & equipments belonging to front office & housekeeping departments of hospitality institutions	An	1,3,5
4	Know and understand the fundamental aspects of housekeeping department of various hospitality industries.	U	1,3,5
5	Recognize different hospitality institutions & its importance in tourism.	R	1,3,5
6	Select appropriate aesthetic treatments of interior environment in commercial & hospitality areas	E	1,3,5
7	Apply the knowledge of safety & security measures for creating favourable guest experience	Ap	1,3,5

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Introduction to hospitality	15	
1.1	Hotel industry and tourism	2	1
1.2	Classification of hotels and other hospitality Institutions.	2	2
1.3	Importance of hospitality in tourism & national development.	3	5
1.4	Organisation of departments	2	6

1.5	Departmental classifications, numbering of rooms and food plans.	2	4
1.6	Room types and rates	2	6
1.7	Tariff structure, rate policies	2	7
2.0	Front Office, Reservation and Records for control	25	
2.1	Importance of the department, Layout and planning, Staffing pattern and duties.	3	1
2.2	Basic Terminology used in the department	2	4
2.3	Qualities and etiquettes of front office staff.	2	7
2.4	Basic reservation system -Procedures of check- in and check-out, VIP Procedures,C-Form,penalty, Cancellation.	3	7
2.5	Key handling and control, Luggage handling	2	6
2.6	Book Keeping and Record Maintenance,Computerized reservation forecasting	3	4
2.7	Lobby management, Public relations, Co-ordination and communication of front office with other departments	4	3
2.8	Basic reservation system -Importance of reports, the front desk log, maintaining room status, maintaining account balance, monitoring availability.	3	4
2.9	Electronic front office, electronic point sale system, roomstatus indicator, accounting equipment.	3	4
3.0	Housekeeping Department	37	
3.1	Importance, Organisation and duties, Hierarchy and Job descriptions, Layout	3	3
3.2	Inter-departmental coordination and communication.	2	3
3.3	Interrelationship with Personnel Department: Importance and functions	3	6
3.4	Manpower planning, Recruitment, training and appraisals.	3	
3.5	Linen room and Laundry management - Classification and selection of linen, par stock determination, storage, distribution and control of linen and uniforms, condemnation and reuse	4	5
3.6	Bed making and turning down	2	3
3.7	Layout and physical attributes of Linen room and storage and laundry, Staff and duties	3	6
3.8	Wet and dry washing	2	4
3.9	Finishing processes and stain removal	2	
3.10	Upkeep, Sanitation and hygiene -Cleaning Guest rooms and service areas, Rules, procedures and principles,	3	4
3.11	Methods of Cleaning of various materials, types of room cleaning- daily, weekly, spring cleaning etc.	3	
3.12	Equipments, cleaning agents and maid's trolley, Sterilization, disinfection, Control of infestation	3	3
3.13	Integrated Waste Management (IWM).	1	3
3.14	Room inspection checklist, repair and maintenance,	3	4

	Refrigeration and A/C, Public address system and music.		
4.0	Aesthetic treatments of Interior environment	8	
4.1	Interior decoration in Commercial / hospitality areas, window treatments.	3	3
4.2	Selection and care of Furniture, furnishings, lighting and accessories.	2	4
4.3	Floral decorations and table setting and layout, Indoor gardens and Landscaping.	3	2
5.0	Safety Education and First Aid	5	
5.1	Need of safety education, First aid for shock, fainting, stroke, burns, fits, heart attack, etc.	2	6
5.2	Safety measures, fire prevention and control, accident prevention, security measures.	3	7

Related Experience:

1. Visit to front office and housekeeping departments of various institutions
2. Role play of guest handling / First Aid / Hostess duties / etiquettes
3. Practical Bed making / Table setting / Flower Arrangement / Curtain Styles
4. Internship in Housekeeping/ Front Office at any Institution/ Preparation of modules for training housekeeping attendants

Reference:

- Andrews S., (2000) Hotel Front Office Training Manual, Tata McGraw Hill Publications, New Delhi
- Andrews S., (2000) Hotel Housekeeping Training Manual, Tata McGraw Hill Publications, New Delhi
- Ball S. et al, (2003) Hospitality Operation-A System Approach, Thomson Learning, U. K.
- Branson J.C. and Lennox M., (1988) Hotel, Hostel and Hospital Housekeeping, Edward Arnold Publishers, London
- Express Health Care Management
- Ismail A., Front Office Operations and Management, Thomson and Delmar Publishers, Canada
- Krishna, B. And Churchland, S., (2004) Hotel Accommodation and Operations, Indo-Swiss Publishers, Mumbai
- Negi J., (1997) Professional Hotel Management, S, Chand Company, N. Delhi
- Raghubalan and Smritee Raghubalan, Hotel Housekeeping- Operations and Management, Oxford University Press, New Delhi
- Krishna, B. And Churchland, S., (2004) Hotel Accommodation and Operations, Indo-Swiss Publishers, Mumbai
- Negi J., (1997) Professional Hotel Management, S, Chand Company, N. Delhi
- Raghubalan and Smritee Raghubalan, Hotel Housekeeping- Operations and Management, Oxford University Press, New Delhi

CORE

Course	Details				
Code	HS1923112				
Title	SCIENTIFIC WRITING AND PROJECT FORMULATION				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/III				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Develop competence in scientific writing & abstracting skills	C	1,9.10
2	Identify key elements of scientific literature that are relevant to a research area	An	1,9.10
3	Describe the scientific process, key stages and its different forms	R	1,9.10
4	Analyse and review scientific papers in terms of key message and justification	An	1,9.10
5	Determine the strength & weakness & focus efforts on improving every aspects of scientific writing.	E	1,9.10
6	Illustrate the process of writing research documents or reports more efficiently.	Ap	1,9.10
7	Demonstrate and write various sections of scientific paper or grant proposal precisely.	U	1,9.10

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Scientific writing as a means of communication	25	
1.1	Different forms of scientific writing- Articles in journals,	2	2
1.2	Review articles	2	2
1.3	Monographs	2	3
1.4	Bibliographies	2	3
1.5	Book chapters and articles.	4	4
2.0	Parts of dissertation/research report/article Introduction, Review of literature, Methods	4	3
2.1	Results and discussion, Summary and	4	6

	abstract,References.		
2.2	Ask questions related to: content, continuity, clarity, validity,	3	3
2.3	Internal consistency and objectivity during writing each of the above parts.	2	5
3.0	Outlines,Drafting titles, tables and illustrations.	23	
3.1	Formulation of outlines- The reasons for preparing outlines: as a guide for plan of writing	3	3
3.2	Skeleton for the manuscript	3	6
3.3	Kinds of outlines, Topic outlines, Conceptual outline, Sentence outlines,	4	6
3.4	Combination of topic and sentence outlines.	2	4
3.5	Drafting titles, Sub titles, tables, illustrations Tables as systematic means of presenting data in rows and columns and lucid way of indicating relationships and results.	3	4
3.6	Formatting tables: Title, Body, Stab, Column, ColumnHead, Spanner Head, Box Head	4	5
3.7	Appendices: use and guidelines.	4	6
4.0	The writing process	18	
4.1	Getting started, Use outlines as a starting device	2	5
4.2	Drafting, Reflecting, re-reading;..	2	6
4.3	Checking organization	2	5
4.4	Checking headings, Checking content,	2	6
4.5	Checking clarity; Checking grammar	2	6
4.6	Brevity and precision in writing	4	4
4.7	Drafting and re-drafting based on critical evaluation	4	4
5.0	Writing for Grants	24	
5.1	The question to be addressed, Rationale and importance of the question being addressed,.	3	4
5.2	Empirical and theoretical framework,	2	5
5.3	Presenting pilot study/data or background information	3	5
5.4	Research proposal and time frame	3	6
5.5	Speciality of methodology,	3	7
5.6	Organization of different phases of study,	3	7
5.7	Expected outcome of study and its implications,	2	5
5.8	Budgeting, Available infra-structure and resources	3	6
5.9	Executive summary.	2	7

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R-Remember; U-Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

References

- APA (1994). Publication Manual of American Psychological Association (4th Edition), Washington: APA.
- Cooper, H.M. (1990) Integrating research: A guide for literature reviews (2nd Edition). California: Sage.
- Dunn, F.V. & Others. (Ed.) (1994). Disseminating research: Changing practice. NY: Sage.

- Harman, E & Montagnes, I. (Eds.) (1997). The thesis and the book. New Delhi: Vistaar.
- Locke, L.F. and others (1987). Proposals that work : A guide for planning dissertations & Grant proposals (2nd Ed.). Beverly Hills: Sage.
- Mullins, C.J. (1977). A guide to writing and publishing in social and behavioural Sciences. New York: John Wiley & Sons.
- Richardson, L. (1990) Writing strategies. Reaching diverse audience. California : Sage.
- Sternberg, R.J. (1991), The psychologist's companion: A guide to scientific writing for students & researchers. Cambridge: CUP.
- Thyer, B.A. (1994) Successful publishing in scholarly journals. California: Sage.
- Wolcott, H.F. (1990). Writing up qualitative research. Newbury Park : Sage

CORE- PRACTICAL

Course	Details				
Code	HS1923603				
Title	FOOD SERVICE MANAGEMENT PRACTICAL & FIELD EXPERIENCE				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/III				
Credits	2	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Develop practical skills for being managed as a food service employee in the areas of production, service and accounts	C	1,10,11
2	Identify the factors that affect food, labour and operating cost while running a food service outlet	An	1,10,11
3	Understand the theoretical aspects of food service management through field study	U	1,11
4	Take part in the production of standardised nutritional menus & stepping up them for food service institution.	An	1,11
5	Evaluate the organisation & function of restaurants & Quantity Food Production in food service industry	E	1,10,11
6	Verify the cost profit analysis of a food service unit	E	1,10,11
7	Apply the knowledge of theory & practice of food service management	Ap	1,10,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Food production	18	
1.1	Selection of recipes suitable for various types of food services establishments- any two cuisines	4	5
1.2	Standardisation of recipes.	8	4
1.3	Stepping up of standardized recipes for quantity products (Max.50 portions).	6	4
2.0	Field Experience	30	
2.1	Planning, purchasing, preparing and serving foods in the college cafeteria.	25	3
2.2	Cost and profit analysis	5	6
3.0	Field Study on Any One of the Following Aspects	24	

3.1	Planning and design of a food service establishment.	4	5
3.2	Equipment design and arrangement related to food service.	4	1
3.3	Costing, pricing and profit calculation of a food service unit.	4	6
3.4	Sanitation and hygienic practices followed in a unit.	4	1
3.5	Quantity control in various stages of food service.	4	5
3.6	Food purchasing, selection and storage practices in a food service unit.	4	2
4.0	Visit to a commissary kitchen	8	7
5.0	PROJECT	10	
5.1	Design and conduct a study related to any of the topics in the course content of Food Service Management.	10	3

SEMESTER IV

ELECTIVE

Course	Details				
Code	HS1924301				
Title	PUBLIC HEALTH NUTRITION				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2IV				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Recall the fundamental concepts of PHN	R	1,5,11
2	Identify and explain the broad determinants of dietary and food aspects of health and well being	R	1,5,11
3	Understand the principles and approaches to dietary assessment as this relates to groups and population	U	1,5,11
4	Exhibit knowledge the skills required to design and and plan a food and nutrition intervention project or program	AP	1,5,11
5	Plan, perform and evaluate nutritional status assessment and screening for identifying the health needs and preventive measures suitable to the community	C	1,5,11
6	Explain some key techniques in epidemiology of diseases	U	1,5,11
7	Advanced understanding of epidemiological theory and its role and contribution in health related discipline	U	1,5,11
8	Critically analyse emerging issues in public health nutrition	An	1,5,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember; U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Food and Nutrition Situation in India	15	
1.1	Hunger in India, India state Hunger Index (ISHI)	4	1
1.2	Food and Nutrition security, production and availability of foods in India	4	1
1.3	Consumption pattern	4	2
1.4	Trends in nutrient intake and nutritional status.	3	2
2.0	Epidemiology of nutritional disorders	36	
2.1	Principles of epidemiology & epidemiological methods- Introduction to epidemiology, aims,	2	6
2.2	Classifying epidemiological study methods	2	7

2.3	Nutrition epidemiology and public health nutrition.	2	6
2.4	Epidemiology of Nutritional deficiencies- Prevalence, Aetiology, Consequences and treatment of- PEM-Clinical syndromes, prevention of malnutrition, managing PEM	4	4
2.5	Vitamin A Deficiency- Consequences, epidemiology, aetiological factors, intervention strategies for preventing Vitamin A deficiency disorders(VADD)	4	5
2.6	Iron Deficiency Anaemia-Epidemiology, Prevalence, aetiological consequences, approaches for prevention and control of anaemia, National Nutritional Anaemia Control Programme	4	5
2.7	Iodine Deficiency Disorders-Epidemiology, aetiological factors, consequences of IDD,IDD as a public health problem, elimination of IDD-An International focus, National Iodine Deficiency Disorders Control Programme of India	4	6
2.8	Zinc Deficiency-Epidemiology, public health significance, clinical manifestations of zinc deficiency, Zinc supplementation in pregnancy, Flourosis.	4	7
2.9	Nutrition related non communicable chronic disorders - Prevalence at global and national level	1	2
2.10	Cardiovascular disease and Hypertension	2	5
2.11	Obesity &Diabetes Mellitus	2	6
2.12	Cancer.	2	7
2.13	Risk factors for Non Communicable Diseases-Community based programmes for primary prevention	2	6
2.14	Health education and role of mass media, secondary and tertiary prevention.	1	8
3.0	Assessment of nutritional status and Nutrition education	23	
3.1	Assessment of nutritional status in community setting- Nutritional assessment, Importance and Objectives	3	5
3.2	Indirect assessment of Nutritional status - Age, specific mortality rates, cause specific mortality rates, nutritionally relevant morbidity rates, ecological factors.	3	5
3.2	Direct assessment of nutritional status – Nutritional Anthropometry-Height, length, weight, waist circumference, waist hip ratio, body fat, skin fold measurements.	3	5
3.3	Clinical assessment of Nutritional disorders,	2	5
3.4	Biochemical assessment for nutritional deficiencies	2	5
3.5	Dietary assessment-Family diet survey, Individual diet survey, quantitative diet surveys, Institutionalised surveys and Food balance sheet.	3	5

3.6	Nutrition Education -Definition, Significance, Design and implementation of NHE Programme Receiver, Communicator, Message Channel	4	6
3.7	Theories of Nutrition Education, Evaluation-Purpose and Types of evaluation	3	7
4.0	Organisations and Programmes in the field of nutrition monitoring and Interventions	10	
4.1	Organisations in the field of nutrition monitoring and Interventions	2	4
4.2	Programmes in the field of nutrition monitoring	2	4
4.3	Brief outline of WHO, FAO, UNICEF, CARE	3	5
4.4	NFHS, NNMB, ICDS, ICMR, ICAR.	3	5
5.0	Food Fortification and Enrichment	6	
5.1	Definition of terms, Technology for food fortification, fortificants	3	1
5.2	Planning food fortification intervention, fortification of selected food items.	3	5

References

- Modern Nutrition in Health and Disease edited by Maurice B Shils, Moshe Shike, A. Catherine Ross, Benjamin Cabellero, Robert J Cousins, Lippincott Williams & Wilkins 2006.
- Nutrient Requirements and Recommended Dietary Allowances for Indians. A report of the expert group of the Indian Council of Medical Research ICMR 2010.
- Public Health Nutrition in Developing Countries Edited by Sheila Chander Vir Woodhead Publishing India. Part I & II. 201

ELECTIVE

Course	Details				
Code	HS1924302				
Title	FOOD MICROBIOLOGY AND SANITATION				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/IV				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Recall the basics of food microbiology , food safety, Sanitation and Hygeine	R	1,7
2	Examine the interaction between microorganisms and the food environment and factors influencing their growth and survival	Ap	1,7
3	Understand the common micro organism associated with food borne illness	An	1,7,11
4	Able to plan strategies to improve the safety maintain and monitor the quality of food through the use of microbiological criteria	C	1,7,11
5	Differentiate the role of micro organisms to food borne diseases and compare pathogens that cause infections and intoxication	An	1,7
6	Assess the effects of fermentation , genetical modification in food production and its influence of microbiology quality and status of food Products	E	1,7,11
7	Understand the regulatory and control bodies and certifications in microbiology	U	1,7
8	Recognize the need for food preservation and various preservation methods	R	1,7
9	Learn the economic importance of microorganisms and their application in the sector of food industry	R	1,7,11
10	Identify the types of spoilage associated with various food commodities	An	1,7,11

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R-Remember; U-Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Fundamentals of Microbiology	16	
1.1	History and development of microbiology	1	1
1.2	Scope and importance of food microbiology	1	1
1.3	Economic importance of yeast, moulds and bacteria	3	9
1.4	Bacterial growth curve	2	1
1.5	Factors affecting the survival and growth of microorganisms in food. Intrinsic and Extrinsic parameters that affect microbial growth. Intrinsic factors for growth- Generalized, nutrient effect, pH, buffer, anaerobic/aerobic conditions, moisture content, temperature, gaseous atmosphere.	4	2
1.6	Application of microbiology in nutrition	2	9
1.7	Microbiological Examination- Different methods of microbial Examinations: - Procedures of TPC, SPC, Pour plate method, Streaking, Swabbing, Stabbing	3	1
2.0	Microbiology of water and different foods	40	
2.1	Water -Sources, bacteriology of water supplies	3	3
2.2	Bacteriological examination and purification of water.	4	10
2.3	Milk and Milk Products -Types of microorganisms & Sources of contamination	3	3
2.4	Types of spoilage, prevention and control	3	10
2.5	Microbiology of dairy products- fermented milk, butter and cheese.	4	10
2.6	Microbiology of Fruits : Types of microorganisms, sources of contamination,	2	3
2.7	Fruits -types of spoilage, prevention and control	3	10
2.8	Microbiology of Vegetables: Types of microorganisms, sources of contamination,	2	3
2.9	Vegetables - types of spoilage, prevention and control	3	10
2.10	Microbiology of Cereal and Cereal Products Types of microorganisms & sources of contamination	2	3
2.11	Types of spoilage, prevention and control in cereals & cereal products	3	10
2.12	Microbiology of meat, fish and poultry -Types of microorganisms & sources of contamination	2	3
2.13	Types of spoilage, prevention and control	3	10
2.14	Role of Microbes in Fermented Foods and Genetically modified foods.	3	6
3.0	Food Spoilage, Food Preservation and Food	9	

	borne diseases		
3.1	Spoilage -Microbiological, physical and chemical factors.	2	1
3.2	Spoilage and examination of canned food.	2	10
3.3	Food Preservation -Methods of food preservation, dehydration, canning, freezing and pickling.	3	8
3.4	Use of syrup, irradiation and microwave	2	8
4.0	Food borne diseases	11	
4.1	Food infections- Salmonellosis, Shigellosis, Vibrio gastroenteritis, E.Coli, Hepatitis A and Shellfish poisoning,	2	1,5
4.2	Food Borne Intoxications- Staphylococcal poisoning, Bacillus cerues poisoning, Botulism,	2	
4.3	Mycotoxins- Aflatoxicosis, Ergotism	1	
4.4	Bacterial and viral food borne disorders	2	5
4.5	Food-borne important animal parasites	2	5
4.6	Food borne diseases and their outbreak.	2	5
5.0	Sanitation and Safety, Regulatory & control bodies	14	
5.1	Food safety - Basic concepts	1	1
5.2	Factors affecting food safety:-physical hazards, biological hazards and chemical hazards.	1	4
5.3	HACCP system -Need, principles, benefits and guidelines	2	4
5.4	Personal hygiene & sanitation in handling food.	2	1
5.5	Sanitation & Safety in handling Equipment, Plant constructions, water supply and sewage disposal.	4	1
5.6	Regulatory & control bodies -FSSAI, GMP, Codex, GRAS, Certifications in Microbiology	4	7

Related Experience:

- Preparation of media for cultivating micro organisms. Inoculation of the media. Isolation of pure culture
- Identification of bacteria in water, air, food and utensils.
- Demonstration of available rapid methods and diagnostic kits used in identification of micro organisms or their products.
- Identification of micro organism in processed foods

References:

- Adams, M.P and Moss, M.O. (1996): Food Microbiology, New Age International (p) Limited Publishers.
- Frazier, W. C and Westhoff, D.C.(1999):Food microbiology ,Tata MC Graw.Hill Publishing Company Ltd,New Delhi.
- Joshua, AK.(1994):Microbiology, popular Book depot Publishers.
- Westhoff, D.C.(1993): food Microbiology. Tata McGraw Hill Publishing Co Ltd., New Delhi.

ELECTIVE

Course	Details				
Code	HS1924303				
Title	NUTRITION FOR SPORTS AND FITNESS				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/IV				
Credits	4	Hours/week	5	Total hours	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the components of health and Fitness	U	1,8
2	Develop ability to evaluate fitness and well being	C	1,8,11
3	Explain the importance of nutrients and fluid in athlete diet and gain Capability to provide individual advice and guidance in the area of Sports Nutrition	C	1,8,11
4	Learn the optimum healthy and performance enhancing methods for safe and effective fat loss and weight loss and examine effective methods where they are deemed necessary	Ap	1,8,11
5	Apply knowledge of underlying principles and concepts of exercise and sports nutrition	Ap	1,8,11
6	Investigate health related issues in Sports Nutrition	An	1,8,11
7	Recommend appropriate dietary advice for athletes with therapeutic dietary requirements	E	1,8,11
8	Critically examine the appropriate use of nutritional supplements and ergogenic aids for athletes	E	1,8,11
9	Define the body composition of an athlete & to become aware of the methods of measuring body composition	R	1,8,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Physical fitness and health	21	
1.1	Introduction to physical fitness and wellness	4	1
1.2	Contributing factors to health	2	1
1.3	Objectives of physical fitness	2	1
1.4	Motivation for a physically active life, motivational strategies	3	4
1.5	Principles of nutrition for health.	2	3
1.6	Measures of performance and physical fitness	4	2
1.7	Dietary guidelines appropriate to health and fitness with special reference to obesity, Cardio vascular diseases and diabetes.	4	7
2.0	Weight management and fitness	21	
2.1	Body weight components	3	9
2.2	Body composition assessment	4	9
2.3	Regulation of body weight (energy)	3	4
2.4	Weight imbalance- underweight, overweight and obesity (types)	4	6
2.5	Management of obesity	3	6
2.6	Critical review of various dietary regimes for weight and fat reduction	4	4
3.0	Exercise Performance and Nutrition	20	
3.1	Energy expenditure during physical activity	3	5
3.2	Carbohydrates and performance	3	3
3.3	Fat metabolism and performance	4	3
3.4	Effect of exercise on protein requirements	3	3
3.5	Vitamins and Minerals	3	3
3.6	Fluid and electrolyte loss and replacement in exercise	4	3
4.0	Sports nutrition	22	
4.1	Sports physiology	3	5
4.2	Nutritional requirements in sports events- team, power, endurance events	4	3
4.3	Pre-game and post-game regime	4	3
4.4	Carbohydrate loading	3	3
4.5	Water and electrolyte balance	4	3
4.5	Role of nutrition, stress, fracture and injury.	4	7
5.0	Nutritional Ergogenic aids and Supplements	6	
5.1	Types, Potentials and concerns of nutritional ergogenic aids	3	8
5.2	Types, Potentials and concerns of nutritional supplements	3	8

References:

- Bamji S.M., Rao NP and Reddy V. 1998. Text book of Human Nutrition. Oxford and IBH Publishing C. New Delhi.
- Fink H.H., Mikesky E.A and Burgoon A.L. 2012. Practical Applications in Sports Nutrition. 3rd ed. Jones and Barlett Learning. USA.
- Gibney J.M. Macdonald A.I and Roche M.H. 2003. Nutrition and Metabolism. Blackwell Publishing.

- Modern Nutrition in Health and Disease edited by Maurice B Shils, Moshe Shike, Catherine Ross, Benjamin Cabellero, Robert J Cousins, Lippincott Williams and Wilkins 2006.
- Nutrition for Health, Fitness and Sport, eighth edition, by Melvin Williams, 2007 McGraw-Hill.
- Practical Nutrition for a Fit Life, by Cherie Moore, 2004, Kendall-Hunt Publishers
- WHO. 1995. Physical Status: The Use and interpretation of Anthropometry. Report of WHO Expert Committee, Geneva.

Course	Details				
Code	HS1924304				
Title	ENTREPRENEURSHIP DEVELOPMENT				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/IV				
Credits	4	Hours /week	4	Total Hours	72

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Creating ability to sell themselves and their ideas	C	10, 11
2	Understand the knowledge about the current market and products	U	10,11
3	Create skills in resource management and financial management	C	10,11
4	Knowledge to assess the business organisation	E	10,11
5	Able to apply planning, organizing, and execute a project	Ap	10,11
6	Analyse interpersonal and entrepreneurial skills	E	10,11
7	Evaluate the knowledge on entrepreneurship	E	10,11
8	To provide an outline on various entrepreneurial organizations and institutional support	R	10,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	ENTREPRENEURSHIP DEVELOPMENT AND WOMEN EMPLOYMENT	11	
1.1	Entrepreneurship and its development Entrepreneurship-Definition, types, characteristics,	2	8
1.2	Entrepreneurship development for employment generation- importance	2	1,7
1.3	Factors affecting entrepreneurial growth-economic, social, cultural and personal factors	3	6
1.4	Women and Employment Women employment in India - categories of employment,	2	6
1.5	Problems related to employment, Unemployment in India- causes & remedies, Importance of self employment.	2	1
2.0	FORMS OF ENTREPRENEURIAL ORGANIZATIONS	8	
2.1	Forms of Entrepreneurial Organizations Scope and Objectives of modern business, Essentials of successful business,	2	2

2.2	Sole proprietorship, Partnership, Joint Stock company, State enterprises and Co-operatives societies ñ meaning, merits and demerits of each,	3	4
2.3	Types of important documents of companies – Memorandum of association, Article of association & Prospectus.	3	7
3.0	INSTITUTIONAL SUPPORT FOR ENTREPRENEURIAL ORGANIZATIONS	16	
3.1	Entrepreneurship and Institutional support Facilities for small scale unit, Problems faced by emerging small scale units and remedies	4	4
3.2	Objectives, functions and assistance given by SIDCO, SIDO, SFCK IDBI, SIDBI, KSIDC, KSWDC, KITCO, SEWA, SGSY (Swarnjayanti Gram Swarozgar Yojana), JGSY (Jawahar Gram Samridhi Yojana) ,	4	4
3.3	Agencies promoting entrepreneurship - role of NSIC (National Small Industry Corporation) , Small Industry Extension Training Institute (SIETI), Central Small Industry Organisation (CSIO) DCK, DRDA, KVIC	4	8
3.4	Khadi and Village Industry Commission) Other voluntary organizations, Small Scale Industries (SSI) - Definition, types, procedure for setting a small scale unit, training	4	6
4.0	SOURCE OF FINANCE, BOOK KEEPING & ACCOUNTING	26	
4.1	Source of Finance	2	3
4.2	Importance of finance- sources of company finance - long term and short term,	3	8
4.3	Role of banks and other financial institutions, Project Appraisal.	4	5
4.4	Book keeping & Accounting Basics of Costs and Cost Control,	3	3
4.5	Concepts and Basics of accounting methods-	3	3
4.6	Journal and ledger, balancing, trial balance, cash book, subsidiary books, Brief study of Financial Statements,	4	6
4.7	Basics of Auditing, Sales Tax- meaning and types,	3	3
4.8	Registration of business, turnover, filing & assessment of returns	4	3
5.0	MARKETING & SALES PROMOTION	11	
5.1	Marketing- Marketing mix, Functions, types,	4	2
5.2	Advertising & Salesmanship, Public relations, Personal selling,	4	6
5.3	Interpersonal skills, factors affecting the entrepreneur's skill	3	6

Related Experience:

1. Visits to agencies involved in development of entrepreneurship
2. Preparation of a project proposal by
 - Selection of a trade
 - Visits to 1 or 2 units related to trade
 - Study the infrastructural requirements
 - Records to be maintained
 - Procedure for obtaining loan

References

- Arora, S. P., Business Organization, Vikas Publishing House Pvt. Ltd. New Delhi, (1980)
- Bhattacharyya, S.K Accounting for Management, Vikas Publishing House Pvt. Ltd., New Delhi
- Bhushan, Business Organization, Sultan Chand & Sons, New Delhi, (1985)
- Chetnakal, Women and Development, Discovery Publishing House, New Delhi(1991)
- Desai V., Entrepreneurial Development- Vol -3,Himalaya Publishing House, New Delhi (1993)
- Gupta C.B. (Dr.), Office Organization and Management, Sultan Chand & Sons, New Delhi, (1999)
- Kanikar Entrepreneurs and Micro Enterprises in Rural India, New Age International Publishers Ltd., New Delhi (1995)
- Khanka S.S, Entrepreneurial Development, S.Chand&Co.Ltd., New Delhi, (1999)
- Ramesh Babbuís Handbook of Entrepreneurs, Business Intelligence Publications
- Sherlekar S.A, Principles of Business Management, Himalaya Publishing house, New Delhi, (1999)
- Shukla M.C., Business Organisation, S. Chand & Co. New Delhi, (1970)

ELECTIVE- PRACTICALS

Course	Details				
Code	HS1924701				
Title	PUBLIC HEALTH NUTRITION PRACTICALS				
Degree	MSc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	II/IV				
Credits	3	Hours /week	6	Total Hours	108

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	To acquire skill in organising and implementing community nutrition projects	C	5,11
2	To give an insight into the various low cost ingredients available in market and prepare low cost nutritious dishes for vulnerable segments in the community	U	5,11
3	To apply the nutritional knowledge and attitudes to develop various tools for a community programmes	Ap	5,11
4	Recall the usage of growth charts and interpretation among the pre-schoolers for the public health nutrition programmes	E	5,11
5	To develop skill in field level application of the techniques of assessing nutritional status	C	5,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R- Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1	Assessment of nutritional status	28	
1.1	Assessment of nutritional status of vulnerable group,	18	5
1.2	Use and interpretation of Growth Charts	10	4
2	Preparation & Planning of low cost recipes	16	
2.1	Preparation of low cost recipes and one dish meal,	8	2
2.2	Planning of Cyclic menu	8	2
3	Nutrition and Health Education programme	50	
3.1	Formulating messages for Nutrition and Health Education	5	1
3.2	Development, Use and Evaluation of methods and aids for NHE	10	3
4	Planning and implementation of a Nutrition and Health Education programme in the community	35	3

5	Development of tool	14	
5.1	Development of tools to assess Nutrition Knowledge	7	3
5.2	Development of tools to assess Attitudes and Practices	7	3

References

- Modern Nutrition in Health and Disease edited by Maurice B Shils, Moshe Shike, A. Catherine Ross, Benjamin Cabellero, Robert J Cousins, Lippincott Williams & Wilkins 2006.
- Nutrient Requirements and Recommended Dietary Allowances for Indians. A report of the expert group of the Indian Council of Medical Research ICMR 2010.
- Public Health Nutrition in Developing Countries Edited by Sheila Chander Vir Woodhead Publishing India. Part I & II. 2011

ELECTIVE

Course	Details				
Code	HS1924305				
Title	NUTRITION EDUCATION AND DIETETIC COUNSELING				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/IV				
Credits	4	Hours /week	5	Total Hours:	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Learn the role of a dietician, professional ethics & responsibilities	U	1
2	Apply knowledge on giving dietary prescription and diet counselling	Ap	5
3	Understand the method of working with hospitalized patients.	U	1
4	Recall the basics of principles of diet in various Disease conditions	R	1,6
5	Plan & Implement nutritional care process according to patient requirements	C	1
6	Evaluate the effectiveness of patient counselling	E	5
7	Analyse the patient history, clinical and dietary pattern followed by the patient	An	1,6
8	Recognize the importance of record maintenance , resources & aids for effective counselling	R	1,5

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1	Role of Dietitians in the Hospital and Community	15	
1.1	Professional qualification and personal attributes	3	1
1.2	Types of dietitians, Professional ethics, responsibilities.	4	1
1.3	Dietitian as part of the Medical Team and Outreach Services.	4	1
1.4	Indian dietetic association- origin, objectives, membership, chapters, registration	4	1
2	The Nutritional Care Process	22	
2.1	The Nutritional Care Process – Purpose,	4	5

	Method		
2.2	Nutritional Care Plan -Setting goals and objectives short term and long term	4	5
2.3	Assessment and Therapy in Patient Care	4	2
2.4	Implementation of Nutritional Care-Counseling and Patient Education	6	5
2.5	Dietary Prescription	4	2
3	Assessing patient clinical information & Dietary Diagnosis	16	
3.1	Clinical Information - Medical History and Patient Profile Techniques of obtaining relevant information, Retrospective information	4	7
3.2	Dietary Diagnosis, Assessing food and nutrient intakes, Lifestyles, Physical activity, Stress	4	7
3.3	Assessment of Nutritional Status.	4	7
3.4	Correlating Relevant Information and identifying areas of need	4	7
4	Working with Patients	17	
4.1	Working with - Hospitalized patients (adults, pediatric, elderly, and handicapped), adjusting and adopting to individual needs	6	3
4.2	Working with. Outpatients (adults, pediatric, elderly, handicapped), patients	4	3
4.3	Education, techniques and modes	4	6
4.4	Motivating patients- Need & methods	3	5
5	Record maintenance, follow up, Monitoring and Evaluation of outcome	20	
5.1	Maintaining records, Reporting findings	6	8
5.2	Applying findings, Resources and Aids for education and counseling, Terminating counseling	6	8
5.3	Education for individual patients, Use of regional language, linguistics in communication process, Counseling and education.	4	8
5.4	Follow up with the record findings, Monitoring & evaluation of outcomes	4	6,8

References:

- Garrow JS, James WPT and Ralph AC, (1993) Nutrition and Dietetics, Churchill Livingstone
- Mahan L.K, and Stump S.E, (2001), Krause's Food, Nutrition and Diet Therapy, WB Saunders Limited.10th Edition
- Schils N.E, Olson J.A., Shike A, Ross A.C,(2006), Modern Nutrition in Health and Disease, 9th Edition, William and Wilkins.

ELECTIVE

Course	Details				
Code	HS1924306				
Title	NUTRITION IN CRITICAL CARE				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	IV				
Credits	4	Hours /week	5	Total Hours:	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Understand the physiology requirements of the critically ill.	U	2
2	Familiarize with the special nutritional support techniques to meet their nutritional needs of the critically ill.	U	2
3	Understand the metabolism and analyze special nutritional requirements of the critically ill.	An	2,6
4	Evaluate the conditions of the patients understand the requirements to make up their immune systems	An	2,4,11
5	Apply the knowledge in nutrition to formulate the feeding formulations necessary to meet patient nutritional needs	Ap	2,4,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Nutrition in critical care	20	
1.1	Nutritional screening of critically ill	5	2
1.2	Nutritional assessment of critically ill	5	1
1.3	Nutritional support system of critically ill	5	2
1.4	Other life saving measures for the critically ill.	5	1
2.0	Immunity & Diet related ethical issues in critical care	18	
2.1	Role of immune enhancers in critically care	5	4
2.2	Conditionally essential nutrients in critically care	5	4
2.3	Immune suppressants and special diets in critically care	4	4
2.4	Diet related ethical issues in terminally ill.	4	4
3.0	Clinical & Metabolic aspects in critically ill	30	
3.1	Pathophysiological, clinical and metabolic	5	1

	aspects		
3.2	Understanding of the special nutritional requirements,	5	1
3.3	Nutritional goals and monitoring the therapy in critically illness like Stress, trauma ,sepsis, burns	5	1
3.4	CV complications and surgery,ESRD, dialysis, transplant Multiple organ failure	5	3
3.5	GI tract surgery, GER (Gastro oesophageal reflux) and complications	5	3
3.6	Hepatic failure and transplants, Neurosurgery	5	1
4.0	Complications of Nutritional support systems	12	
4.1	Common complications of Nutritional support systems	4	1
4.2	Refeeding syndrome – definition	4	2
4.3	Complications arised during refeeding syndroms	4	3
5.0	Rehabilitation diets-Stages	10	
5.1	Rehabilitation diet- definition,importance	5	4
5.2	Stages of Rehabilitation diet	5	5

References

- Galambos, J.P. (1979) Cirrohosis in the series .MajorProblems in internal medicine,WB.SaundersCompany.Philadelphia
- Kinney .J.M.andBorum.P.R.(Editors)(1989) Perspectives in Critical Nutrition.Urban and Schwarzenberg.
- Kenes, W.M.and Fowler, P.B.S.(1984) Clinical Endocrinology.William Heinemann Medical Books,London.

ELECTIVE

Course	Details				
Code	HS1924307				
Title	NUTRITION IN EMERGENCIES AND DISASTERS				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	2/IV				
Credits	4	Hours /week	5	Total Hours:	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Familiarize the students with various natural and manmade emergencies and disasters having an impact on nutrition and health status.	U	1
2	Understand the special nutritional concerns out of these situations.	U	1
3	Analyze & Understand strategies for nutritional rehabilitation management of the health of emergency affected populations.	An	1,11
4	Apply the knowledge & principles of diet & nutritional adequacy in various emergency condition	Ap	1
5	Formulate & Demonstrate supplementary diet feeds for different disaster emergencies	Ap	1,5,11
6	Assess the various causes & indicators of malnutrition & public health programmes implemented to tackle various problems	E	5
7	Analyse the various methods of anthropometric assessment	An	1,5

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1	Natural/Manmade disasters resulting in emergency situations	14	1
1.1	Famine, drought, flood ,earthquake,cyclone,war ,civil and political emergencies	5	1
1.2	Factors giving rise to emergency situation in these disasters	4	1
1.3	Illustration using case studies from Indian subcontinent.	5	1
2	Nutritional problems in emergencies in vulnerable groups	14	
2.1	Causes of malnutrition in emergency situations.	4	6
2.2	Major deficiency disease during emergencies., Protein	6	2

	Energy Malnutrition, specific deficiencies		
2.3	Public Nutrition approaches to tackle nutritional problems in emergencies.	4	6
3	Communicable disease: Surveillance and treatment	12	
3.1	Communicable Diseases- types, Surveillance and treatment	4	2
3.2	Control of communicable disease in emergencies	4	2
3.3	Role of immunization and sanitation	4	2
4	Assessment and surveillance of Nutritional status in emergency affected population.	20	
4.1	Scope of assessment of malnutrition in emergency affected populations.	4	6
4.2	Indicators of malnutrition,	3	6
4.3	Clinical signs for screening acute malnutrition.	3	6
4.4	Anthropometric assessment of nutritional status .	4	7
4.5	Indicators and cut-offs indicating seriously abnormal nutrition situation: weight for height based indices, MUAC, Social indicators.	3	7
4.6	Organisation of nutritional surveillance and individual screening.	3	6
5	Nutritional Relief and Rehabilitation	30	
5.1	Assessment of food needs in emergency situations, food distribution strategy – Identifying and reaching the vulnerable group.	4	2
5.2	Targeting Food aid ,Mass and Supplementary feeding.	4	2
5.3	Special foods ,Local foods in rehabilitation.	4	4
5.4	Organisation of mass feeding /general food distribution.	3	6
5.5	Feeding Centres	2	6
5.6	Transportation and food storage	2	6
5.7	Sanitation and Hygiene	3	6
5.8	Evaluation of feeding programmes	4	2
5.9	Household food security and nutrition in emergencies	4	3

References:

- Bradley.A, Woodruff and Arabella Duffield (2000), Assessment of Nutritional Status in Emergency affected populations-Adolescents, special supplement UN ACC/SCN sub-committee on nutrition.
- The Management of Nutrition in Major Emergencies .WHO in collaboration with UNHCR, International federation of redcross and redcrescent societies and WFP.
- FAO (1997), FAO's emergency Activities,Rome ,FAO.
- WHO (1997): Applied Health Research, priorities in complex emergencies, Geneva, WHO.
- Goyet, Fish.V, Seaman,J and Geijer.U.(1978):The Management of Nutritional emergencies in Large population,World Health Organisation ,Geneva.
- Steve Collins and Arabella Duffield (2000) Assessment of Nutritional status in Emergency affected populations-Adults, Special supplement, UNACC/SCN.Subcommittee on Nutrition.

ELECTIVE

Course	Details				
Code	HS1924308				
Title	SENSORY EVALUATION				
Degree	M.Sc.				
Branch(s)	DIETETICS AND FOOD SERVICE MANAGEMENT				
Year/Semester	IV				
Credits	4	Hours /week	5	Total Hours:	90

CO No.	<i>Expected Course Outcomes</i> <i>Upon completion of this course, the students will be able to:</i>	Cognitive Level	PSO No.
1	Gain an insight on theoretical background and understanding of sensory evaluation of food.	U	1,3
2	Apply various sensory methods for evaluating different types of food.	Ap	3
3	Analyze and interpret sensory evaluation data	E	9
4	Gain employment in food industries as taste panellists.	Ap	11
5	Conduct Market research studies based on consumer acceptability	C	9,11

PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember;U- Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create.

Module	Course Description	Hrs	CO.No.
1.0	Introduction to sensory analysis and uses of sensory tests	18	
1.1	Sensory evaluation- definition and general introduction	2	1
1.2	Importance of sensory evaluation	4	1
1.3	Neural networks in sensory perception	4	1
1.4	Types of food products for sensory evaluation.	5	1
1.5	General testing conditions.	3	1
2.0	Selection of test subjects and training of panel	20	
2.1	Criteria for selection of taste panel	3	4
2.2	Selecting and recruiting panelists	3	4
2.3	Orientation and screening of trained panels	4	4
2.4	Training process	6	4
2.5	Monitoring performance	4	4
3.0	Types of tests	22	

3.1	Discrimination /difference tests	2	2
3.2	Triangle tests and duo-trio test	2	2
3.3	Tests for multiple sample	3	2
3.4	Difference from control/reference	3	2
3.5	Qualitative difference tests.:Ranking, numerical scoring test ,magnitude estimation.	4	2
3.6	Descriptive tests :Ranking for sensory profile, consensus profiling ,conventional profiling, free choice profiling ,Threshold tests	4	2
3.7	Acceptance test: monadic ,paired and sequential monadic	4	2
4.0	Experimental design	10	
4.1	Planning a Sensory Experiment	4	3
4.2	Designing the questionnaire and score card	3	3
4.3	Designing Sensory Testing Facilities	3	3
5.0	Consumer acceptability using sensory evaluation	20	
5.1	Conducting the test	6	5
5.2	Collecting and analyzing sensory data	6	5
5.3	Statistical applications and interpretations	4	5
5.4	Report Writing	4	5

Related Experience:

1. Establishing sensory panels: Selecting and recruiting panelists, orienting, screening for trained panels, training panelists, monitoring performance. Recognition tests for four basic tastes, dour and aroma .Tests with other senses. Threshold tests.
2. Analytical tests: a. Difference, b.Ranking c.Descriptive d.Scoring and e.Rating.
3. Planning a Sensory Experiment: 1.Designing the questionnaire and score card
2.Identifying descriptions.
4. Designing Sensory Testing Facilities: Permanent and Temporary.
5. Conducting the test
6. Collecting and analyzing sensory data, statistical analysis, interpretations.
7. Report Writing.

References

- Amerine,M.A; Pangborn, R.M;Roessier,E.B.(1965): Principles of Sensory Evaluation. Academic Press, New York.
- Jelinek,G.(1985):Sensory Evaluation of Food Theory and Practice ,Ellis Horwood,Chichester.

- Kapsalis, J.G.(1987):Objective Methods in Food Quality Assessment.CRC Press,Florida.
- Lyon,D.H; Francombe,M.A; Hasdell, T.A;Lawwson,K.(eds)(1992):Guidelines for Sensory Analysis in Food Product Development and Quality Control .Chapman and Hall,London.
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