M.Sc. (Home Science) Prospectus No. 2015199

Semester-I & III - Winter-2014

Semester-II & IV - Summer-2015

संत गाडगे बाबा अमरावती विद्यापीठ

SANT GADGE BABA AMRAVATI UNIVERSITY

गृहविज्ञान विद्याशाखा

(FACULTY OF HOME SCIENCE)

PROSPECTUS

OF

M.SC. (Home Science) (Food Science and Nutrition)

EXAMINATIONS

SEMESTER-I & III, WINTER-2014

SEMESTER-II & IV, SUMMER-2015

2014

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Dineshkumar Joshi
Registrar,
Sant Gadge Baba
Amravati University
Amravati - 444 602

I N D E X

M.Sc. (Home Science) (Food Science and Nutrition)

(Semester-I to IV)

(Prospectus No.2015199)

SANT GADGE BABA AMRAVATI UNIVERSITY
SPECIAL NOTE FOR INFORMATION OF THE STUDENTS

(1) Notwithstanding anything to the contrary, it is notified for general information and guidance of all concerned that a person, who has passed the qualifying examination and is eligible for admission only to the corresponding next higher examination as an ex-student or an external candidate, shall be examined in accordance with the syllabus of such next higher examination in force at the time of such examination in such subjects, papers or combination of papers in which students from University Departments or Colleges are to be examined by the University.

(2) Be it known to all the students desirous to take examination/s for which this prospectus has been prescribed should, if found necessary for any other information regarding examinations etc. refer the University Ordinance Booklet the various conditions/provisions pertaining to examinations as prescribed in the following Ordinances-

Ordinance No. 1	:	Enrolment of Students.
Ordinance No.2	:	Admission of Students
Ordinance No. 4	:	National Cadet Corps
Ordinance No. 6	:	Examination in General (relevant extracts)
Ordinance No. 18/2001	:	An Ordinance to provide grace marks for passing in a Head of passing and Inprovement of Division (Higher Class) and getting Distinction in the subject and condonation of defficiency of marks in a subject in all the faculties prescribed by the Statute NO.18, Ordinance 2001.
Ordinance No.9	:	Conduct of Examinations (Relevant extracts)
Ordinance No.10	:	Providing for Exemptions and Compartments
Ordinance No. 19	:	Admission of Candidates to Degrees

Ordinance No.109	:	Recording of a change of name of a University Student in the records of the University
Ordinance No. 6/2008	:	For improvement of Division/Grade.
Ordinance No.19/2001	:	An Ordinance for Central Assessment Programme, Scheme of Evaluation and Moderation of answerbooks and preparation of results of the examinations, conducted by the University, Ordinance 2001.

Dineshkumar Joshi
Registrar
Sant Gadge Baba Amravati University

SANT GADGE BABA AMRAVATI UNIVERSITY

***DIRECTION**

No.: 46/ 2010 Date : 05/07/ 2010

Subject : Examinations Leading to the Degree of (गृहविज्ञान पारंगत) Master of Science (Home Science) (Two Year Course – Semester Pattern), Direction 2010.

Whereas, the Board of Studies in Home Science have prepared and recommended the Schemes of Teaching and Examinations along with Draft Ordinance for M.Sc. (Home Science) for the subjects (1) Communication and Extension, (2) Food Science and Nutrition, (3) Human Development, (4) Resource Management, & (5) Textile and Clothing, Semester-I to IV as per Semester Pattern and Credit Based Performance and Assessment System.

AND

Whereas, the faculty of Home Science in its meeting held 2.12.2009 have recommended the schemes along with Draft Ordinance with corrections to the Academic Council.

AND

Whereas, Academic Council in its meeting held on 20.02.2010 while considering item No. 16 8) A) R-2 on the agenda, have principally accepted the above recommendations of faculty of Home Science and constituted the Committee for some terms of references.

AND

Whereas, the Committee of Academic Council in its meeting held on 18.5.2010 vide item No.1 have suggested amendments in the above recommendations (Schemes of examinations and Draft Ordinances) and directed the Dean/expert member of Committee to submit the modified recommendations for placing it before the Academic Council meeting according to the terms of references.

AND

Whereas, the aforesaid recommendations were placed before the Academic Council in its meeting held on 28.5.2010 vide item No.46 and the Council resolved to accept the refer the Schemes/Draft Ordinance to the Ordinance Committee for placing it directly before the Management Council.

AND

Whereas, the Honôble Vice-Chancellor has accepted the corrections in the Schemes of Examinations and proposed draft Ordinance

of M.Sc. (Home Science) in all specializations on behalf of Faculty of Home Science and Academic Council as recommended by Dean, faculty of Home Science.

AND

Whereas, the making of Ordinance/Regulation for M.Sc. (Home Science) (Semester Pattern) for the subjects (1) Communication and Extension, (2) Food Science and Nutrition, (3) Human Development, (4) Resource Management, & (5) Textile and Clothing, is a time consuming process.

AND

Whereas, it is necessary to provide the Schemes of examinations along with other details with eligibility criteria for the purpose of admissions.

Now, therefore, I, Dr. Kamal Singh , Vice Chancellor of Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act., 1994, do hereby direct as under:

1. This Direction may be called ñExaminations Leading to the Degree of (गृहविज्ञान पारंगत) Master of Science (Home Science) (Two Year Course ï Semester Pattern), Direction 2010ò.
2. This direction shall come into force from the date of its issuance.
3. There shall be four semester examinations leading to the Degree of (गृहविज्ञान पारंगत) Master of Science (Home Science) , namely :-
   i) the (गृहविज्ञान पारंगत भाग-१) M.Sc. (Home Science) Part-I consists of Semester-I & II examinations, and;
   ii) the (गृहविज्ञान पारंगत भाग-२) M.Sc. (Home Science) Part-II consists of Semester-III & IV examinations.
4. The students who have passed bachelors degree in Home Science/ Science/ Technology/ Medical/ Agriculture/Management are eligible for admission in M.Sc. Home Science in Resource Management/Food Science and Nutrition/Human Development/ Textiles and Clothing/Communication and Extension subject to the condition that the student should have respective subject at which she/he is applying.
5. (i) The duration of the course shall be of two academic years.
   (ii) The examination of first and third semester shall be held in winter and that of second and fourth semester shall be held in summer every year.
   (iii) Practical of odd semesters (Sem-I & III) shall be conducted by the College/department under the supervision of Principal/ Head. Practicals of even semesters (Sem-II & IV) will be conducted by appointing external and internal examiners.

6. The examinations specified in the preceding paragraph shall be held at such places and on such dates as may be appointed by the Board of Examination.

7) **I) Examinations of Odd Semesters :**

(1) Odd semesters theory and practical examinations of Sem-I & III shall be conducted by College/Department under the supervision of Principal / Head of the Department in winter.

(2) The concerned subject teacher shall be the paper setter and valuer in case of theory examinations. Examiner of practical examinations will also be the concerned subject teacher of the College / Department.

(3) The concerned subject teacher of the College / Department shall do the work of paper setting as per the instructions for the paper setter. Valuation will also be done by the concerned teacher.

(4) Question papers, foil, counter foil of marksheet (in the prescribed format), attendance sheet of examinee and time table of examination shall be prepared by the concerned teacher and send it to the University duly signed by College Principal / Department Head.

(5) College / Department shall issue marksheets of odd semester examinations to students duly signed by respective Principal of College / Head of the Department.

II) Examinations of Even Semesters :

(1) The theory and practical examinations of even semester Sem-II & IV shall be conducted by the University.

8) Subject to his/ her compliance with provisions of this Direction and of other Ordinances (Pertaining to examinations in General) in force from time to time, the applicant for admission, at the end of the course of a particular term(s) shall be eligible to appear if:

i) he /she satisfied the conditions in the Table-I.

ii) he / she has prosecuted a regular course of study in the University / College affiliated to the University

iii) he /she has in the opinion of the Head of the Department / Principal shown satisfactory progress in his / her studies.

TABLE-I

Name of Exam	The student should have passed / cleared the examination of	The student should have completed the session/term satisfactorily
M.Sc.Semester-I (Home Science)	B.Sc.(Home Science) or equivalent	ð ð -
M.Sc.Semester-II (Home Science)	ð ð	M.Sc. Semester-I
M.Sc.Semester-III (Home Science)	2/3 heads of Semester-I & II combined together	ð ð
M.Sc.Semester-IV (Home Science)	ð ð	M.Sc. Semester-III

Note:-
- For calculating the heads, the theory and practical shall be considered as a separate head.
- Student shall have to complete the research work and submit the dissertation to University for award of Degree.

9. Students will be admitted to General Interest Course (GIC) for their choice at Semester-II, III & IV after counseling and will be registered in the preceeding semester.

10. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5,8,10,27 and 32 of the said Ordinance shall apply to every Collegiate candidate.

11. The fee for the Examination shall be as prescribed by the competent authority, time to time.

12. (i) The scope of the subjects shall be as indicated in the Syllabus.
(ii) The medium of Instruction shall be English.
(iii) Question Paper shall be in English.
(iv) Examinees shall have option to write answers in English or Marathi.

13. The Schemes of teaching and examinations for M.Sc. (Home Science) course, computation of SGPA & CGPA and illustrative example for results in Grade Point System shall be as provided under Appendix/ Appendices appended with the related regulation.

14. A Masters programme is of a two academic year course. If a students fails to pursue two year course, she/he will be given Certificate of P.G. Diploma in Home Science of respective discipline after successful completion of first and second semester.

15. The system of evaluation will be as follows:

Theory, practical, internal, dissertation, viva, seminar will be evaluated in terms of marks. Then marks will be converted into a grade and later a grade point average. Results will be declared for each semester and the final examination will give total grade and grade point average.

16. A total of 80 credits have to be taken by the students to complete the programme.

17. The computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of an examinee of post graduate course shall be as given below :-

The marks will be given in all examinations which will include internal assessment marks and the total marks for each Theory / Practical shall be converted into Grades as shown in Table.

SGPA shall be calculated based on Grade Points corresponding to Grade and the Credits allotted to respective Theory / Practical shown in the scheme for respective semester.

SGPA shall be computed for I, II, III, & IV Semester and CGPA shall be computed only in IV Semester based on SGPAs of I, II, III, & IV Semester. :-

$$\text{SGPA} = \frac{C1 \times G1 + C2 \times G2 + \ldots\ldots + Cn \times Gn}{C1 + C2 + \ldots\ldots\ldots + Cn}$$

Where C_1 = Credit of individual Theory / Practial
G_1 = Corresponding Grade Point obtained in the respective Theory / Practical

$$\text{CGPA} = \frac{(\text{SGPA})_I \times (\text{Cr})_I + (\text{SGPA})_{II} \times (\text{Cr})_{II} + (\text{SGPA})_{III} \times (\text{Cr})_{III} + (\text{SGPA})_{IV} \times (\text{Cr})_{IV}}{(\text{Cr})_I + (\text{Cr})_{II} + (\text{Cr})_{III} + (\text{Cr})_{IV}}$$

Where $(\text{SGPA})_{I,II,III,IV}$ = SGPA of I, II, III, IV Semester
$(\text{Cr})_{I,II,III,IV}$ = Total Credits for I, II, III, IV Semester

CGPA equal to 6.00 and above shall be considered as equivalent to First Class which shall be mentioned on Grade Card of IV Semester as a foot note.

Table of Grade, Percentage of Marks and Grade Points for P.G. Home Science Examinations

THEORY

Grade	Percentage of Marks	Grade Points
AA	80 ≤ Marks ≤ 100	10
AB	70 ≤ Marks < 80	9
BB	60 ≤ Marks < 70	8
BC	55 ≤ Marks < 60	7
CC	50 ≤ Marks < 55	6
CD	45 ≤ Marks < 50	5
DD	40 ≤ Marks < 45	4
FF	00 ≤ Marks < 40	0
ZZ	Absent in Examination	ð

PRACTICAL

Grade	Percentage of Marks	Grade Points
AA	85 ≤ Marks ≤ 100	10
AB	80 ≤ Marks < 85	9
BB	75 ≤ Marks < 80	8
BC	70 ≤ Marks < 75	7
CC	65 ≤ Marks < 70	6
CD	60 ≤ Marks < 65	5
DD	50 ≤ Marks < 60	4
FF	00 ≤ Marks < 50	0
ZZ	Absent in Examination	ð

Table of Final Grade Points for SGPA and CGPA

SGPA/CGPA	Final Grade	Remarks (Not to be mentioned on Transcript)
8.00-10	AA	Outstanding
7.00ï 7.99	AB	Excellent
6.00-6.99	BB	Very Good
5.50-5.99	BC	Good
5.00-5.49	CC	Fair
4.50-4.99	CD	Average
4.00-4.49	DD	Below Average
00-3.99	FF	Fail
Absent in Examination	ZZ	ð

Table of Equivalence of Class / Division to CGPA

CGPA	Class/Division
7.50 or Higher	First Class with distinction
6.00 to 7.49	First Class
5.50 to 5.99	Higher Second Class
5.00 to 5.49	Second Class

18. As soon as possible after the examinations the Board of Examination shall publish a list of successful examinees. The results of final M.Sc. examinations shall be classified as said before and merit list shall be notified as per Ordinance No.6.

19. No person shall be admitted to an examination under this Direction, if he/she has already passed the same examination, or an equivalent examination of any other Statutory University.

20. The provision of ordinance relating to the condonation of deficiency of marks for passing examination and ordinance relating to exemption and compartment shall apply to the examination under this Direction.

21. Examinees successful at the Semester-I, II & III Examination shall be entitled to receive a Certificate signed by the Registrar, and those successful at the Semester-IV Examination shall on payment of the prescribed fees, receive a Degree in the prescribed form signed by the Vice-Chancellor.

Amravati
Dated : 02/07/2010

Sd/-
(Dr.Kamal Singh)
Vice-Chancellor

ð ð

*Amended vide Directions Nos.65 of 2010 and 13 of 2011 & 35/2011,

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SCHEME OF B. Sc. HOME SCIENCE & M. Sc. HOME SCIENCE

- Scheme of **Bachelor's Programme (Composite)** and **Master's Programme** (in five specializations i.e. Family Resource Management, Food Science and Nutrition, Human Development, Textile and Clothing, Communication and Extension) is designed by considering regional, national and global needs and to achieve the academic, professional, social and personal development of students.

- The **Bachelor's programme is of three year (six semesters)** / **Master's programme is of two year (four semesters)** duration. At every stage of completion of the course students will be given certificate, diploma and degree as shown under

S. N.	Semester	Certificate/ Diploma/ Degree
1	First	Certificate in Home Science
2	First & Second	Diploma in Home Science
3	Third & Fourth	Advanced Diploma in Home Science
4	Fifth & Sixth	Bachelorôs Degree in Home Science
5	First & Second of Masters Programme	Post Graduate Diploma in Home Science*
6	Third & Fourth of Masters Programme	Masterôs Degree in Home Science*

*of respective specialization said in Para-1.

- The examinations of first, third and fifth semester shall be held in winter and second, fourth and sixth semesters shall be held in summer. Grade system will be used to evaluate performance of the examinee.

- The scheme is based on credit grade teaching evaluation system, comprise core Home Science and applied Science, elective / optional, intra and interdisciplinary, participatory (practical & Projects) and research courses.

- A total of 132 and 80 credits have to be taken by the students to complete bachelorôs and masterôs programme respectively. Bachelorôs programme is composite inspite of which elective papers are included. Master Programme of each discipline is choice based and elective papers are kept at III Semesters to build career in interested area.

- Teachers appointed in Home Science faculty are eligible to teach add-on course and communication skills of bachelor programme other than the subject teacher.
- About 20-30% marks are assigned for internal assessment in theory as well as practicals in which, performance in class test, session end examination, projects, seminars and assignments, attendance etc. will be assessed.
- In order to develop research aptitude, research based subjects are included at masterôs level. Dissertation is compulsory and research work of dissertation will begin from third semester and end in fourth semester. There shall be an open viva-voce on it.
- Scheme is focused on participatory learning, therefore practicals, seminars, home & community visits, extension activities, organization of intervention programmes, on job training / internship, projects participation in national and international days etc. are included.
- Choice based course (General Interest Course) shall be as per the Science faculty of this University, notified from time to time.
- Schemes of Bachelors and Masters Programme in Home Science are as enclosed herewith.
- Relative Weightage of internal assessment, (Theory and Practical), practical, dissertation & Seminar, rating scale of theory and practical subjects, final Grade Points for SGPA and CGPA are given in respective tables.

SCHEME OF TEACHING AND EXAMINATION
M.Sc. HOME SCIENCE (COMMUNICATION AND EXTENSION)

Sr. No.	Subject Code	Title of Paper	Teaching Scheme						Examination Scheme								Total
			Hours of instructions per week			Credits			Theory				Practical				
			Theory	Practical / Tutorial	Total	Theory	Practical	Total	Duration in Hrs.	Max. Marks		Minimum passing grade point	Duration in Hrs.	Max. Marks		Minimum passing grade point	
										Theory	Internal			Practical	Internal		
	Semester-I																
7.1	115CO*45*	Community Organisation and Development Theories	3	2	5	3	1	4	2	50	25	4	--	--	25	4	100
7.2	115SD*46*	Sustainable Development Initiatives & Approaches	3	2	5	3	1	4	2	45	30	4	--	--	25	4	100
7.3	113HL*47*	Human Learning Psychology	2	2	4	2	1	3	2	35	15	4	--	--	25	4	75
7.4	115PD*48*	Programme Design and Evaluation	4	4	8	4	2	6	2,30	60	40	4	3	35	15	4	150
7.5	111CA*49*	Computer Application in Communication and Extension Statistics	--	4	4	--	2	2	--	--	--	4	3	35	15	4	50
		Total	**12**	**14**	**26**	**12**	**7**	**19**		**300**				**175**			**475**
	Semester-II																
8.1	125EE*50*	Extension Education System	3	2	5	3	1	4	2	45	30	4	--	--	25	4	100
8.2	125TM*51*	Training Methodology	3	4	7	3	2	5	2	45	30	4	3	35	15	4	125
8.3	125*CA52*	Communication Approaches in Extension	3	4	7	3	2	5	2	45	30	4	--	--	50	4	125
8.4	125ED*53*	Entreprencurship Development in Communication **OR 2GIC**	3	2	5	3	1	4	2	45	30	4	3	20	5	4	100
8.5	125RM*54*	Research Methods in Communication and Extension	3	2	5	3	1	4	2	45	30	4	3	--	25	4	100
		Total	**15**	**14**	**29**	**15**	**7**	**22**		**375**				**175**			**550**
	Semester-III																
9.1	235DP*55*	Development Project Management	--	4	4	--	2	**2**	--	--	--	4	--	--	**50**	4	**50**
9.2	235MP*56*	IEC Material Production **OR 3GIC**	--	4	4	--	2	**2**	--	--	--	4	--	--	**50**	4	**50**
9.3	235ELI*57*	Elective-I	3	4	7	3	2	**5**	2	**45**	**30**	4	3	**35**	**15**	4	**125**
9.4	235ELII*58*	Elective-II	3	4	7	3	2	**5**	2	**45**	**30**	4	3	**35**	**15**	4	**125**
9.5	235ELIII*59*	Elective-III	3	4	7	3	2	**5**	2	**45**	**30**	4	3	**35**	**15**	4	**125**
		Total	**9**	**20**	**29**	**9**	**10**	**19**		**225**				**250**			**475**
	Elective-I : 235ELI 1 Management of Non-Government Organization 235ELI.2 Writing for Media 235ELI.3 Curriculum Planning and Development		**Elective-II :** 235ELII.1 Management of Human Service Organization 235ELII.2 Media Planning and Social Advertising 235ELII.3 Curriculum Text Production						**Elective-III** 235ELIII.1 Community Health & Hygiene Education 235ELIII.2 Media Research and Evaluation 235ELIII.3 Evaluation of Curriculum and Text								
	Semester-IV																
10.1	245WE*60*	Writing, Editing and Reporting for Mass Communication **OR 4GIC**	3	4	7	3	2	5	2	45	30	4	--	--	50	4	125
10.2	245CT*61*	Current Trends and Issues in Extension and Communication	3	4	7	3	2	5	2	45	30	4	--	--	50	4	125
10.3	245SW*62*	Scientific Writing	3	4	7	3	2	5	2	45	30	4	--	--	50	4	125
10.4	245*DR63*	Dissertation Report	--	--	--	--		3	--	--	--	4	--	75	--	4	75
		Viva	--	--	--	--		1	--	--	--		--	25	--		25
		Seminar	--	--	--	--		1	--	--	--		--	--	25		25
		Total	**9**	**12**	**21**	**9**	**6**	**20(15+3*+2**)**		**225**				**275**		4	**500**

Note : Students will have to Select any one paper from each of the Elective-I,II & III mentioned in Semester-III. *: Dissertation work, **: Seminar, Viva

SCHEME OF TEACHING AND EXAMINATION
M.Sc. (HOME SCIENCE) (FOOD SCIENCE AND NUTRITION)

Sr. No.	Subject Code	Title of Paper	Teaching Scheme						Examination Scheme								Total
			Hours of instructions per week			Credits			Theory				Practical				
			Theory	Practical/ Tutorial	Total	Theory	Practical	Total	Duration in Hrs.	Max. Marks		Minimum passing grade point	Duration in Hrs.	Max. Marks		Minimum passing grade point	
										Theory	Internal			Practical	Internal		
	Semester-I																
7.1	112FS*45*	Food Science	4	4	8	4	2	6	2.30	60	40	4	3	35	15	4	150
7.2	113HP*46*	Human Physiology	4	--	4	4	--	4	2.30	60	40	4	--	--	--	--	100
7.3	112FH*47*	Food and Human Behaviour	2	2	4	2	1	3	2.0	35	15	4	--	--	25	4	75
7.4	112NP*48*	Nutrition Programme Design and Evaluation	2	4	6	2	2	4	2.0	35	15	4	--	--	50	4	100
7.5	111CA*49*	Computer Application in Food Statistics	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
		Total	**12**	**14**	**26**	**12**	**7**	**19**		**300**				**175**			**475**
	Semester-II																
8.1	122FM*50*	Food Microbiology	3	2	5	3	1	4	2.0	45	30	4	3	20	5	4	100
8.2	122NB*51*	Nutritional Biochemistry	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
8.3	122CA*52*	Communication Approaches in Nutrition	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
8.4	122ED*53*	Entrepreneurship Development in Food **OR 2GIC**	3	2	5	3	1	4	2.0	45	30	4	3	20	5	4	100
8.5	122RM*54*	Research Methods in Nutrition	3	2	5	3	1	4	2.0	45	30	4	--	--	25	4	100
		Total	**15**	**14**	**29**	**15**	**7**	**22**		**375**				**175**			**550**
	Semester-III																
9.1	232FP*55*	Food Product Development	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
9.2	232SE*56*	Sensory Evaluation **OR 3GIC**	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
9.3	232ELI*57*	Elective-I	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
9.4	232ELII*58*	Elective-II	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
9.5	232ELIII*59*	Elective-III	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
		Total	**9**	**20**	**29**	**9**	**10**	**19**		**225**				**250**			**475**
	Elective-I : 232ELI.1 Therapeutic Nutrition 232ELI.2 Assessment of Nutritional Status 232ELI.3 Kitchen Planning, Equipment & Plants		**Elective-II :** 232ELII.1 Biochemical Correlation with Nutritional Therapy 232ELII.2 Nutritional Epidemiology 232ELII.3 Food Safety and Quality Control			**Elective-III** 232ELIII.1 Dietetic Techniques & Patient Counseling 232ELIII.2 Community Nutrition 232ELIII.3 Food Service Management										
	Semester-IV																
10.1	242FI*60*	Food informatics **OR 4GIC**	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.2	242CI*61*	Current Issues in Food & Nutrition	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.3	242SW*62*	Scientific Writing	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.4	242*DR63*	Dissertation Report	--	--	--	--		3	--	--	--	--	--	75	--	4	75
		Viva	--	--	--	--		1	--	--	--	--	--	25	--		25
		Seminar	---	--	--	--		1	--	--	--	--	--	-	25		25
		Total	**9**	**12**	**21**	**9**	**6**	**20(15+3*+2**)**		**225**		**--**		**275**			**500**

Note : Students will have to Select any one paper from each of the Elective-I,II & III mentioned in Semester-III. *: Dissertation work, **: Seminar, Viva

SCHEME OF TEACHING AND EXAMINATION
M.Sc. (HOME SCIENCE) (HUMAN DEVELOPMENT)

Sr. No.	Subject Code	Title of Paper	Teaching Scheme						Examination Scheme								Total
			Hours of instructions per week			Credits			Theory				Practical				
			Theory	Practical/ Tutorial	Total	Theory	Practical	Total	Duration in Hrs.	Max. Marks Theory	Max. Marks Internal	Minimum passing grade points	Duration in Hrs.	Max. Marks Practical.	Max. Marks Internal	Minimum passing grade points	
	Semester-I																
7.1	113TH*45*	Theories of Human Development	4	--	4	4	--	4	2,3	60	40	4	3	--	--	--	100
7.2	113*PH46*	Problems of Human Nutrition	4	4	8	4	2	6	2.3	60	40	4	3	35	15	4	150
7.3	113PH*47*	Psychology of Human Behaviour	2	2	4	2	1	3	2.0	35	15	4	3	20	5	4	75
7.4	114HD*48*	Human Development Programme Design and Evaluation	2	4	6	2	2	4	2.0	35	15	4	--	--	50	4	100
7.5	111CA*49*	Computer Application in Human Statistics	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
		Total	**12**	**14**	**26**		**7**	**19**		**300**				**175**			**475**
	Semester-II																
8.1	123PT*50*	Psychological Testing	3	4	7	3	2	5	2.0	45	30	4	3	20	5	4	100
8.2	123CA*51*	Communication Approaches in Human Development	3	2	5	3	1	4	2.0	45	30	4	--	50	--	4	125
8.3	123*EH52*	Entrepreneurship in Human Development **OR 2GIC**	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
8.4	123HA*53*	Human Anatomy and Physiology	3	2	5	3	1	4	2.0	45	30	4	3	20	5	4	100
8.5	123RM*54*	Research Methods in Human Development	3	2	5	3	1	4	2.0	45	30	4	--	--	25	4	100
		Total	**15**	**14**	**29**	**15**	**7**	**22**		**375**				**175**			**550**
	Semester III																
9.1	233WP*55*	Working with Parents and Community	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
9.2	233*CH56*	Child and Human Rights **OR 3GIC**	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
9.3	233ELI*57*	Elective-I	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
9.4	233ELII*58*	Elective-II	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
9.5	233ELIII*59*	Elective-III	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
		Total	**9**	**20**	**29**	**9**	**10**	**19**		**225**				**250**			**475**
	Elective-I : 233ELI.1 Development of Self 233ELI.2 Advanced Child Development 233ELI.3 Family and Child Welfare		**Elective-II :** 233ELII.1 Projective Techniques of Psychological Testing 233ELII.2 Behavioural Problems, Child Guidance and Counseling 233ELII.3 Family and Marriage Counseling						**Elective-III** 233ELIII.1 Mental Health in Developmental Perspectives 233ELIII.2 Child with special Needs 233ELIII.3 Family Dynamics								
	Semester-IV																
10.1	243PE*60*	Personal Empowerment **OR 4GIC**	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.2	243CT*61*	Current Trends and Issues in Human Development	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.3	243SW*62*	Scientific Writing	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.4	243 ***DR 63***	Dissertation ***Report***	--	--	--	--	--	3	--	--	--	--	--	75	--	4	75
		Viva	--	--	--	--	--	1	--	--	--	--	--	25	--	4	25
		Seminar	--	--	--	--	--	1	--	--	--	--	--	--	25	4	25
		Total	**9**	**12**	**21**	**9**	**6**	**20(15+3*+2**)**		**225**				**275**			**500**

Note: Students will have to Select any one paper from each of the Elective-I,II & III mentioned in Semester-III. *: Dissertation work, **: Seminar, Viva

SCHEME OF TEACHING AND EXAMINATION
M.Sc. (HOME SCIENCE) (TEXTILE AND CLOTHING)

Sr. No.	Subject Code	Title of Paper	Teaching Scheme						Examination Scheme								Total
			Hours of instructions per week			Credits			Theory				Practical				
			Theory	Practical/ Tutorial	Total	Theory	Practical	Total	Duration in Hrs.	Max. Marks		Minimum passing grade points	Duration in Hrs.	Max. Marks		Minimum passing grade points	
										Theory	Internal			Practical.	Internal		
	Semester-I																
7.1	114AT*45*	Advanced Textile Design	4	3	7	4	1.5	5.5	2.30	60	40	4	3	20	5	4	125
7.2	114TC*46*	Textile Chemistry	3	3	6	3	1.5	4.5	2.0	45	30	4	3	35	15	4	125
7.3	115PD*47*	Programme Design and Evaluation in Textile Clothing	2	2	4	2	1.0	3.0	2.0	35	15	4	--	--	25	4	75
7.4	114ED*48*	Entrepreneurship Development in Textile and Clothing	3	2	5	3	1.0	4.0	2.0	45	30	4	3	20	5	4	100
7.5	111CA*49*	Computer Application in Textile & Clothing Statistics	--	4	4	--	2.0	2.0	--	--	--	--	3	35	15	4	50
		Total	**12**	**14**	**26**	**12**	**7.0**	**19.0**		**300**				**175**			**475**
	Semester-II																
8.1	124FA*50*	Fashion and Apparel Design	3	4	7	3	2.0	5.0	2.0	45	30	4	3	35	15	4	125
8.2	124TT*51*	Textile Testing & Quality Control	3	4	7	3	2.0	5.0	2.0	45	30	4	3	35	15	4	125
8.3	123TC*52*	Textile Clothing and Human Psychology	3	2	5	3	1.0	4.0	2.0	45	30	4	3	20	5	4	100
8.4	125CA*53*	Communication Approaches in Textiles and Clothing **OR 2GIC**	3	2	5	3	1.0	4.0	2.0	45	30	4	--	--	25	4	100
8.5	124RM*54*	Research Methods in Textile & clothing	3	2	5	3	1.0	4.0	2.0	45	30	4	3	20	5	4	100
		Total	**15**	**14**	**29**	**15**	**7.0**	**22.0**		**375**				**175**			**550**
	Semester-III																
9.1	234PM*55*	Pattern Making	--	6	6	--	3.0	3.0	--	--	--	--	3	50	25	4	75
9.2	234FI*56*	Fashion Illustration **OR 3GIC**	--	6	6	--	3.0	3.0	--	--	--	--	3	50	25	4	75
9.3	234ELI*57*	Elective-I	3	2	5	3	1.0	4.0	2.0	45	30	4	3	20	5	4	100
9.4	234ELII*58*	Elective-II	3	4	7	3	2.0	5.0	2.0	45	30	4	4	35	15	4	125
9.5	234ELIII*59*	Elective-III	3	2	5	3	1.0	4.0	2.0	45	30	4	3	20	5	4	100
		Total	**9**	**20**	**29**	**9**	**10.0**	**19.0**		**225**			**3**	**250**			**475**
	Elective-I : 234ELI.1 Historic Costume 234ELI.2 Dying and Printing 234ELI.3 Fashion Making and Merchandising		**Elective-II :** 234ELII.1 Eco Textiles and Environment 234ELII.2 Advanced Apparel Construction 234ELII.3 Historic Textiles			**Elective-III** 234ELIII.1 Knitting Technology 234ELIII.2 Fashion Communication 234ELIII.3 Textile Industry in India											
	Semester IV																
10.1	244CT*60*	Current Trends in Textile Clothing	3	4	5	3	2.0	**5.0**	2.0	45	30	4	--	--	**50**	4	**125**
10.2	244*TF61*	CAD in Textile and Fashion **OR 4GIC**	2	6	8	2	3.0	**5.0**	2.0	35	15	4	**3**	**50**	**25**	4	**125**
10.3	244SW*62*	Scientific Writing	3	4	7	3	2.0	**5.0**	2.0	45	30	4	--	--	**50**	4	**125**
10.4	244 ***DR 63***	Dissertation ***Report***	--	--	--	--	--	**3.0**	--	--	--	--	--	**75**	**--**	4	**75**
		Viva	--	--	--	--	--	**1.0**	--	--	--	--	--	**25**	**--**	4	**25**
		Seminar	--	--	--	--	--	**1.0**	--	--	--	--	--	--	**25**	4	**25**
		Total	**8**	**12**	**20**	**8**	**7.0**	**20(15+3*+2**)**		**225**				**275**			**500**

Note : Students will have to Select any one paper from each of the Elective-I,II & III mentioned in Semester-III. . *: Dissertation work, **: Seminar, Viva

SCHEME OF TEACHING AND EXAMINATION
M.Sc. (HOME SCIENCE) (RESOURCE MANAGEMENT)

Sr. No.	Subject Code	Title of Paper	Teaching Scheme						Examination Scheme								Total
			Hours of instructions per week			Credits			Theory				Practical				
			Theory	Practical/ Tutorial	Total	Theory	Practical	Total	Duration in Hrs.	Max. Marks Theory	Max. Marks Internal	Minimum passing grade points	Duration in Hrs.	Max. Marks Practical.	Max. Marks Internal	Minimum passing grade points	
	Semester-I																
7.1	111HR*45*	Human Resource Management	4	-	4	4	--	4	2.3	60	40	4	--	--	--	4	100
7.2	111PM*46*	Principles of Management	4	4	8	4	2	6	2.3	60	40	4	3	35	15	--	150
7.3	113HB*47*	Human Behaviour in Resource Management	2	2	4	2	1	3	2.0	35	15	4	--	-	25	4	75
7.4	115*RD48*	Resource Development Programme Design and Evaluation	2	4	6	2	2	4	2.0	35	15	4	--	-	50	4	100
7.5	111CA*49*	Computer Application in Resources Statistics	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
		Total	**12**	**14**	**26**	**12**	**7**	**19**		**300**				**175**			**475**
	Semester II																
8.1	121RF*50*	Residential Furnishing and House Keeping	3	2	5	3	1	4	2.0	45	30	4	3	20	5	4	100
8.2	121HT*51*	Household Technology	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
8.3	121*CA52*	Communication Approaches in Resource Management	3	4	7	3	2	5	2.0	45	30	4	--	50	--	4	125
8.4	121ED*53*	Entrepreneurship Development **OR 2GIC**	3	2	5	3	1	4	2.0	45	30	4	3	20	5	4	100
8.5	121RM*54*	Research Methods in Resource Management	3	2	5	3	1	4	2.0	45	30	4		-	25	4	100
		Total	**15**	**14**	**29**	**15**	**7**	**22**		**375**				**175**			**550**
	Semester-III																
9.1	231ER*55*	Ergonomics	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
9.2	231FM*56*	Financial Management **OR 3GIC**	--	4	4	--	2	2	--	--	--	--	3	35	15	4	50
9.3	231EL*I57*	Elective-I	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
9.4	231ELII*58*	Elective-II	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
9.5	231ELIII*59*	Elective-III	3	4	7	3	2	5	2.0	45	30	4	3	35	15	4	125
		Total	**9**	**20**	**29**	**9**	**10**	**19**		**225**				**250**			**475**
	Elective-I : 231ELI.1 Home Event Management; 231ELI.2 Home Furnishing; 231ELI.3 Front Office Operation and Accommodation		**Elective-II :** 231ELII.1 Community Event Management; 231ELII.2 Household Equipment; 231ELII.3 Food Service Management						**Elective-III** 231ELIII.1 Institutional Event Management; 231ELIII.2 House Keeping and Facility Management; 231ELIII.3 Travel Management								
	Semester-IV																
10.1	241RI*60*	Resource Informatics **OR 4GIC**	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.2	241*CI61*	Current Issues and Trends in Resource Management	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.3	241SW*62*	Scientific Writing	3	4	7	3	2	5	2.0	45	30	4	--	--	50	4	125
10.4	241 ***DR 63***	Dissertation ***Report***	--	--	--	--	--	3	--	--	--	--	--	75	--	4	75
		Viva	--	--	--	--	--	1	--	--	--	--	--	25	--	4	25
		Seminar	--	--	--	--	--	1	--	--	--	--	--	--	25	4	25
		Total				**9**	**6**	**20(15+3*+2**)**		**225**				**275**			**500**

Note : Students will have to Select any one paper from each of the Elective-I,II & III mentioned in Semester-III. . *: Dissertation work, **: Seminar, Viva

Annexure-I

Internal Assessment of Theory and Practical Examination for M.Sc. (Home Science)

Table-1 : Internal Assessment of Theory

Sr. No.	Theory subject	Total Marks (%)
1	Class Tests	30
2	Assignments	20
3	Session End Examination	50

Table-2 : Internal Assessment of Practicals

Sr. No.	Theory subject	Total Marks (%)
1	Submission of Reports	50
2	Performance during Practical / Sessional	50

Table-3: Evaluation of Practical

Sr. No.	Theory subject	Total Marks (%)
1	Performance in the conduction of experiments and / or Sessional	50
2	Practical Record /Sessional Reports	30
3	Viva	20

Table-4: Evaluation of Dissertation

Sr. No.	Theory subject	Total Marks (%)
1	Title & Introduction	05
2	Review of Literature	05
3	Methodology	15
4	Results & Discussion	35
5	Summary & Conclusion	05
6	Implications	05
7	Norms of Scientific Writing	10
8	Submission of Final Draft of Report (Spiral Bound)	10
9	Submission of corrected report (Hard Bound) along with Soft Copy (CD)	10

Table-5: Evaluation of Seminar

Sr. No.	Theory subject	Total Marks (%)
1	Synopsis of dissertation	40
2	Result of Dissertation Work	60

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Syllabus Prescribed for M.Sc. (Home Science) (Food Science and Nutrition)
Semester-I & Semester-II
(Implemented from the Academic Session 2010-11)

Semester-I
Subject Code 112FS45
Food Science

Learning objectives : After completion of course students will be enable to-

- provide an understanding of composition of various food stuffs
- familiarize students with changes occurring in various food stuffs as a result of processing and cooking
- enable students to use the theoretical knowledge in various applications and food preparations

Theory

Unit 1 : Water and food dispersions

1.1 Physical properties of water
1.2 Structure of water molecule
1.3 Bound water
1.4 Colloidal systems
1.5 Types of food dispersions ï sol, gel, emulsion and foam

Unit 2 : Polysaccharides and sugars

2.1 Starch
- Flour mixtures ï batters and dough
- Leavening agents ï physical, chemical and biological
- Gluten formation
- Gelatinisation
- Dextrinisation

2.2 Sugar
- Stages of sugar cookery
- Crystalisation

Unit 3 : Fats and oils

3.1 Functional properties of fats
3.2 Role of fats and oils in cooking
3.3 Trans fatty acids
3.4 Fat substitutes
3.5 Fat deterioration and antioxidants

Unit 4 : Proteins

4.1 Milk and milk products- Composition of milk, roperties of milk, effect of heat on milk, milk products and milk substitutes

4.2 Meat, fish and poultry- Composition, cooking methods, effects of cooking.
4.3 Fish and sea foods- Composition, changes during processing
4.4 Pulses and legumes - Composition, processing toxic constituents
4.5 Eggs - Composition, functional properties of eggs, use in cooking, egg processing, egg products
4.6 Protein concentrates, hydro lysates and texturised vegetable proteins

Unit 5 : Fruits and Vegetables

5.1 Enzymes and pigments in fruits and vegetables
5.2 Enzymic browning in fruits and vegetables

Practicals

1) Standardisation of recipes and methods of reporting recipes
2) Experiments on crystallisation of sugar
   - Stages of sugar cookery
   - Crystalline and non crystalline candies
3) Fat and oils ï smoking temperatures, factors affecting absorption of fat
4) Experiments with eggs to study the properties of coagulation, foaming, emulsifying agent and leavening agent
5) Preparation and evaluation of recipes out of milk, meat and poultry
6) Factors affecting colour, texture and flavour of vegetables and fruits

References

1) Potter N. and Hotchkiss J.H. (1996) Food Science. 5th edition, CBS publishers and distributors, New Delhi
2) Charley H. (1982) Food Science. 2nd edition, John Wiley and sons, New York
3) Peckham G. and Freeland Grages G.H. (1979) Foundations of Food Preservations
4) Meyer L.H. (1998) Food Chemistry. CBS publishers and distributors, Shahdara, Delhi 110032
5) Manay M.S., Shadaksharaswamy M. (1997) Food Facts and Principles. 3rd edition, New Age International (P) Ltd. publishers, New Delhi
6) C. Gopalan, B.V. Rameshastri, S.C. Balasubramanian (2004) Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad
7) Fox B. (1985) Food Science A Chemical Approach. Hoddir and Stoughton Educational, Bungay Suffolk.

Semester-I
Subject Code : 113HP46
Human Physiology

Learning objectives :

After completion of course students will be able to understand relationship of physiology and role of nutrition.

Theory

Unit 1 : Introduction to Physiology

1.1 Physiology of growth and development
1.2 Physiology of aging
   - Free radical theory of aging
   - Physiological mechanisms to limit free radical damage
   - Caloric restriction, antioxidants and aging

Unit 2 : Enzymes

2.1 Introduction to enzymes and coenzymes
2.2 Nomenclature and classification of enzymes
2.3 Role of enzymes and coenzymes in metabolism
2.4 Enzymes in clinical diagnosis

Unit 3 : Hormones

3.1 Introduction to hormones
3.2 Classification of hormones
3.3 Role of hormones in nutrition and health

Unit 4 : Nutrogenomics

4.1 Genes and disease
4.2 Genetic variation and dietary response
4.3 Gene nutrient interactions
4.4 Role of nutrients in gene expression

Unit 5 : Maintenance of Body Homeostasis

5.1 Homeostasis ï An introduction
5.2 Body fluids ï essential to maintain body homeostasis
5.3 Methods of measuring body fluids

References

1) Applied Physiology, MFM 001 Course, Indira Gandhi National Open University
2) Vander A.J., Sherman J.H., Luciono D.S. (2000) Human Physiology. 7th edition, New York, McGraw Hill
3) Jain A.K. Textbook of Physiology. Vol. I and II, Avichal publishing co., New Delhi
4) Guyton A.C. and Hall J.B. (1996) Textbook of Medical Physiology. 9th edition, W.B. Sanders Company, Prism Books (Pvt.) Ltd., Banglore.

Semester-I
Subject Code : 112FH47
Food and Human Behaviour

Learning Objectives :- After completion of the course, students will be able to-

- understand indicators of human behaviour.
- know various factors influence dietary practices of individual.
- understand consequences of the behaviour on health.
- know means of modifying food behaviour.
- develop skill of developing scale.

Unit-I : Indicators of Human Behaviour :
- Knowledge.
- Attitude
- Practice.

Meaning, measuring techniques and tools.

Unit-II : Relation of knowledge, attitude and practice about food in changing food behaviour for good nutrition.

Unit-III : Factors affecting food Behaviour :
- Agricultural
- Economic
- Environmental
- Socio-cultural
- Psychological
- Religious.

Ø Role of industrialization, urbanization, work pattern, mass media etc. in changing food behaviour.

Unit-IV : ● Food behaviour and linkages with health.

Unit-V : Communication strategies for modifying food behaviour (knowledge, attitude and practice)

Practical Internal Assessment :-

(1) Study of KAP Tools (Scales)
(2) Developing KAP scales for food behaviour study.
(3) Study of Indigeneous/traditional dietary pattern of community and factors affecting.
(4) Study of facts, fallacies and beliefs ï indentifying positive, neutral and negative implications.

References :-

(1) Sanjur, D. (1982), Social and Cultural Perspectives in Nutrition, Prentice Hall, Inc.
(2) Long, P.J., Shann, B. (1983), Nutrition and Inquiry into the issues, Prentice Hall, Inc.

(3) Blix, G. (1978), Food Cultism and Nutrition Quackery, Almguist and Wiksels, Uppasala.
(4) Gillespie, S. Mc Neil, G. (1992), Food, Health and Survival in Developing Countries, Oxford University Press.
(5) Oskamp, Stuart, (1987), Attitudes and Opinions, Prentice Hall.
(6) Okediji, O.F. (1973) Theoretical and Methodological Critique of surveys of knowledge, Attitude and Practice of Family Planning in Africa. International Review of Modern Sociology, Vol.3(i), March.
(7) Davis, D. and T.Ostrom (1987), Attitude Measurement in concise Encyclopaedia of Psychology (ed) J.Ramond Cossini, John Wiley and Sons, New York.
(8) Goode j., Wand P.K.Hatt (1952), Methods in Social Research, McGraw Hill, New York.

Semester-I
Subject Code : 112NP48
Nutrition Programme Design and Evaluation

Learning Objectives :- After completing this course, students will be able to-
- understand the process of programme design.
- develop ability in planning nutrition programmes.

Unit-1 : Programme Planning and Implementation :

1.1 Planning
- Meaning and importance.
- Pre-requisities for developing plan (short and long term)
- Programme Planning Processes.

1.2 Implementation
- Aspects of execution
- Factors responsible for successful conduct of programme.

Unit-2 : 2.1 Evaluation
- Meaning and purpose of Evaluation.
- Types and tools of Evaluation.

2.2 Follow up
- Need for follow up.
- Methods of follow up

2.3 Documentation
- Need for reporting and recording.
- Aspects to be covered.

Unit-3 : Nutrition Programme Design

3.1 Formulation of objectives and target group.
3.2 Resource Mapping.
3.3 Administrative Structure.

3.4 Implementation process.
3.5 Monitoring and evaluation of designed programme.

Unit-4 : Study the programme design and evaluation aspects of following ongoing nutrition programme-

4.1 ICDS.
4.2 Nutrient Deficiency Control Programme.
4.3 Supplementary Feeding Programmes
4.4 Food Security Programmes.

Unit-5 : Management Informations System -MIS.

Practical :-

- Design nutrition awareness/ skill development counselling / diagnostic / assessment programme.
  Implement, Evaluate and take follow up and document.
- Visit ongoing nutrition programmes.

References :-

1) Albrecsht, H. et. al. (1989). Rural Development Series Agricultural Extension Vol. I & II. Basic concepts and methods, Wiley Eastern Limited, New Delhi.
2) Chaubey, B.K. (1979). A Handbook of Extension Education, Jyoti Prakashan; Allahabad.
3) Dahama, O.P. and Bhatnagar, O.P. (1987). Education and Communication for development. Oxford and IBH Publishing Co., Pvt. Ltd.; New Delhi.
4) Extension Education in Community Development. (1961). Ministry of Food and Agriculture. Government of India, New Delhi.
5) Pankajam, G. (2000). Extension - Third Dimension of Education, Gyan Publishing House ; New Delhi.
6) Ray, G.L. (1999). Extension Communication and Management. Naya Prokashi; Calcutta.
7) Reddy, A. (1999). Extension Education, Sree Lakshmi Press, Bapatla.
8) Sandhu,A.S. (1994) Extension Programme Planning. Oxford & IBH Publishing Company Private Limited, New Delhi.
9) Singh, R. (1987) Textbook of Extension Education. Sahitya Kala Prakashan, Ludhiana.
10) Supe, S.V. (1982). Introduction to Extension Education. Oxford Publishers; New Delhi

Semester-I
Subject Code : 111CA49
Computer Application in Food Statistics

Learning Objectives :- After completing course students will be able to-

- understand use of excel in analysis of data related to food and nutrition.
- develop skill of drafting text, tables, figures, etc.

Practical :

(1) Computer Basics
1.1 Computer Hardware and software.
1.2 Input and out put devices.
1.3 Basic Operations in data handling (copy, paste, prepare file / folder, burn CDs etc.)
(2) MS Word
2.1 Introduction to MS Word.
2.2 Use for drafting letters and reports.
(3) MS Excel
3.1 Introduction to MS Excel.
3.2 Drafting tables.
3.3 Use for statistical analysis in Nutrition.
Descriptive Statistics – Mean, standard deviation.
Correlation – Pearson correlation between two or more variables.
Parametric test – t test, z test, analysis of variance.
Non-parametric text – chi test.
3.4 Graphical Presentation – Graphs and bar diagrams.
(4) Introduction to applicable statistical analysis softwares.

References :-

(1) Literature of MSCIT.
(2) Garrett, Henry E. (1971), Statistics in Psychology and Education, David Hanley and Co.
(3) Edward, Experimental Design in Psychological Research.
(4) Kerlinger, Foundation of Educational Research.

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Semester – II
Subject Code : 122FM50
Food Microbiology

Learning objectives : After completion of course students will be able to

- gain knowledge of role of microorganisms in humans and environment
- understand the importance of microorganisms in food spoilage

- understand the role of microbes in food borne disorders and integrated approach to food safety

Theory

Unit 1 : Food Microbes :

1.1 Microorganisms in foods
1.2 Factor affecting multiplication and survival of microorganisms
1.3 Control of microbial growth in foods

Unit 2 : Food Spoilage

2.1 Causes of food spoilage
2.2 Role of microbes in food spoilage
2.3 Factors affecting food spoilage
2.4 Changes in foods caused by microbes

Unit 3 : Modes of disease transmission

3.1 Routes of disease transmission
3.2 Source of contamination

Unit 4 : Food borne illnesses

4.1 Types of food borne illnesses
4.2 Control of food borne illnesses

Unit 5 : Food Safety

5.1 Concept and importance of safe foods
5.2 Importance of sanitation and hygiene in foods
5.3 Integrated approach to food safety

- Good hygiene practice (GHP)
- Good manufacturing practice (GMP)
- Hazard analysis critical control point (HACCP)
- Microbial risk assessment
- Quality management ISO series
- Total quality management

Practicals

1) Preparation of common laboratory media and special media for cultivation of bacteria, yeast and moulds.
2) Preparation of bacterial smears, simple staining, differential staining, spore staining, staining of moulds and yeast.
3) Isolation of microorganisms ï different methods and maintenance of cultures of microorganism.
4) Bacteriological analysis of water.
5) Bacteriological analysis of foods.
6) Visits to food processing unit or any other organization dealing with advanced methods in food microbiology.

References

1) Ranganna S. (1986) Handbook Analysis and Quality Control for Fruit and Vegetable Products. 2nd Edition, Tata McGraw Hill publishing Co. Ltd., New Delhi
2) Roday S. (1999) Food Hygiene and Sanitation. 1st Edition, Tata McGraw Hill publishing Co. Ltd., New Delhi
3) Chris Bell, Paul Neaves and Anthony Williams (2005) Blackwell publishing
4) William Frazier and Dennis Westhoff (1995) 4th Edition, Tata McGraw Hill publishing Co. Ltd., New Delhi

Semester – II
Subject Code : 122NB51
Nutritional Biochemistry

Objectives : After completion of course students will be able to-

- augment the biochemistry knowledge acquired at the under graduate level
- understand the mechanism adopted by human body for regulation of metabolic pathways
- become proficient for specialization in nutrition
- perform biochemical analysis with accuracy and reproducibility

Theory

Unit 1 : Human Energy Requirements

1.1 Definition and components of energy requirement
1.2 Factors affecting energy expenditure and requirement
1.3 Methods of estimation of energy expenditures and requirements

Unit 2 : Carbohydrates

1.1
2.1 Review of chemistry of carbohydrates
2.2 Metabolism of carbohydrates, oxidation of glucose by glycolysis and Kreb cycle. Glycogen synthesis and breakdown. Regulation of blood glucose

Unit 3 : Proteins

3.1 Review of chemistry of proteins
3.2 Transamination, deamination
3.3 Urea cycle
3.4 Metabolism of amino acids ï Glycine, tyrosine, tryptophan and methionine
3.5 Metabolic disorders of amino acids

Unit 4 : Lipids

4.1 Review of chemistry of lipids
4.2 Metabolism of lipids
4.3 Oxidation of fatty acids
4.4 Cholesterol biosynthesis and regulation
4.5 Ketosis

Unit 5 :

5.1 Review of chemistry of vitamins and minerals
5.2 Biochemical role of water soluble and fat soluble vitamins
5.3 Biochemical role of macro and micro minerals

Practicals

1) Introduction to Laboratory Equipments ï Digital weighing balance, pH meter, Photo Electric Colorimeter, Spectro photometer etc.
2) Estimation of glucose in blood.
3) Estimation of serum protein
4) Analysis of lipids from serum
5) Analysis of food
   - Total protein content
   - Total fat content
   - Total carbohydrate content
6) Estimation of vitamin óCô in foods
7) Estimation of calcium in foods
8) Estimation of iron in foods
9) Chromatographic separation of amino acids in food stuffs
10) Survey of Pathological Laboratories ï To obtain information about the methods used for blood / urine analysis and submit a report.

References

1) Deb A.C. (2008) Fundamental of Biochemistry. 9th edition, New Central Book Agency (P) Ltd., 8/1 Chintamoni Das Lane, Kolkatta
2) Satyanarayana C., U.Chakrapani (2007) Biochemistry. 3rd edition, Biochemistry Books and Allied (P) Ltd. Shubham Plaza, Kolkatta
3) Cox M.M., Melson D.L. (2008) Lebninger Principles of Biochemistry. 5th edition, W.H. Freeman and Company, New York
4) Sathe A.Y. (1999) A First Course in Food Analysis. New Age International (P) Ltd. publishers, New Delhi.
5) Berwal J.S., Grewal R.B., Kapoor C.M., Garg M.K. (2004) Practical Methods in Food Analysis. Agrotech publishing academy, Udaipur

Semester – II
Subject Code : 122CA52
Communication Approaches in Nutrition

Objectives : After completion of course students will be able to-

- understand use of communication approaches in improving nutritional status of the population of different sector
- develop skill of preparing tools of communication

Theory

Unit 1 : Approaches of Communication in Nutrition

1.1 Traditional Approach
Folk media ï songs, story, shows
1.2 Modern Approach
- Participatory
- Analytical
- Dialogue
- Persuasive
- Educational

1.3 Modified Approach
Combination of traditional and modern approaches
1.4 Presentation of above approaches

Unit 2 : Methods of Communication

2.1 Individual communication
2.2 Group communication
2.3 Mass communication
2.4 Planning and preparation of communication methods

Unit 3 : Projected tools of communication

3.1 Transparencies for OHP
3.2 Soft copy of presentation (CD and Pen drive) for computer and computer aided projectors
3.3 Other E. learning material
3.4 Script for radio and TV
3.5 Preparation and presentation of projected tools

Unit 4 : Non projected tools of Communication

4.1 Model ï Working, non-working
4.2 Print material ï Leaflets, folders, posters, charts, flash cards, news letter, circular letter, bulletin
4.3 Preparation of non projected tools

Unit 5 :

5.1 Themes and Messages
- Themes for nutrition education
- Messages for nutrition education

5.2 Strategies in nutrition education

- Individual
- Community
- Presentation of the operation of strategies

Practicals

- Identify themes of nutrition education through literature research, experiences, pilot study/survey and prepare, present and evaluate following projected and non projected tools for effective communication.

  Posters, Banners, Slogans, Charts, Flash cards, Folder, Leaflets, Games, Transparencies, CD, Scripts.

Note : Any two out of projected and two out of non projected tools.

References

1) Maan, Gurmeet Singh (1987) The Story of Mass Communication : An Indian Perspective. New Delhi, Harnam Publishers.
2) Tiwari I.P. (1987) Communication Technology and Development. New Delhi, Ministry of Information and Broadcasting.
3) Sharma S.C. (1987) Media Communication and Development. Jaipur, Rawat Publishers.
4) Gamble M.W. and Gamble T.K. (1989) Introducing Mass Communication. IInd Ed. New York, MaGraw Hill Book.
5) Day P.R. (1977) Methods of Learning Communication Skills. Oxford, Peragamon.
6) Hartman, Paul and others (1986) The Mass Media and the Village Life : An Indian Study. New Delhi, Sage Publication.
7) Melkote S.R. (1991) Communication for Development in Third World : Theory and Practice. New Delhi, Sage.
8) Bhatnagar S. and Satyapal A. (eds.) (1988) education and Communication Technology : Perspective, Planning and Implementation. New Delhi.
9) Scott B. (1986) The Skills of Communication. Aldershot Gower Press.
10) Joshi P.C. (1989) Culture Communication and Social Change. New Delhi, Vikas Publications.
11) Mahajan K. (1990) Communication and Society. New Delhi, Classical Publications.

Semester – II

Subject code : 122ED53

Entrepreneurship Development in Food

Objectives : After completion of course students will be enable to

- provide conceptual inputs regarding entrepreneurship development in food
- sensitise and motivate towards entrepreneurship development
- orient and impart knowledge towards identifying and implementing entrepreneurship opportunities

Theory

Unit 1 : Conceptual Framework

1.1 Concept, need and process in entrepreneurship development
1.2 Types of enterprise ï merits and demerits
1.3 Role of enterprise in national and global economy

Unit 2 : The Entrepreneur

2.1 Entrepreneurial motivation ï dynamics of motivation
2.2 Entrepreneurial competency ï concepts
2.3 Developing entrepreneurial competencies ï requirements and understanding the process of entrepreneurship development, self awareness, interpersonal skills, creativity, assertiveness, achievement, factors affecting entrepreneurôs role

Unit 3 : Launching and Organising an Enterprise

3.1 Environment scanning ï information, sources, schemes of assistance, problems
3.2 Enterprise selection, enterprise, feasibility study, SWOT analysis
3.3 Resource mobilization ï finance, technology, raw material, site and man power
3.4 Market assessment, costing and quality control

Unit 4 : Areas of Entrepreneurship

4.1 Production and marketing of value added food products, therapeutic products, low cost nutritious food products, indigenous food products, supplementary foods
4.2 Consultancy areas ï Diet counseling through diet clinics, Health clubs, Diagnostic/Assessment centre of nutritional status
4.3 Services ï Catering daily meals, therapeutic diets, pack lunch, meals for occasions, food analyser

Unit 5 : Agencies for Development of Entrepreneurship

5.1 Government of Indiaôs policy towards promotion of entrepreneurship reservations and sanctions for small scale sector

5.2 Role of SSI, Procedures and formalities for setting up SSI

5.3 Role of banks and other agencies for development of entrepreneurship

Practicals

1) Enlist entrepreneurial opportunities in Food Science and Nutrition.
2) Select any enterprise and prepare a report of SWOT analysis.
3) Visit to funding agencies offices for understanding the formalities for registrations and the licences for enterprise.
4) Prepare and use the business games for development of entrepreneurial qualities.

References

1) Hisrich R.D. and Peters M.P. (1995) Entrepreneurship ï starting, developing and managing a new enterprise. Richard D. Irwin INC, USA.
2) Meredith C.G. et al (1982) Practice of Entrepreneurship. ILO , Geneva.
3) Deshpande M.V. (1984) Entrepreneurship of small scale industries, concept, growth and management. Deep and Deep Publication D-1/ 24, R-Garden, New Delhi.
4) Parekh U. and Rao T.V. (1978) Personal Efficacy in Development Entrepreneurship, Learning system. New Delhi.
5) Vasant Desai (1991) Entrepreneurship and Entrepreneur Development, Vol. I, II, III, Himalaya Publishing House.
6) Maratha Chamber of Commerce, Industrial Development of Maharashtra, Latest edition.

Semester – II
Subject code : 122RM54
Research Methods in Nutrition

Objectives : After completion of course students will be able to

- know importance of research in food science and nutrition
- understand the types, tools applicable to research problem
- construct common data collection tools
- develop skills of preparing out line of research work

Theory

Unit 1 : Foundation of Scientific Research

1.1 Research ï meaning and definition

1.2 Need of research in food science and nutrition

1.3 Research process

- Selection and formulation of research problem
- Specifying objectives
- Formulating hypothesis
- Deciding variables

Unit 2 : Design Strategies in Research

2.1 Descriptive studies

- Correlation studies
- Case studies
- Cross sectional/Survey

2.2 Analytical studies

- Observational studies
- Cohort studies
- Cross sectional studies/Survey

Unit 3 : Methods of Sampling

3.1 Characteristics of good sampling

3.2 Probability or random sampling

3.3 Non probability sampling

Unit 4 : Research Tools

4.1 Levels of data measurements and characteristics of good measurement

4.2 Types of tools and their uses

- Questionnaire
- Schedule
- Rating scale
- Attitude scale
- Interview ï structured and unstructured
- Observation ï participant and non participant

4.3 Concept of data

- Types of Data ï Qualitative and Quantitative data
- Analysis of Data ï Qualitative and Quantitative data analysis

Unit 5 : Statistical Testing of Hypothesis

5.1 Application of parametric tests

- r test
- t tests
- Z test
- F test
- ANOVA

5.2 Application of non parametric tests

- Chi square test
- Spearmanôs Rank correlation

Practicals

1) List research areas in food science and nutrition
2) Prepare synopsis/outline of dissertation work
   - Select problem for dissertation from literature research, experience of guide & teachers, and experiment/pilot study.
   - Find out key words, their meaning and definitions from dictionary and encyclopedias.
   - Design conceptual model of the study.
   - Collect review on selected variables from national and international journals and prepare note cards and reference cards (follow the rules of scientific writing)
   - Decide and prepare tools of measurement of variables
   - Specify objectives
   - Frame hypothesis
   - Select locale of the study
   - Decide sample size and sampling techniques
   - Decide applicable statistical tests
3) Conduct pilot study for calculating validity, reliability and usability of the tools.
4) Prepare master table for analysis
5) Prepare time schedule and facilities required for your dissertation work.

References

1) Van Maanen (1983) Qualitative Methodology. Sage Publication
2) Sumati Mulay and Sabarathanam V.E. (1980) Research Methods in Extension Education. New Delhi, Sole Selling Agents, MANASHYAN, 32.
3) Bryman A. and Cramer D. (1994) Quantitative Data Analysis for Social Scientist
4) Aravindra Chandra and Saxena T.P. Style Manual for Writing : Thesis, Dissertations and Papers in Social Sciences. New Delhi, Metropolitan Book Co. Pvt. Ltd.
5) Kerlinger, Foundation of Educational Research
6) Ingle P.O. Scientific Report Writing. Nagpur, Sarla P. Ingle.

(Note : The syllabi for General Interest Course shall be as per Science faculty.)

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Syllabus Prescribed for M.Sc. (Home Science)
(Food Science and Nutrition)
Semester-III & Semester-IV
(Implemented from the Academic Session 2011-12)

Semester-III
Subject Code : 232FP55
Food Product Development

Learning Objectives :- After completion of the course the students will be able to develop products which meeting consumer needs and nutritionally and commercially viable.

Practicals :-

1. Market survey, consumer survey to identify new products in terms of-
   - Line Extension
   - Repositioning existing products
   - New form / Reformulation
   - New packaging of existing products.
   - Innovative products.
   - Creative products.
2. Tapping traditional foods and unconventional sources of foods.
3. Identification of product for development.
4. Development and screening of the products.
5. Project report.

References :-

(1) Fuller G.W. (1994) ï New Product Development : From concept to market place, CRC Press, New York.
(2) Craft, E and Saguy I.S. (1991) ï Food Product Development : From concept to market place, Van Nostrand Reinhold, New York.
(3) Oickle, J.G. (1990) ï New Product Development and Value Added. Food Development Division Agriculture, Canada.

Journals :-

(1) International Journal of Food Science and Technology.
(2) Food Technology
(3) Journal of Food Technology.
(4) Trends in Food Science and Technology
(5) Critical reviews in Food Science and Nutrition.

Semester-III
Subject Code : 232SE56
Sensory Evaluation

Learning Objectives :- After completion of the course the students will be able to-

(1) use various sensory methods for evaluating of variety of foods.
(2) analyze and interpret sensory evaluation data.

Practicals :-

1. Establishing sensory panels-
   Selecting and recreating panels, orienting, screening for trained panels, training panellets, monitoring the performance.
2. Analytical Tools :- (i) Difference, (ii) Ranking, (iii) Descriptive, (iv) Scoring, (v) Rating.
3. Planning a sensory experiment ï
   - Designing the questionnaire and score card.
   - Identifying descriptors.
   - Designing sensory testing facilities.
4. Conducting the test ï
   - Preparing the samples.
   - Using reference samples.
   - Reducing panel response error.
   - Product marketing.
   - Shelf life studies.
5. Collecting and analyzing sensory data, statistical analysis, inter prevention.
6. Report writing.

References :-

(1) Ranganna S. (2003), Handbook of analysis and quality control for fruit and vegetable products. Tata McGraw Hill Publishing Company Limited 7, West Patel Nagar, New Delhi.
(2) Mosk Owitz H.R. (1983), Product testing and sensory evaluation of foods : Marketing and Research and Development approaches. Food and Nutrition Press, Connecticat.
(3) Watts B.M., Ylimaki, G.L., Jeffery L.E., and Elias L.G. (1989), Basic Sensory Methods for Food Evaluation. The international development research centre, Ottawa, Canada.

Semester-III
232ELI57 : Elective-I
Subject Code : 232ELI.1
Therapeutic Nutrition

Learning Objectives :- The course will enable the students to-

(1) understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
(2) know the effect of the various diseases on nutritional status and nutritional and dietary requirements.
(3) be able to recommend and provide appropriate nutritional care for prevention / and treatment of the various diseases.

Course Contents :
Theory :

Unit-1 : 1.1 Nutritional screening and assessment of Nutritional status of hospitalized and outdoor patients- Identification of risk patients, assessment of patient needs based on interpretation of patient data ï clinical, biochemical, personal etc.
1.2 Drug, nutrient and drug interaction, dosage and efficacy.

Unit-2 : Meaning, causes, signs and symptoms, complications, nutritional and dietary considerations of Cardiovascular Diseases-
- Hypertension.
- Atherosderosis.

Unit-3 : Meaning, causes, signs and symptoms, complications, nutritional and dietary considerations of -
- Obesity and underweight.
- Diabetes mellitus- Type I diabetes and Type II diabetes.

Unit-4 : Meaning, causes, signs and symptoms, complications, nutritional and dietary considerations of -
- Renal disorders.
- Glomerulonephritis
- Acute Renal Failure
- Urinary Calculi
- Chronic Renal Failures

Unit-5 : Meaning, causes, signs and symptoms, complications, nutritional and dietary considerations of -
- Cancer
- Burns.

Practical :-

(1) Collect history of patients (personal, clinical, pathological, medicinal) said in theory.
(2) Study the cases, correlate the patient data and set the objectives for diet planning and counseling.
(3) Plan, prepare and evaluate diets.

References :-

(1) Mohan, L.K. and Escott-Stump, S. (2000) : Krawõs Food Nutrition and Diet Therapy, 10th Edition, W.B.Saunders Ltd.
(2) Shrilakshmi B. (1998) : Dietetics, Wiley Estern Ltd., Pune
(3) Joshi S.A. (1992) : Nutrition and Dietetics, Tata McGraw Hill Publishing Co.Ltd., New Delhi.
(4) Dietary Guidelines for Indians ï A mannual NIN ICMR Hyderabad.
(5) Gopalan et al (1990) : Nutritive value of Indian Foods, NIN ICMR Hyderabad.
(6) Swaminathan M. (1985) : Human Nutrition and Dietetics, Bappco, Banglore.
(7) Mehtab Bamji et al (1996) : Text Book of Human Nutrition, Oxford and IBH Publishing Co. Ltd., New Delhi.
(8) Raghuram T.C. (2000) : Diet and Diabetes, NIN Hyderabad.
(9) Kamala Krushnamurthy (2000) : Diet and Hear Disease, NIN Hyderabad.

Semester-III
232ELI57 : Elective-I
Subject Code : 232ELI.2
Assessment of Nutritional Status

Learning Objectives :- After completion of the course the students will be able to-

(1) orient the students with all methodologies applied in nutritional assessment and surveillance of human groups.
(2) develop specific skills to apply the most widely used methods.

Course Contents :
Theory :

Unit-1 : Nutritional Assessment ï meaning, importance.

Unit-2 : Current methodologies of assessment of nutritional status, their interpretation and comparative applications of the following.

- Food consumption.
- Anthropometry
- Clinical and laboratory.

Unit-3 : Rapid assessment and PRA.

Unit-4 : Nutritional surveillance and basic concepts, uses and setting up of surveillance system.

Unit-5 : Monitoring and evaluation.

Practical :-

(1) A small evaluation study of nutrition project.
(2) Community based project for assessment of nutritional status of any vulnerable group.

References :-

(1) Jelliffe, D.B. and Jelliffe E.F.P. (1989), Community Nutritional Assessment, Oxford University Press.
(2) Gopallan T. and Sheshadri S. (1987), Nutritional Monitoring and Assessment, Oxford University Press.

Semester-III
232ELI57 : Elective-I
Subject Code : 232ELI.3
Kitchen Planning, Equipments and Plants

Learning Objectives :- After completion of the course the students will be able to-

(1) understand the importance of layout in a food service unit.
(2) determine the factors that affect the kitchen plan.
(3) understand the principle of planning layout.
(4) design a kitchen keeping in mind the principles of planning.

Course Contents :
Theory :

Unit-1 : Meaning and importance of kitchen planning. Factors affecting kitchen planning.

Unit-2 : Determining kitchen layout on menu pattern. Principles of layout, establishment of work centre sequence for work from receiving to service.

Unit-3 : Schematic Plan, establish flow of work, work and method study.

Unit-4 : Designing Kitchen : Determining material to be used at work centers, architectural features, floor, walls, lighting, plumbing ventilation, etc.

Unit-5 : Criteria for selection of equipments, types of equipments, installation of equipments, care of equipments.

Practicals :-

(1) Plan and draw kitchen layout for a small food service unit.
(2) Conduct market survey of kitchen equipments for projecting trends in equipment.
(3) Market survey of materials to be used at work centers.

References :-

(1) Sethi, M. Malhan (1993) : Catering Management, An integrated approach, Wiley Eastern, New Delhi.
(2) A very, A.C. (1980) : A Modern guide to food service equipment, FBI Publishing co., INC, BOSTON.
(3) Kotschevar, L.H.; Terrells M.E. (1985) : Food Service Planning, Layout and equipment, 3rd Edition, John wiley and Sons, new York.

Semester-III
232ELII58 : Elective-II
Subject Code : 232ELII.1
Biochemical Correlation with Nutritional Therapy

Learning Objectives :- After completion of the course the students will be able to correlate signs and symptoms, pathological condition of patient and nutritional requirement.

Course Contents :
Theory :

Unit-1 : Biochemistry of the Disease and Nutrition in :
1.1 Upper Gastrointestinal tract disorders ï
- Indigestion and dyspepsia.
- Peptic Ulcer.

1.2 Lower Gastrointestinal tract disorders ï
- Ulcerative Callitis.
- Irritable Bowel syndrome
- Diaverticular Disease

Unit-2 : 2.1 Biochemistry of the Disease and Nutrition in Liver, Exocrine, Pancreas :
- Viral hepatitis.
- Cirohosis
- Pancreatitis.

Unit-3 : 3.1 Biochemistry of the Disease and Nutrition in Anemia :
- Iron deficiency anemia ï iron related blood disorder.
- Pernicious anemia ï B_{12} deficiency anemia.

- Sickle Cell Anemia ï Non nutritional anemias.
- Thalassemia ï Non nutritional anemias

Unit-4 : 4.1 Biochemistry of the Disease and Nutrition in :
- Osteoporosis
- Arthritis
- Gout

Unit-5 : 5.1 Biochemistry of the Disease and Nutrition in :
- Allergy
- Infections.
- Stress

Practical :-

(1) Glucose estimation in solution and in blood.
(2) Determination of protein content using biuret method.
(3) Estimation of Cholesterol.
(4) Estimation of hemoglobin content in blood.

References :-

(1) L.Kathlin Mahan, Sylvia Escott-Stump, Krauseôs Food, Nutrition and Diet Therapy, 11th Edition (2000) Saunders, An imprint of Elsevier. The Curtis centre, Independence square, West Philadelphia, Pennyloania.
(2) U.Satgurunarayana, U.Chakrapani (2007) : Biochemistry Books and Allied (P.) Ltd., Kolkata.
(3) Deb A.C., Fundamentals of Biochemistry (2008), New Central Book Agency, Chintamani Das Lane, Kolkata.

Semester-III
232ELII58 : Elective-II
Subject Code : 232ELII.2
Nutritional Epidemiology

Learning Objectives :- After completion of the course the students will be able to-

(1) understand the principles of epidemiology, nutritional epidemiology and its importance in community and public health.
(2) to design and evaluate studies / nutritional programme.

Course Contents :
Theory :

Unit-1 : 1.1 Introduction to Epidemiology
1.2 Epidemiology : concept and definitions, aims.

Unit-2 : 2.1 Basic measurements in epidemiology.

2.2 Tools of measurement ï Rates, Ratios and proportions.

Unit-3 : 3.1 Design strategies in epidemiological research.
3.2 Types of studies ï Descriptive studies ï Correlational, corss-sectional and case study.

Unit-4 : Analytical Epidemiology ï Observational studies cohort, case control and cross sectional analytic study.

Unit-5 : 5.1 Experimental epidemiology ï Randomized controlled.
5.2 Design and planning of nutritional epidemiology studies.
5.3 Evaluation of epidemiological studies.

Practical :-

(1) Study the designs said in Unit-3 & 4 in nutrition research.
(2) Plan, implement and evaluate nutrition research.

References :-

(1) Anisa Basheer (1995) : Environmental Epidemiology, Rawat Publications, Jaipur.
(2) Beghin I. Cap, M. and Dujardan, B. (1988), A guide to nutritional status assessment, WHO, Geneva.
(3) Parks K., Park : Text Book of Preventive and Social Medicine, Eighteenth Edition, M/S Banarasidas, Bhanot Publishers, 1167, Prem Nagar, Jabalpur, 482001.

Semester-III
232ELII58 : Elective-II
Subject Code : 232ELII.3
Food Safety and Quality Control

Learning Objectives :- After completion of the course the students will be able to understand-

(1) importance of quality assurance in food industry.
(2) various tests and standard for quality assessment and food safety.
(3) various tests used to detect food adulteration.
(4) steps to be considered for successful quality control programme.

Course Contents :
Theory :

Unit-1 : Introduction to quality assurance and food safety assurance. Current concepts of quality control.

Unit-2 : Quality Assurance Programme :- Quality plan, documentation of records, product standards, product and purchase

specifications, process control and HACCP hygiene and housekeeping, corrective action.

Unit-3 : Quality Costs : Measurement and analysis.

Unit-4 : Product Evaluation :

- Specifications of food Standards, International, National ï Mandatory, Voluntary.
- Sample preparation.
- Reporting results and reliability of analysis.
- Tests for specific raw food ingredients and processed foods including additives.
- Proximate principles.
- Nutrient Analysis.
- Quality parameters and tests of adulrants.

Unit-5 : Consumer Protection :.

Practicals :-
Objectives :-

(1) test different foods for their quality.
(2) detect adulteration in different foods.
(3) study the tests used for quality control.

Practicals :-

(I) Assessment of purity and quality using appropriate standard tests for the following :
1) Water including mineral water.
2) Milk and milk products.
3) Fats and oils including butter, ghee and hydrogenated fat.
4) Icurears and sherbets.
5) Tea and Coffee
6) Fruit juices, concentrates and beverages.
7) Flesh foods.
8) Cereals and cereal products.
9) Pulses and legumes.
10) Canned dehydrated, frozen and bottled fruit / vegetable product.

(II) Detection / estimation of food additives and contaminants.

References :-

(1) Pomeranz Y. and Meloan C.E. (1996), Food Analysis :- Theory and Practice, CBS Publishers and Distributors, New Delhi.
(2) Ranganna, S. (1986), Handbook of analysis and Quality.

Semester-III
232ELIII59 : Elective-III

Subject Code : 232ELIII.1
Dietetic Techniques & Patient Counseling

Learning Objectives :- This course will enable the students to-

(1) critically appraise, plan and organize / supervise preparation and service of different kinds of therapeutic diets in hospital dietary service.
(2) develop Skills for patient counseling.
(3) interact effectively with patients and their families and to give dietary advice in the context of the patients socio-cultural and economic milier.

Course Contents :
Theory :

Unit-1 : 1.1 Dietician as part of the medical team and out reach services.
1.2 Medical History assessment ï techniques of obtaining relevant information for patient.

Unit-2 : Dietary diagnosis and tests for nutritional status ï correlation, clinical and dietary information.

Unit-3 : Patient Education and Counseling ï Assessment of patient needs, establishing report, counseling relationship.

Unit-4 : Resources and aids of counseling.
.
Unit-5 : Aesthetic attributes of diets..
Follow up visits and patient education.

Practical :- Practicals should be based in hospitals and done on the basis of case studies observation and evaluation.

(1) Appraisal of routine hospital diets and dietary units.
Organizational structure and staffing pattern, number of patients, departments and types of diets, cost and nutritional adequacy, time schedule, service protocol, equipment.

(2) Case studies and counseling for special diets and feeding methods: Dialysis patient, renal transplant patients, tube feeds, jejunostomy, burns, TPN, Post surgical, Cardic bypass surgery, hypertension, CHD, post heart attack, liver cirrhosis.

(3) Childrenôs Diet ï Management of sick child ï case studies, juvenile ï
Diabetes, childrenôs diseases, cleft palate, etc. integrating special and specific needs of a sick child with management of routine hospital diets.
(4) Metabolic disorders including inborn errors of metabolism, IDDM, NIDDM.

References :-

(1) ARA Health Care Nutrition Counselor : Strategies for results, controlling the pace of counseling (1988), Philadelphia, ARA Services.
(2) Raab C. and Jillotson, J. (1983), Heart to Heart ï A Manual on Nutrition Counseling for the reduction of cardiovascular disease risk factors, U.S. Govt. Printing Office, Washington DC.
(3) Journal of American Dietetics Association.
(4) Dryden, W. Counseling individuals. The rational emotive approach, Taylor and Francis. London.
(5) Dave, Indu (1984) : The basic essentials of Counseling, A Manual Sterling Publishers, New Delhi.

Semester-III
232ELIII59 : Elective-III
Subject Code : 232ELIII.2
Community Nutrition

Learning Objectives :- After completion of the course the students will be able to-

(1) understand the causes / determinants and consequences of nutrition problems in society.
(2) familiar with various approaches to nutrition and health interventions, programmes and policies.

Course Contents :
Theory :

Unit-1 : 1.1 Understanding the terms nutritions, health and community nutrition.
- Concept and Definition.
- Scope.

1.2 Health Care :
- Concept of Health Care.
- Levels of Health Care.
- Primary Health Care.
- Health Care Delivery.

Unit-2 : 2.1 Nutrition Problems :

- PEM
- Vitamin A deficiency
- Iron deficiency Anemia (IDA)
- Iodine deficiency disorder (IDD)
- Zinc deficiency

2.2 Strategies to combat public nutrition problems

Unit-3 : 3.1 Nutrition Problems :

- Vitamin Deficiencies
- Beriberi
- Ariboflavinosis
- Pellagra
- Folic acid and B_{12} deficiency
- Scurvy
- Rickets and osteomalaria

3.2 Strategies to overcome above said problems.

3.3 Fluoresis, lathyrism.

Unit-4 : 4.1 Food and Nutritional Security :-

- Understanding the concept of food and nutrition security.
- Determinants of food security.
- Indiaגs food security system.

4.2 National Food and Nutrition Policy

Unit-5 : Nutrition Education :

5.1 Need, scope, importance, theories.

5.2 Process of nutrition education.

5.3 Nutrition education communication.

Programme, formulation, implementation and evaluation.

Practical :-

(1) Identify nutritional problems and strategies to tackle the nutritional problems in vulnerable groups.

(2) Plan, implement and evaluate nutrition education programme.

(3) Messages for nutrition and health education

(4) Development of low cost nutritious recipes suitable for various vulnerable groups.

References :-

(1) Park K. (2000), Parkגs Text Book of Preventive and Social Medicine, 18th Edition, M/S Banarasidas Bhanot Jabalpur.

(2) National Nutrition Policy (1993), Deptt. of WCD, Govt. of India.

(3) Sharma S.C. (1987), Media Communication and Development, Jaipur.

(4) Singhal A. and Rogers Everett, M. (1989) : Indiaגs Information Revolution, New Delhi, Sage Publications.

(5) Melkote S.R. (1991) : Communication for Development in the third world : Theory and Practice, New Delhi, Sage.

Semester-III

232ELIII59 : Elective-III

Subject Code : 232ELIII.3

Food Service Management

Learning Objectives :- After completion of the course the students will be able to-

(1) gain knowledge about the food services in India.

(2) understand the special characteristics of food service establishment.

(3) know the types of resources required for managing food outlets.

(4) Learn man power management techniques.

(5) know the types of costs involved and how to control them.

(6) think of starting food service.

Course Contents :

Theory :

Unit-1 : Introduction of food service institutions. Importance and meaning of food service institution. Characteristics of food service establishments. Development of food service institutions in India.

Unit-2 : Food Service Management : Definition, principles and tools of management.

Unit-3 : Approaches to Management :- Traditional management, systems approach, management by objectives, total quality management.

Unit-4 : Personnel Management : Recruitments, selection and induction, employee benefits, trade union negotiation and settlement.

Unit-5 : Cost and Management Accounting : Definition and scope, costs and their control.

Practical :-

(1) Survey of various types of food services and determine the factors which led to their development.

(2) Manage small food service unit.

References :-

(1) Drucker, P.F. (1975), Management, Allied Publishers, New Delhi.

(2) Sethi, M.; Malhan S. (1993), Catering Management, An integrated approach, Wiley Eastern, New Delhi.

(3) Hitchcock, M.J. (1980) : Food Service System Administration, Macmillan, New York.

Semester-IV
Subject Code : 242FI60
Food Informatics

Objective - To develop skill in data base management.

Course Contents
Theory :

Unit 1 : 1.1 Food Informatics.
1.2 Meaning and purpose
1.3 Areas of Food Science and Nutrition.

Unit 2 : 2.1 Important search engines.
2.2 Data bases in Food Science, Nutrition (Clinical nutrition, community nutrition, Human Nutrition), Dietetics, Institutional food service management. Food processing technology.

Unit 3 : Data collection, organization in areas of food and nutrition.

Unit 4 : Data storage and distribution by using various information technology tools and methods.

Unit 5 : Database management system.
Application of software.

Practicals :-
(1) Study of various databases in the subject.
(2) Data searching
(3) Data Retrieval.
(4) Create data with the help of software.

References :-
(1) www.wikipedia.org
(2) www.google.com
(3) www.khoj.com
(4) www.nutra.hub.com
(5) www.wiley.com
(6) www.inflibnet.ac.in
(7) www.pubmed.com

Semester-IV
Subject Code : 242CI61
Current Issues in Food & Nutrition

Learning Objectives :-
(1) To sensitize students regarding current trends, issues and research in various aspects of Food Science and Nutrition.
(2) To debate on various emerging areas in Food Science and Nutrition.

Course Contents :
Theory :

Unit-1 : 1.1 Researches and current issues in food and nutritional requirements of people of developed and developing countries.
1.2 Special nutritional requirement in emergencies and extreme environments.

Unit-2 : 2.1 Nutritional Regulation of gene expression.
2.2 Researches in genetically modified foods.

Unit-3 : 3.1 Current trends in special feeding methods in different disease conditions.
3.2 Functional foods.
3.3 Holistic approach in treatment of diseases.

Unit-4 : 4.1 Current food processing technologies.
4.2 Food safety and quality control.
4.3 Food additives.

Unit-5 : 5.1 Non-nutritional components in foods.
5.2 Food Toxins.

Practical :-
(1) Discuss various current trends and issues given in theory by seminars, group and panel discussions.
(2) Prepare food pyramids (for population of developing and developed countries).
(3) Collect information of GM food and functional foods and prepare educational material.
(4) Study nutritional supplements and nutritional support substrates available in the market and use in the hospitals for feeding purpose.
(5) Study nutrition information of foods.
(6) Study the food additives used in commercial food products.
(7) Visit to food and drug department to understand requirements of food quality.

Reference :-

(1) ICMR (1990) : Nutritional Requirement and Recommended Dietary Allowances for Indians, NIN, Hyderabad.

(2) Mehtab Bamji et al (1996) : Human Nutrition.

(3) Mohan L.K. and Escott Stump, S. (2000), Krauseôs Food Nutrition and Diet Therapy, W.B.Saunders Ltd.

(4) Present Knowledge in Nutrition. ILSI Press 2001.

(5) Thompson L.U. (1993) Potential Health Benefits and Problems associated with antinutrients in foods. Food Research International. 26 : 134-149.

(6) Whitney E.R. and S.R.Rolfes (2002), Understanding Nutrition, 9th Ed., Wadsworth Thomson Learning, Australia.

(7) Wardlaw G.M. and Insel PM. Perspectives in Nutrition, Third Edition, Mosby 1996.

(8) Kuhn L.C. (1998) : Iron and Gene Expression : Molecular Mechanism Regulating Cellular Iron Homeostasis, Nutr.Rev. 56(2) 511-517.

(9) Salati L.M. and Amir-Ahmady B. (2001) : Dietary Regulation of Expression of Glucose 6 Phosphate Dehydrogenase, Annual Rev. Nutr. 121-140.

(10) Update Series : Nutrition in Disease Management, Centre for Research on Nutrition Support Systems, Nutrition Foundation of India, New Delhi.

(11) Kamala Krushna (2001, Nutrition Research ï current Scenario and Future Trends. Oxford & IBH Publishing Co. Pvt.Ltd., New Delhi.

(12) 52 Simpleways to Prevent, Control and Turn Off Cancer, by Man Mohan Sharma; S.Chand & Co. Ltd. New Delhi.

Semester-IV
Subject Code : 242SW62
Scientific Writing

Objective - After completion of course students will be able to understand national / international standards of scientific writing and develop skill of writing research reports.

Course Contents :

Theory :

Unit 1 : Introduction to Scientific Writing

- 1.1 Meaning, definition
- 1.2 Characteristics and Principles
- 1.3 Types of report
- 1.4 Format of report
- 1.5 National and international standards

- 1.6 Lay out of thesis / dissertation :- Preliminaries, Text, End Matter

Unit 2 : Writing preliminaries

- 2.1 Title page, Title of dissertation / thesis.
- 2.2 Certificates : Declaration by students certificate of guide
- 2.3 Acknowledgement
- 2.4 Table of content - list of Table, list of Figure
- 2.5 Glossary / Abbreviation / Acronym

Unit 3 : Writing Text / Main Body

- 3.1 Writing introduction
- 3.2 Writing Review of Literature
- 3.3 Writing Methodology Material and Methods
- 3.4 Writing Results
- 3.5 Writing Discussion
- 3.6 Writing Summary, Conclusion and Implication

Unit 4 : Writing End Matter

- 4.1 Writing References / Literature cited
  - Books
  - Journal / Periodical
  - Websites
  - Magazines, newspaper
- 4.2 Appendices

Unit 5 : General Guidelines

- 5.1
  - Size of paper, margin, font type and size
  - Headings and Subheadings
  - Number of chapters and pagination
  - Punctuations.
- 5.2 Evaluating structure of dissertation / thesis

Practicals :

1. Use of Library -
   Get acquainted with the-
   - Type of Library (Traditional, modern, digital, virtual)
   - Services provided by Libraries
   - Various sources (Printed and electronic)
   - Technical work (classification, cataloguing)
   - Information retrieval (i.e. OPAC, WEBOPAC, SOUL, Library Portal, e-books etc.)
2. Practice of writing references on reference cards and notes on note cards from different sources.
3. Review, understand and critically evaluate.
   - Thesis
   - Dissertation
   - Abstract

References :

1) Arvindra Chandra and T.P. Saxena, 1979. Stype manual for writing Thesis, Dissertation and papers in Social Sciences, New Delhi, Metropolitan Book Co. Pvt. Ltd.,

2) Ingle, P.O. 2002.Scientific and Technical Report writing, Nagpur, Sarala Ingle.

3) Kothari, C.R. 1996. Research Methodology - Methods and Techniques, New Delhi. Vishwa Prakashan.

4) Best John W. and Kahn James V., 1989. Research in Education, New Delhi, Prentice Hall of India Private Limited.

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