M.Sc. Home Science (Food & Nutrition)

SANT GAHIRA GURU VISHWAVIDYALAYA

Sarguja Ambikapur (C.G.)

CHOICE BASED CREDIT SYSTEM (CBCS)

SYLLABUS

M.Sc.Home Science (Food & Nutrition)

SEMESTER SYSTEM
SESSION 2018-19

For Affiliated Colleges of

SANT GAHIRA GURU VISHWAVIDYALAYA

Ambikapur (C.G.) -497001

SANT GAHIRA GURU VISHWAVIDYALAYA SARGUJA, AMBIKAPUR (C.G.)

SANT GAHIRA GURU ORDINANCE 46:
MASTER DEGREE (P.G.) PROGRAMMES

PROPOSED DRAFT ORDINANCE 46:

O.M.D.1.: This Ordinance shall be called "The Sant Gahira Guru Master Degree (Semester Study) Programme with Choice based Credit System.

O.M.D.2.: This Ordinance shall come into the force from the Academic Semester 2017-18.

Notwithstanding anything in the earlier laws of the Sant Gahira Guru Master Degree Programmes in the different faculties (*Ayurveda, Commerce, Education, Fine Arts, Law Life Sciences, Medicine, Management, Science & Social Sciences)* under the "semester system", the "Semester with Choice based Credit System" shall be regulated and conducted as per the provisions of this ordinance.

O.M.D.3. Definitions:

In this Ordinance, unless the context otherwise requires:

a. "**Academic Council**" means Academic Council of the University.

b. "**Administrative Grade Letter**" means the alphabet indicating the administrative comment in place of Grade Letter to indicate the Credit Withdrawn (W), Unfair Means (U), Absent in SEE (X). The Administrative Grade Letter has zero Grade Point associated with it.

c. **"Board of Studies"** means PG Board of Studies in any subject constituted under the university statutes.

d. **"Core Course"** means the course pertaining to main subject or theme of the master programme.

e. "**Credit**" means the unit by which the academic activity of course work is measured. In these Regulations, One Credit means one hour of Class Room Teaching per week in case of theory papers and 1.5 hours in practical / laboratory work.

f. **"Credit Courses"** means the course classified as Compulsory Core Courses(**CCC**), Elective Core Courses(**ECC**), Seminar **(SEM),**Project Work**(PRJ)**, Field Study**(FST)**, Self Study Course**(SSC)**, Other Supportive Courses**(OSC),** Educational/Study Tour (**EST**) and Research Publications **(RPJ).**

g. **"Credit Monitoring"** means an act to monitor the credit by a Credit Monitoring Committee **(CMC)** consists of the Head (as Chairperson) and three senior most teachers on the Roll of the Department. In case, when the Department does not have the required number of the teachers in the department than the Vice chancellor may constitute the said committee by nominating the number of expert(s) required by the Ordinance from any other university or institute who are not below the post of Professor.

h. "**Credit Points**" means the product of 'credits assigned to the course' and 'the Grade Point secured for the same course by the student'.

I. "**Semester Grade Point Average (SGPA)**" means the Semester Grade Point average computed on the basis of the formula prescribed in the ordinance. It measures the performance of a student in a given Semester. The SGPA is the ratio of the 'total credit points earned by the student in all the credits earned in the concerned semester' and the 'total number of credits earned in that Semester'.

j. **"Cumulative Grade Point Average (CGPA)"** means the Cumulative Grade Point weightage average of SGPA computed on the basis of the formula prescribed for the entire Programme. It measures the overall performance of a student in a Master degree programme. The CGPA is the ratio of the 'total credit points earned by the student in all the credits earned in the Master degree programme' and the 'total number of credits earned in that Master degree programme'.

k. "**Degree**" means Post Graduate Degree in any subject.

l. **"Departmental Staff Council (DSC)"** means a Council of the Department consisting of its whole time faculty which falls in the category of teacher. The DSC will be empowered to consider and decide the academic matters, as specified in Master Degree Ordinances and Regulations.

m. **"Elective Course" means the course, which can be offered as 'optional subject' to the provisions of this Ordinance and the respective syllabus from inter or intra subjects and or disciplines including interdisciplinary or multidisciplinary nature.**

n. "**Fee**" means the fee prescribed by the University for the respective Master Degree Programme from time to time.

o. "**Grade Letter**" means the alphabet indicating the performance of a student in a particular course. It is the transformation of the scaled marks secured by the student in a Course. Grade letters are O, A, B, C, D, E, and F.

p. "**Grade Point**" means the numerical weightage allotted to each stratum of scaled marks corresponding to each 'Grade letter'.
However, the "Administrative Grade Letter" as defined will represent the categories mentioned in the OMD.3 sub clause 'b' of this ordinance.

q. **"Master Degree Programme"** means a Masters Degree Programme in any subject studied at Master degree level under any faculty of the University.

r. **"Semester End Examination (SEE)'** means the examination due to be conducted after the end of the respective semester.

s. **"Semester"** means an academic term constituting 20(twenty) weeks. Each semester shall have at least 15 (fifteen) weeks of direct class room teaching. The Academic Year shall be of bi-semesters. Odd Semesters shall be normally from mid June to mid December and Even Semesters shall be from mid December to mid June.

t. **"Student"** means student admitted to Master Degree Programme in any subject being run under the University Ordinance and Regulations.

O.M.D.4.Course Structure:

1. A Master Degree programme shall consist of the duration of at least two academic years consisting four semesters. A candidate will be required to complete this programme within 4 years from the date of his/her first admission in the semester – I.

   Provided that subject to the approval of the UGC Regulations, when the Master Degree Programme is of one academic year and spreads in the two academic semesters then the study has to be completed within a period of two years from the date of admission in the Semester – I.

2. Subject to the provisions of this Ordinance the programme/study shall be based on (a) Semester System Examination, (b) Continuous Assessment, (c) Choice Based Credit System, and (d) Semester Grade Point Average and Cumulative Grade Point Average Systems.

3. "Core Course' means a 'course/subject', the knowledge of which is considered essential for a student of the respective programme. This may also include elective courses.

4. 'Elective Course' allow students to acquire knowledge and skills in areas of their choice. Such course(s) may be offered by concerned department and / or other departments within the university. This may be inter or/ and intra department/institution subject to the approval by the university.

5. The Course of respective Master Degree Programme shall have following (i) Course Code(**CC**), (ii)Course Title (**CT**), (iii) Course type such as Compulsory Core Courses(**CCC**), Elective Core Courses(**ECC**), Seminar **(SEM)**,Project Work(**PRJ**), Field Study(**FST**), Self Study Course(**SSC**), Other Supportive Courses(**OSC**), Educational/Study Tour (**EST**) and Research Publications(**RPJ**) (iv) Credits Assigned, (v) Number of Contact Hours for Lecture(**L**), Tutorial (**T**) and Practical or other (**P**) to be assigned per week.

S No.	Course Code	Course Title	Course Type	Credits	Contact Hours Per week		
					L	T	P

6. Fifteen (15) hours of theory teaching will lead to one credit((which means one hour per week theory teaching in a semester is equivalent to one credit) and in case of practical 45 hours of laboratory work will lead to two credits (Which means 3 hour practical classes per week in a semester is equivalent to two credits). Each semester of Master's course shall offer 30 credits or more. Number of semester of Examinations and minimum credit required to be earned for Master Degree in various post-graduate courses specified as under:

S No.	Course Code	Number of Semesters	Minimum Required Credi
1.	All Two Year Master Degree Programme	Four	120
2.	All One Year Master Degree Programme	Two	60

- ***Note***: The curriculum may be described in the syllabus in form of 'Courses' or 'Papers'. The number of papers, course type and credits with detailed syllabus for each course shall be described in the 'syllabus of the respective course'. Candidate will be required to earn minimum credits prescribed for the respective Master Degree.
- 7. Each course shall be assigned a specific number of credits. A course or paper is identified by a course code designated by a string of six alphanumeric characters and a course title. In course code the first three characters of the string indicate the Department offering the course and the later three alphanumeric characters designate a particular course. In the case of compulsory core courses (CCC) the fourth character identifies the semester numeric digit and in case of the elective core courses (ECC) the fourth character indicates the cluster of specialization. For compulsory theory core courses the fifth character is **'0'**, for laboratory core courses it is **'1'** and for project/seminar it is **'2'** and for research publications in journal it is **'3'**.
- The examination shall comprise of the requirement of four (in case of one year course two) semesters and the Subjects for each semester will be as per the schedule of the structure of the Master Degree Programme with the particulars mentioned therein.
- 8. CBCS offers flexibility for effective **teaching learning processes** in terms of number of contact hours for Lecture (**L**) Tutorial (**T**) and Practical or other (**P**) to be assigned per week for a course or paper.

9. Type of courses

There shall be following categories of courses in the MASTER DEGREE Regular Programme:

9.1. Compulsory Core Course (CCC)

A course, prerequisite for a student to obtain the Degree in the concerned Programme.

9.2. Elective Core Course (ECC)

A course, which is to be chosen by the student from a pool of courses offered by the Department.

9.3. Other Supportive Course (OSC)

Subject to the availability of the course and provisions of university rules, a student admitted in a Master Degree Programme shall have option to offer **Other Supportive Courses** including Interdisciplinary **(ID)**/Multidisciplinary **(MD)** course/s offered by a Department/cluster of Departments. For formation of a cluster, two or more Departments shall come together for offering ID/MD courses depending on their available expertise and infrastructure. The Departmental Staff Council (DSC) shall be competent to decide the nature and scope and number of such courses to be offered by the concerned Department in collaboration with other Department/s.

9.4. Self Study courses (SSC)

Since one of the main objectives of the CBCS is to enable the students to learn on their own. The Self Study course(s) shall be offered to realize this objective. A list of Self Study course(s) shall be designed by different faculty of the Department and after the approval of the DSC, the course(s) shall be made available to the students for self study. Such a course(s) shall have advisory academic support of the faculty, who proposed the course, and the same faculty shall evaluate the student at the end of the semester for a Course Report of 50 marks and a viva voce examination of 50 marks. The number of credits that can be earned in a semester in SSC shall be limited to 4.

- **9.5. Seminar (SEM):**

The aim of the seminar is to give students an exposure to recent developments and advance topic of research interests. The seminar preparations can be undertaken only after the prior approval of the CMC of the Department. The CMC will allot Seminar Credits on merit basis out of desiring students. The said preparations will be undertaken under the guidance and supervision of a teacher of the parent department. No teacher will be allowed to guide more than three students at a time in a semester. The guiding teacher will make continuous internal assessment of the seminar. At the end of the 'Semester End Examination' the seminar will be conducted and credits will be awarded by a Board of three examiners consisting of the Head of the Department, guide and one faculty member other than a guide.

9.6. Project Work (PRJ) or Field Study (FST):

The aim of the Project Work or Field Work is to introduce students with the research methodology in the subject and to prepare them for pursuing research in theoretical, experimental or computational areas of the subject. The Project Work or Field Study has to be conducted under the guidance of a teacher of the concerned department or a scientist or any other suitable person with proven research excellence in the concerned field of study. One can conduct the Project Work or Field Work in an outside institution of national or international repute on the prior approval by the CMC of the department concerned.

The CMC will allot the Credits Project Work or Field Study to the desirous depending on their capacity and subject to the availability of the resources on the basis of their merit. The guiding teacher will make continuous

- assessment of the Project Work or Field Study of a candidate under his/her supervision. SEE for the said Project Work or Field Study will be held at the unit where the study has been under taken by a Board of three examiners consisting of the concerned Head, Guide/Supervisor and one other senior faculty.

9.7. Education Study Tour (EST):

Subject to the provisions of the syllabus of the concerned Master degree Programme, the concerned Department may arrange educational tour/study tour. It will be compulsory on the part of student to join the same and on completion of tour; he/she will be required to submit its report to the University Department. The time spent for the purpose will be considered for computation of attendances in the respective semester/term. The Department may design & arrange the educational tour considering nature, scope & requirement of the respective subject.
The requirement of the tour has to be incorporated in the respective syllabus.
The university will determine the university contribution for toufor each student and escorting staff by administrative decision approved by the Finance Committee.

9.8. Research Publications in Journals (RPJ):

One research publication as a coauthor in a journal above impact factor 1.0 will be assigned two credits and that in other ISSN bearing journals will be assigned one credits.

10. A Master Degree study is a regular fulltime programme. Therefore, no student admitted in the said programme will be allowed to join any other programme of study during this period. This will be obligatory for the student to ensure that he has not sought admission in any other programme during this period.

O.M.D.5.Admission:

1. A candidate, who has passed Bachelor Degree programme in the concerned subject/discipline from this university or any other university established by law and recognized by the Sant Gahira Guru for the purpose of admission in the Master Degree programme of this university shall be eligible to apply for admission in the respective Master Degree programme of this university.

   Provided further that a candidate, who has passed Bachelor Degree programme from the Faculty of Arts/Social Science shall be eligible to submit his candidature for any subject of the Master degree programme(s) of the said faculties except the Master degree programme in Mathematics run under the same faculties. A candidate can apply for Master Degree in Mathematics only when he has passed Bachelor degree with subject of Mathematics either from Faculty of Social Sciences/ Science.
2. The University may prescribe further stipulation with respect to minimum qualifications subject to the approval of the Academic Authorities of the university.
3. The University may prescribe different qualifications for different courses.
4. The admissions shall be granted strictly on the basis of the merit list.
5. The Department/ University may with the previous permission of the Vice-Chancellor (including the approval of the scheme entrance test/examination), hold entrance test and /or Oral examination for admission in the respective Master degree programme of the department.
6. In case when the Department conducts Entrance Test and/ or Oral Test, the university will give at least "Fifty per cent' weightage to the marks obtained by the candidate at the concerned qualifying examination.

7. It will be obligatory for the authorities involved in the admission process to strictly observe the reservation policy in admissions formulated time to time by the Union Government or State Government, UGC, Rehabilitation Council and adopted by the University. The data based information in this regard has to be provided to the university within a period of 15 days after the completion of the admissions in the respective degree.

8. Admitting authority shall have to prepare and publish the merit list in the two fold as mentioned below:-

   (i) Candidates, who have passed the qualifying examination indicating category against each of the name in the last column such as General/S.T./S.C./S.E.B.C./Physically Challenged/Women etc.
   (ii) Candidates, who have passed the qualifying examination from a foreign university.

9. Admission granted by the University/Department to any student shall be provisional till the enrolment/registration/enlistment is made by the University. When the admission is granted on the bases of provisional eligibility certificate, the conditions & instructions given by the University should be complied within the time limit fixed by the University or latest by the beginning of next semester otherwise, term kept by such students will be forfeited and no fees on any account will be refunded.

O.M.D.6.Medium of Instruction and Examinations :

1. English or Hindi shall be the medium of instruction & examination.
2. No student shall be allowed to change the medium to appear in the examinations once he/she has opted any medium for particular Semester.
3. No student shall be allowed to opt or write papers with two different medium in one examination.

4. Notwithstanding anything in this ordinance the University may declare English as compulsory medium for instructions and/ or examinations for any Master Degree Course keeping academic considerations in mind

O.M.D.7.Mandatory Requirement of Attendance to appear in Examination:

1. The Choice Based Credit System (CBCS) Programme of the University is a comprehensive and continuous evaluation programme .Therefore; no students shall be allowed to appea in the examination unless he has at least 75% (seventy five pe cent) attendance separately in all the papers/courses.
2. The respective term/ semester of the student shall be liable fo rejection in case the attendance is short in any paper/subjec due to the reasons, whatsoever.

   Provided that the Vice chancellor may on the medical groun condone the requirement of attendance not exceeding 10% (ten percent) short to the required minimum attendance on th recommendation of the Head of the concerned Departmen that the illness was of such a serious nature (recorded by th doctor treating him/her) that it was beyond his or her control t attend the classes during the said period. The production c false certificate in this regard will be a ground for rejection fron the Master degree programme and criminal action.

   Provided further that the Vice chancellor may on any othe reasonable ground condone 5% (five per cent) attendanc lesser than to the required 75% (seventy five per cent) to hi satisfaction on the recommendation of the concerned Head c the Department.

3. A student. who represented the university/ institution/ Department/Centre/ State or Nation in Sports, N.C.C., N.S.S Cultural or other Activities conducted and / or sponsored officially by such institution(s) or agencies shall be entitle to

relaxation of ten percent in the attendance required for the purpose. Such cases should also be recommended by the concerned Head before he/she proceeds for leave and forwarded his application with appropriate documents to prove his participation. Submission of his case without prior permission will not be considered in any case.

Explanation: The University in no case will grant relaxation in attendance to a student, separate or combined on all the heads mentioned in O.M.D. 7 exceeding 15% (fifteen percent). Therefore, no candidate, who does not have 60% (sixty) or more than 60% (sixty per cent) attendance, will not be allowed to appear in the examination for reasons and grounds whatsoever.

O.M.D.8. Advisory for Students:

1. Each Department shall develop 'Advisory Mechanism' to address complex nature of the issues including advice to elect the course(s) from the category of elective courses.

2. Each Department will appoint Advisors in appropriate number required for the purpose.

3. The Department may Prepare "Student Hand Book" containing the detail of the courses available at the Department. This includes both the 'Core' and 'Elective Course (s)'.

4. A student subject to the availability of the elective courses will be required opt course(s) and submit his 'Option in writing' in triplicate on the prescribed 'Performa' for his registration in the concerned semester to the Head of the Department immediately after the commencement of the respective semester; i.e. on or before the last date notified by the concerned department.

5. The last date for registration and permission for election of subject should not exceed more than two weeks after the commencement of the semester.

6. A student may be permitted to withdraw from his registration from two weeks from the date of the registration.

7. A student may be permitted to withdraw from/change the elective subject opted by him after the allocation. However, he /she will not be allowed to withdraw/ change the same on or before the last date fixed for exercising his/her option to opt the same. Provided further that no student will be allowed to withdraw or change the option, who has been allowed for late registration/permission or entry.

O.M.D.9. Semester Schedule:

1. A Semester shall consist of the duration of Fifteen weeks (90 working Days)

2. First Semester of each Academic year will commence from July 15th of every Academic year.

3. Mid-academic year Semester(s) will commence on the stipulated date notified by the university or within in a period of seven days after the completion of the examination of the preceding semester for those students, who fall in this category can seek provisional admission.
   Their admission will be regularized within a period of seven days after the date of the declaration of the result of the said semester.

O.M.D.10. Examination Schedule:

1. **Proposed Time of Examinations**: The examinations of the **"Even Semester(s)"** shall commence in the **month of May** in case of "Odd Semester(s)" it may commence in the **month of December.**

2. **Examination Application**: A candidate shall be required to apply on the prescribed **'Examination Application Form'** for the 'Semester End Examination' to the Registrar/Dean/ Controller of Examinations through the Head of the concerned Department.

3. **'Examination Application Form'** must consist with following particulars and certificates signed by the appropriate authorities:
   (a) Candidate has attended minimum number of lectures etc. in respect of all the Courses.
   (b) Statement of 'No due Certificate' with regard to all the dues including the fee due on all the heads.

O.M.D.11. Salient Features of the Choice Based Credit System:

1. PG Departments of the different Faculties of the University shall design the Semester based Choice Based Credit System (CBCS) for Master Degree programme. Students will be provided choice to select courses offered by the respective Department of the same faculty or any other Department of the same or any other Faculty, depending on his/her interest, needs and long term goals as well as the feasibility in terms of the available expertise and infrastructure at the Department level.

2. Each PG Department shall design and offer courses after the due consideration and approval of the **Departmental Staff Council (DSC)** and concerned authorities of the University.

3. **Composition of the DSC**: The DSC shall consist of all the regular faculty of concerned Department and the Head of the Department shall chair it. The DSC shall recommend to the Vice chancellor for approval the constitution of "Credit Monitoring Committee **(CMC)**", which consists of the Head of the Department and three senior most teachers of the

department. The Department having the faculty strength of less than three (including HOD) shall co-opt maximum up to two members of the rank of Professor of the same subject from other Universities with the permission of the Vice - Chancellor. The Vice chancellor shall have prerogative to drop, alter or substitute any name suomoto or on the further recommendation of the same. In the absence of the HOD, the DSC/CMC shall be chaired by the next senior faculty member of the concerned Department.

4. Registration of candidates in first and subsequent semesters after the last date will not be permitted. For subsequent semesters, no minimum credit earning criteria will be applicable. Credit registration at least once in all Compulsory Credit Course shall be binding. However, earning all CCC credits for accumulation of the prescribed minimum credits shall not be required.

5. A student shall be evaluated through CCA (Comprehensive Continuous Assessment) and Semester End Examination (SEE). The distribution of marks between the CCA and the Semester end examination shall be in the ratio of 30:70. Each paper/ Course shall consist of 100 marks .However; the Programme governed by the provisions of different Councils in case of inconsistency shall be exempted from this requirement.

6. The candidate will be required to finalize the number of credits at the time of the registration in the semester and no change will be permitted after seven days of the commencement of the semester. The CMC of the concerned Department will forward the credits registration detail of all the students enrolled in the semester. The prior approval of the CMC will be essential and its decision shall be final and binding.

7. Each course shall be assigned a specific number of credits.

8. The marks obtained by a student in a course shall be converted into Grade Points and Credit Points based on scale-normalized marks. The performance of a student in a Semester shall be expressed as Semester Grade Point Average (SGPA) and the combined performance of a student in all the semesters of the Master degree programme shall be expressed as Cumulative Grade Point Average (CGPA).

9. The Department is under obligation to arrange all Compulsory Core Courses and the special number of Elective Core Courses so that the students enrolled for the course can complete/obtain prescribed minimum number of credits. However, it will not be at all obligatory for the department to make provision for all the Elective Core Courses. Department can add, remove or substitute any course and course both in the Core and/ or Elective Course(s).

10. There will be no provision to conduct supplementary, due paper of special examination for any examination. Students with 'F' or "E' Grade will be provided an option to re-register themselves in the said course subject to their desire as 'Self Study Course' or in a 'Regular Course' subject to the feasibility and availability of the resources in the department. The credit earned will not be considered in any case if the candidate has not re-registered and the same has not been approved by the CMC of the department at the time of the registration in the respective semester.

O.M.D.12. Credits: Weightage and Distribution:

1. The term **'Credit'** refers to the weightage given to a course and means the unit by which the academic activity of course work is measured. In these Regulations, One Credit means one hour of Class Room Teaching per week in case of theory papers. For a theory course of 6 credits, 6 'contact hours' per week will be assigned in time-table and thus in a semester 90 contact hours will be assigned to a 5 credit course.

2. The minimum number of credits to be earned for a degree will be 30 times the number of semesters specified in the syllabus for the degree. For example for a two year four semester course the minimum numbers of credit to be earned will be 120. In case where a candidate earned more than the minimum number credits specified, the best credits upto minimum number of credits will be considered for CGPA. However, the total credits for different courses may be different subject to the nature and design of the course concerned and norms formulated by the regulatory authorities.

3. **Distribution of Credits:** Ordinarily, all semester shall have uniform distribution of credits.

4. **Credit Card**: Every department will be under an obligation to maintain academic credit card on the prescribed Performa developed and provided by the University Examination Department for students. The Credit card shall be issued to the students before the commencement of the next semester and a student will be under the obligation to attach the copy of the same with the application for registration as student in the next semester. The department will prepare two copies of the Credit Card one each for the student and for the office record of the department.

O.M.D.13. Assessment and Evaluation:

1. The CBCS is student centric not only in the teaching-learning processes but also in their evaluation process. In CBCS, the evaluation process is divided into two parts. The first part consists of Comprehensive Continuous Assessment (CCA) and the second part consists of the Semester End Examination. The division of marks between the two shall be as per the provisions of this ordinance in ratio 30:70. In the CBCS, the evaluation process shall follow the norm that the faculty, who teaches the course, shall conduct the

Comprehensive Continuous Assessment (CCA) and the Semester End Examination (SEE). The concerned faculty shall be accountable for transparency and reliability of the entire evaluation of the student in the concerned Course.

2. The comprehensive continuous assessment and evaluation (based on the performance of the student) process in CBCS is in continuous model is conducted for the purpose to bring periodically in to the notice of the candidate about his/her progress. The assessment is divided into four discrete components for reporting the scores to the student as earned by him/ her. The CMC shall announce policy for CCA for all the courses in the Department in the beginning of the Semester and the same shall be communicated to the students.

3. The details of the Comprehensive Continuous Assessment and Semester End Examination are summarized in the Table below:

Component	Unit covered in a Course/Paper	Mode of Evaluation	Weightage in Percentage	Marks	Period of Continuous Assessment
CCA-I	First 30%	Assignment/ Field-Project Study/ Tour	10%	10	First part of the Semester. *Completed by the Fifth(5th) Week.
CCA-II	Succeeding 30%	Seminar Presentation	10%	10	Second part of the semester. *Completed by the Tenth(10th) Week.
CCA-III	Remaining 40%	Written/MCQ Test	10%	10	Third part of the Semester. *Completed by the Fifteenth(15th) Week.
CCA-Sub Total			**30%**	**30**	
SEE	100%	**Semester End Examination**	70%	70	To be completed between 18th - 20th week of the Semester.

4. The marks/ grades awarded for the continuous assessment shall be notified to the students within a period of ten days from the date of the completion of the assessment. In case a student fails to secure 12 out of 30 in the CCA (all three components taken). He/she shall not be allowed to appear for the Semester End Examination.

5. Students may seek clarifications within period of a week from the date of the notification of the said result. No clarifications will be entertained after the expiry of the said period.

6. The Department will constitute a committee consists of three members and the Head will be the ex officio chairperson of the Committee to supervise the whole Examination Process.

7. The marks awarded by the teacher(s) are shall be kept confidential unless moderated and approved by the CMC/Dept. Examination committee constituted for the purpose. The Committee shall be under consideration to maintain the standards of the evaluation.

O.M.D.14. Semester End Examination:

1. Semester End Examination shall be conducted between 18th - 20th week of the semester.

2. The duration for per course shall be of three hours for theory courses and four hours for practical/laboratory courses, and half hour for seminar, project work or field study presentations.

3. Question papers for Semester End Examination shall be set keeping in mind to examine the candidates' creativity, comprehension, problem solving capacity, application side of the subject, interpretation and awareness capacities. It should not be expected from the students to reproduce the answers by memorizing the answers.

4. Paper Setting:

4.1.1. The question paper for the end-semester examinations for each course shall be set by the paper setter appointed for the purpose. It shall be the responsibility of the paper setter to ensure that the syllabus for the course is adequately covered in the question paper.

4.1.2. The questions may comprise; objective type, short notes, Descriptive or any other types as per the policy developed and designed by the department and approved by the competent academic authorities of the university and notified in advance. The University may retain the earlier pattern of setting papers which includes the requirement of 10/8 questions and students may be provided with choice to answer respectively 5/4 questions. The maximum marks of SEE shall be 70. All questions shall carry the marks mentioned in the paper.

4.1.3. The answer scripts for End-Semester Examinations shall be evaluated preferably, by the respective paper-setters and or the mechanism developed by the university.

4.2.1. **Appointment of paper-setter/examiner**: The Boards of Studies in each subject shall draw a panel of paper-setters/examiners ordinarily in the month of August every alternate year and forward the same to the Academic Council which shall approve the panel of Paper-Setter/Examiner. While drawing the panel, the Chairman of the Board of Studies shall take into consideration the confidential aspect of the assignment.

The Vice chancellor if present preside the meeting of the Board but will not cast his vote. In his absence the Chairperson of the Board will preside the meeting.

However, the University may constitute group of teachers to set the paper through workshop method.

Provided further that the university may develop question bank with the help of examiners appointed subject to the provisions of this ordinance.

4.2.2. A person to be appointed as a Paper –Setter must be a full time teacher of the University/Colleges having at least 3 years Post Graduate teaching experience.

4.2.3. However, in exceptional circumstances, the Vice-Chancellor may relax the condition of experience and or alter or remove any paper setter.

4.3.1. **Moderation Board and moderation of Question Papers:**
There shall be a Moderation Board for each subject/programme of study and it shall consist of-

a) Dean of the School concerned

b) Head of the concerned Department,

c) Two senior teachers nominated by the Head of the Department/ Departmental committee recommended by the Dean of school and finally approved by the Vice Chancellor.

4.3.2. The functions of the Board shall be:

a) To ensure that the question paper has been set strictly in accordance with the syllabus and instructions given by the University covering broad areas adequately.

b) To delete question(s) set from outside syllabus and to make necessary substitution, if required.

c) To remove ambiguity in the language of question, if any,

d) To moderate the questions properly giving ample opportunity to candidates of both average and exceptional capabilities,

e) To ensure proper distribution and indication of marks for each question or part or parts thereof, time prescribed for the paper and to correct errors, if any, in this regard.

f) To bring to the notice of the Controller of Examinations lapses or omission on the part of the Paper-Setter, if any.

.4. Evaluation:

1. The CBCS is student centric scheme, not only in the teaching-learning processes but also in the evaluation process.

2. In CBCS, the evaluation process is divided into two parts. The first part consists of Comprehensive Continuous Assessment (CCA) and the second part consists of the Semester End Examination.

3. The division of marks between the two shall be as per the provisions of this Ordinance i.e. the CCA will have a weightage of 30 and SEE of 70 out of 100.

4. In the CBCS, the evaluation process shall follow the norm that the faculty, who teaches the course, shall conduct the Comprehensive Continuous Assessment (CCA) and the Semester End Examination (SEE) and the concerned faculty shall be accountable for transparency and reliability of the entire evaluation of the student in the concerned Course.

5. In Comprehensive Continuous assessment and Semester End *Examination* evaluation for each course shall be carried out on the basis of performance of students.

6. Continuous Assessment means 'internal assessment tests'or' sessional tests' and end-on semester means theoretical or practical laboratory examinations along with

Project work/Field study/Educational Tour or preparation dissertation or Term paper.

7. Each course shall carry credits as may be prescribed Board of Studies time to time in the syllabus. T weightage assigned to 'Continuous Assessment' a 'Semester End Examination' shall be taken into t consideration for the purpose of determining the gra obtained by the student in a course,

8. Grade point shall be calculated for each course in 10 po scale system on the basis of total marks obtained in C and SEE.

9. The Vice chancellor on the recommendation of Board studies and approved by the Academic Council sh appoint Paper Setter-cum Examiner or constitute Board Examiners for each course of study subject to t provisions of this Ordinance .

10. The Semester End Practical Examinations shall be joint conducted by an external and an internal examiner.

O.M.D.15. Result Preparation:

1. The final result of the examination shall be prepared on t basis of 'comprehensive continuous assessment' a 'semester end examination' along with credits earned by t respective student.

The results after computation and tabulation shall be plac before the Vice Chancellor for approval after it has be moderated/scrutinized by a Board consisting of the Head of t concerned Department and not less than two faculty memb appointed by the Dean.

2. **Grade Assignments:**

The grades in a course will be assigned on the basis of combined marks obtained in CCA and SEE. The total of maximum marks in CCA and SEE shall be 100 in all courses with a weightage of 30% to CCA. The letter grades and points will be assigned as per table given below.

Total Marks of CAA and SEE	Grade	Grade Definition	Grade Point
90<X<=100	O	Outstanding	10
80<X<=90	A	Excellent	9
70<X<=80	B	Very good	8
60<X<=70	C	Good	7
50<X<=60	D	Fair	6
39<X<=50	E	Average	5
Les than 40	F	Failed	0

3. **Credit Point Assignments:** Credit points earned in a course will be equal to product of Credit assigned to the course in the syllabus and grade point earned by the student on the basis of combined score in CAA and SEE.

4. **Grade Card and /Mark sheet:**

The University will issue the 'Grade Card' and "Mark Sheet" at the end of each semester to each student registered for the respective course from the examination. The Grade Card shall consist of at least the following particulars:

Basic Details: i. Name of the Student. ii. Father's Name. iii. Roll Number. iv. Enrolment / Registration / Unique Number.

Performance Details: For each course i. Course Code. ii. Course Title, iii Course type, iv. Credit of course, v. CAA marks, SEE Marks, Total Marks, Grade Point, Credit Point

Summary Performance Details: i. Total credit points earned i the semester, ii. Total credit earned in the semester, iii. SGP iv. Credit earned in Previous Semesters and v. CGP (calculated till the end of current semester)

5. Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) will be calculated on the credit ighted average of the grade points obtained as given below.

$$CGPA=\frac{\sum_{i=1}^{n} C_i P_i}{\sum_{i=1}^{n} C_i}$$

Where

C_i: Number of credits earned in the i^{th} course o Semester for which SGPA is to be calculated.

P_i: Grade Point Earned in i^{th} course

i: 1, 2, ...n represents the number of courses in which student is registered in the concerned semester.

$$SGPA=\frac{\sum_{i=1}^{n} C_i P_i}{\sum_{i=1}^{n} C_i}$$

Where

C_i: Number of credits earned in the i^{th} course of Cours till date for which CGPA is to be calculated.

P_i: Grade Point Earned in i^{th} course

i: 1, 2, ...n represents the number of courses in which a student is registered in the concerned semester.

6. The Cumulative Grade Point Average (CGPA) of all the courses after completing the programme or all semesters at the final stage of study shall be awarded in the Fina Cumulative Grade Card. The Final Grade of the Maste degree programme will be assigned on the basis of Fina CGPA as per table given below.

CGPA	Letter Grade	Classification
9.00 to 10.00	O	Outstanding
8.00 to 8.99	A	Excellent
7.00 to 7.99	B	Very good
5.50 to 6.99	C	Good
4.50 to 5.49	D	Fair
3.60 to 4.49	E	Average
O to 3.59	F	Failed

7. Equivalent Percentage of marks may be computed as ten times of CGPA. The candidates with CGPA equal to or higher than 5.5 (Letter Grade C) will be considered with good academic record and shall be treated as eligible wherever the minimum percentage of 55% is specified.
8. In case of LLM examination and other cases wherever specified specifically the candidates with CGPA less than 4.8 will be declared failed.

O.M.D.16. Promotion Rules:

a) A candidate is eligible to continue the classes of next semester immediately after the examinations of one semester is over and he/ she can appear the next semester examination with any number of back/arrear papers.

b) A candidate shall have to appear in 1st semester examinations to be eligible for promotion to 2nd semester. If and student could not appear or apply for 1st semester examination then he/she must have to take re-admission in 1st semester afresh.

c) A candidate may get chance to clear the all courses double the duration of the course of study .i e. for 2 year course within four years, for 3 year courses within 6 years, for 4 year courses within eight years and for 5 year courses within ten years.

O.M.D.17.: When a candidate at a 'University Semester End Examination' fails to obtain minimum marks for passing in a particular courses he/she will be required to reappear in that

course without keeping term for that semester. The candidate wi have to reappear in the semester end examination by paying fres examination fee along with an application form. Such candidate when obtains minimum or more than minimum marks for passin in the course, his/her actual marks of reappearance will be carrie forward for award of class/CGPA.

O.M.D.18. RANKS:

First and Second Ranks will be awarded after completion of the course of study at the end of the final semester examination on the day of publication of final results.

On the basis of Average percentage of results as declared and on this basis of CGPA, Ranks will be awarded to the candidates in subject.

O.M.D.19. General Guidelines:

I) There will be no provision for repeat of betterment i.e. scope fo appearing and paper again for obtaining better result.

ii) If a candidate after admission in first semester could no continue the classes or could not obtain eligibility to ge admission in first semester examination then he/she is to ge re-admission in first semester again as fresh and he/she wi not be allowed to continue study in other semester.

iii) Candidates should be registered under Sant Gahira Guru within 3 months of study, if not obtained earlier. The condition for obtaining Registration must be followed as specified in the Application form. Without Registration number of Sant Gahira Guru no students will be allowed to get admission in firs semester examination or 2nd semester course of study.

iv) The dates of commencement and termination of each semeste shall be as fixed by the Academic Council.

v) It will be obligatory for the Head of Department to take appropriate measures against Ragging & Gender problems arising in the University Department. In case of occurrence of any such incident, the violator shall be dealt with very seriously and appropriate stringent action be taken by the Head of Department by observing principle of natural justice. The Head of Department may appoint a committee to inquire in to the matter which will also observe the principle of natural justice. The committee will submit its report to the head of Department who will forward the, same with his comment there upon to the University Registrar, for taking further necessary action in the matter.

i) Candidates must forward their applications for admission to University examination to the registrar on or before the prescribed date with a certificate of attendance duly signed by the Head of the Department along with the examination fees fixed by the University.

ii) Thirty percent internal evaluation shall be within the exclusive purview of the concerned Head of Department which requires purity, transparency accuracy in the evaluation & assessment of students. The benefits of re-assessment scheme will not be made available to the students as regards the internal assessment.

iii) There will be theory and practical examination if prescribed in the syllabus, at the end of the fourth semester. The viva voce examination will be conducted at the end of the fourth semester.

x) Subject to the provisions of University Act., Statutes, Ordinances, Rules and Regulations, the University will prepare, design and enact syllabus/prospectus for different Master Degree prorgammes under the different faculties time to time.

O.M.D.20.: EMPOWERING CLAUSE: Subject to the provisions of this ordinance, the University shall run Master Degree programme(s) prepared and approved by the Academic authorities of the University including the Board of Studies and Faculty of the respective subject and approved by the Academic Council and the Executive Council.

Semester Structure Table

Appendix –

Note: The Department Staff Council may subject to the approval
the Board of Studies of the respective subject, respectiv
Faculty and the Academy Council of the University, may b
way of addition or deletion introduction of new or addition
subject or amend the given scheme including the increase
the number of papers under the same code number or b
inserting additional or new code numbers.
Provided further that the University may design different CBC
scheme for the different Master Degree programm
depending on their nature, scope & requisites. In suc
situation, the scheme will be notified with semester wise deta
evaluation scheme and the syllabus of the respecti
subject/course.

Thus the actual semester structure table may vary for the
different master degree programme. The one given below is fo
an example.
ABC: In tables given below ABC shall be replace by Three
Letter Subject Code of the degree programme for example PH
for M.Sc. Physics.
The table assumes that six cluster A, B, C, D, E, F are availab
for Elective Core Courses each involving four courses labeled
like A01, A02, Ao3, A04.
The Interdisciplinary courses are classified under OSC

First Semester Structure Table

S. No.	Subject Code	Course Title	Course Type	Credit	Contact Hours Per week			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
1.	ABC 101		CCC	6	4	2	0	3	0
2.	ABC 102		CCC	6	4	2	0	3	0
3.	ABC 103		CCC	6	4	2	0	3	0
4.	ABC S01	Other Supportive Course	OSC	6	4	2	0	3	0
5.	ABC A01/B01/ C01/D01/ E01/F01		ECC	6	4	2	0	3	0
				30					

Second Semester Structure Table

	Subject Code	Course Title	Course Type	Credit	Contact Hours Per week			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
	ABC 201		CCC	6	4	2	0	3	0
	ABC 202		CCC	6	4	2	0	3	0
	ABC 203		CCC	6	4	2	0	3	0
	ABC 221		PRJ/FST/ EST	6	4	2	0	3	0
	ABC A02/B02/ C02/D02/ E02/F021		ECC	6	4	2	0	3	0
				30					

Third Semester Structure Table

S. No.	Subject Code	Course Title	Course Type	Credit	Contact Hours Per week			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
1.	ABC 301		CCC	6	4	2	0	3	0
2.	ABC 302		CCC	6	4	2	0	3	0
3.	ABC 303		CCC	6	4	2	0	3	0
4.	ABC S02		OSC	6	4	2	0	3	0
5.	ABC A03/B03/ C03/D03/ E03/F03		ECC	6	4	2	0	3	0
				30					

Fourth Semester Structure Table

S. No.	Subject Code	Course Title	Course Type	Credit	Contact Hours Per week			EoSE Duration (Hrs.)	
					L	T	P	Thy	
1.	ABC 401		CCC	6	4	2	0	3	0
2.	ABC 402		CCC	6	4	2	0	3	0
3.	ABC 403		CCC	6	4	2	0	3	0
4.	ABC 421		PRJ/FST/ EST	6	4	2	0	3	0
5.	ABC A04/B04/ C04/D04/ E04/F04		ECC	6	4	2	0	3	0
				30					

Eligibility Criteria (Qualifying Exams)	Admission Criteria	Course Code	Course Type	Course Title	Credits	Contact Hours Per Week			EoSE Duration (Hrs.)		
						L	T	P	Thy		P
	1) Merit List 2) Entrance Test (written or/and oral) if decided by the University 3) Observance of Reservation Policy.	HSc 101	CCC	PHYSIOLOGY	5	4	2	0	3		0
		HSc 111	CCC	PHYSIOLOGY-LABORATORY WORK	2	00	00	3	0		3
		HSc 102	CCC	FOOD MICROBIOLOGY	5	4	2	0	3		0
		HSc 112	CCC	FOOD MICROBIOLOGY-LABORATORY WORK	2	00	00	3	0		3
		HSc 103	CCC	PROBLEMS IN HUMAN NUTRITION	5	4	2	0	3		0
		HSc 113	CCC	PROBLEMS IN HUMAN NUTRITION-LABORATORY WORK	2	00	00	3	0		3
		HSc S01	OSC	RESEARCH METHODOLOGY & COMPUTER APPLICATION: BASICS	6	4	3	00	3		00
		HSc A01	ECC/CB	CONSTITUTIONALISM & INDIAN POLITICAL SYSTEM PUBLIC NUTRITION	6	4	3	00	3		00
				TOTAL= 33							

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IST SEMESTER
COURSE CODE: HSc101			COURSE TYPE: CCC
COURSE TITLE: PHYSIOLOGY			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY:90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL:33	

OBJECTIVE:

This course will enable students to:

- Advance their understanding of some of the relevant issues and topics of human physiology.
- Enable the students to understand the integrated function of all systems and thegrounding of nutritional science in Physiology.
- Understand alterations of structure and function in various organs and systems indisease conditions.

UNIT-1- *18 Hours*	UNIT-I 1. Cell structure and functions Levels of cellular organization and function - organelles, tissues, organs and systems brief review. Cell membrane, transport across cell membrane and intercellular communication. Regulation of cell multiplication. 2. Nervous systemReview of structure and function of neuron, conduction of nerve impulsesynapses, role of neurotransmitters Organization of central nervous systemstructure and function of Brain and spinal cord, Afferent and efferent nerves,Hypothalamus and its role in various body function, obesity, sleep, memory.
UNIT-2- *18Hours*	UNIT-II 3. Endocrine system Endocrine glands- structure, function, role of hormones, regulation of hormonal secretion, Disorders of endocrine gland. Emphasis on physiology of diabetesand stress hormones. 4. Sense Organs Review of structure and function, Role of skin, eye, ear, nose and tongue in perception of stimuli.
UNIT-3- *18 Hours*	UNIT-III 5. Digestive system Review of structure and function. Secretary, Digestive and Absorptive function. Role of liver, pancreas and gall bladder and their dysfunction. 6. Respiratory system Review of structure and function. Role of lungs in the exchange of gases, Transport of oxygen and Co2. Role of Hemoglobin and buffer systems. Respiratory quotient, hypoxia, and asthma

	UNIT-IV 7. The circulatory system Structure and function of heart and blood vessels. Regulation of cardiac output and blood pressure, heart failure, hypertension. 8. Blood formation, composition, blood clotting and homeostasis: Formation and function of plasma proteins, Erythropoesis, Blood groups and his to compatibility. Blood indices. Use of blood for investigation and diagnosis ofspecific disorders Anemia. 9. The Musculo skeletal system Structure and function of bone, cartilage and connective tissue, Disorders of the skeletal system. Types of muscles structure and function
	UNIT-V 10. The excretory system: Structure and function of nephron. Urine formation. Role of kidney in maintaining pH of blood. Water, electrolyte and acid base balance, diuretics. 11. Immunity system Cell mediated and hormonal immunity. Activation of WBC and production of antibodies. Role in inflammation and defense 12. Physiological changes in pregnancy.
(HSc111)	Identification of bones of Human Skeleton Diagrammatic presentation of different physiological system Model making of any physiological system.
READINGS	1. Ganong W.F. 1985: Review of Medical Physiology 2nd Edition, Lange Medical Publication. 2. Moan Camcell E.J. Dickinson C.J.... Edwares C.R.N. and Sikora K. (1984): Clinical Physiiology, 5th Edition .... Publication. 3. Guyton A.C. (1985): 4. Guyton, A.C. and Hall, J.B. (1996) Text Book of Medical Physiology, 9th Edition, W.B. Saneers Company... Books Pvt. Ltd. Banglore. 5. Wilson KTW and Waugh A (1998): Ress and Wilson Antony and Physiology in Health and .... 4th Edition 6. Mc. W.D. Karen F.J. and Katch, V.L. (1996): Excericise Physiology, Energy ,.....performance, 4th Edition, Williams and Wilkons Batimere 7. Jain A.K. Text Book of Physiiology, Vol I and II Avichal Publishing Co. New Delhi

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			**IST SEMESTE**
COURSE CODE: HSc 102			**COURSE TYPE: C**
COURSE TITLE: **FOOD MICROBIOLOGY**			
CREDIT:7		**HOURS:135**	
THEORY: 5	**PRACTICAL:2**	**THEORY:90**	**PRACTICAL:4**
MARKS			
THEORY: 100(20+80)		**PRACTICAL:33**	
OBJECTIVE : To understand the relevant issues & topics of food microbiology			

UNIT-1- 18Hours	UNIT-I 1. Bacterial morphology, structure, staining, culture media, culture method a identification of bacteria. 2. Growth and Nutrition of Bacteria : Intrinsic and extrinsic parameters that af microbial growth.
UNIT-2- -18Hours	UNIT-II 3. Microorganism important in food microbiology - Mold, yeast, bacteria. 4. Spoilage of different groups of foods: a. Cereals and cereal products b. Vegetables and fruits c. Fish and meat products d. Meat and meat products e. Eggs and poultry f. Milk and milk products g. Canned foods
UNIT-3- 18Hours	UNIT-III 5. Contamination of foods. 6. Food Preservation : a. General principles of food preservation: Asepsis, removal of microorgan maintenance of anaerobic conditions. b. Preservation by use of high temperature. c. Preservation by use of low temperature d. Preservation by drying. e. Preservation by food additives f. Preservation by radiation.
18Hours	UNIT-IV 7. Foods in relation to disease : Food borne illness: Bacterial and viral food borne disorders. Food borne important animal parasites, mycotoxins. 8. Fermented Foods : Role of microbes in fermented foods – a. Fermented dairy products b. Fermented vegetables c. Fermented meat d. Fermented fish e. Beverage and distilled products.
UNIT-5- 18Hours	UNIT-V 9. Indices of Food Sanitary Quality: (i) Microbial criteria of food. (ii) Microbial standards and food safety 10. Controlling the microbial quality of foods - (i) Quality control using microbial criteria. (ii) The HACCP (Hazard Analysis and Critical Control Point) system 11. Anti microbial therapy 12. Food Laws
LABORATORY WORK (HSc 112)	1. Preparation of common laboratory media and special media for cultivation of bacteria,yeast and moulds. 2. Staining of bacteria- grams staining, spore, capsule, motility of bacteria, staining of yeast and moulds. 3. Identification of important moulds and yeasts (slides). 4. Study of environment around us as source of transmission of micro organisms in food.Assessment of surface Sanitation of food preparation units. 5. Bacteriological analysis of milk. 6. Demonstration of available rapid methods, diagnostic kits used in identification of microorganisms or their products. 7. Visits to food processing units or any other organization dealing with advance methods in food microbiology.

SUGGESTED READINGS

1. Atlas, M. Ronald (1995) principles of Microbiology, 1th Edition Mosby-year Book, Inc., Missour, U.S.A.
2. Topley and Wission's (1983) Principles of Bacteriology, Virology and Immunity, Edited by S.G. Wilson, A. Miles and M.T. Parkar, Vol.I
3. General Microbiology and Immunity, II: Systematic Bacteriology, 7th Edition, Edward Arnold Publish.
4. Block, J.G. (1999) Microbiology Principles and Exportations, 4th Edition John Wiley an Sone Inc.
5. Jay, James, M. (2000) Modern Food Microbiology, 6th Edition, Aspen publishers, Inc., Maryland.
6. Bansart, G. (1989) Basic Food Microbiology, 2th Edition, CBS Publisher.
7. Garbutt, J (1977) Essentials of Food Microbiology, 1st Edition, Arnold International Students Edition.
8. Doyle, P. Benehat, L.R. and Mantville, T.J. (1977): Food Microbiology, Fundamentals a Forntiers, ASM Press, Washington DC.
9. Bensaon, H.J. (1990) Microbiological applications, C. Brown Publishers U.S.A.
10. Roday, S. (1999) Food Hygiene and sanitation, 1st Edition, Tata Mcgraw Hilll, New Delh
11. Venderzant, C and D.F. splitts Toesser (1992): Compendium of Methods for the Microbiological Examination of Foods 3rd Edition. American Public Health Association, Washington D.C.
12. Frazier, W.C. and Westhoff, D.C. (1998) : Food Microbiology. Tata McGraw Hill Book Company, New Delhi, 4th Edition.
13. James, M.J. (1987) : Modern Food Microbiology, CBS Publishers, New Delhi, 3rd editio
14. Pelezar, M.I. and Reid, RD. (1993) : Microbiology, McGraw Hill Book Company, New Yo 5th edition.
15. Adams, M.R., Moss, M.O. (1995): Food Microbiology, New Age International (P.) Ltd.,

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IST SEMESTER
COURSE CODE: HSc103			COURSE TYPE: CCC
COURSE TITLE: PROBLEMS IN HUMAN NUTRITION			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL: 34	
OBJECTIVE : To understand the relevant issues & topics related to nutritional problems.			
UNIT-1- 20 Hours	UNIT-I 1. Nutritional screening and assessment of nutritional status of hospitalized and outdoor patients. Identification of high risk patients. Assessment of patient needsbased on interpretation of patient data (Clinical, biochemical, biophysical, personal etc.)		
UNIT-2- 15 Hours	2. Nutritional support: Recent advances in techniques and feeding substrates.		
UNIT-3- 15 Hours	3. Stress and trauma : Diet in surgery, bums, fracture. Diet and drug interaction: Effect of drugs on ingestion, digestion and metabolism of nutrients.		
UNIT-4 -20 Hours	Neurological disorders: (i) Neuritis - Etiology, nutritional care. (ii) Migraine - Diet management (iii) Anorexia Nervosa - Etiology, treatment 6. Childhood problems : Inborn errors of metabolism and their nutritional management. Maple syrup urine disease - Tyrosenemia, Galactosemia, Phenylketonuria.		

UNIT-5- 20- Hours	Musculoskeletal disorders: (i) Arthritis's - Nutritional care (ii) Gout - Characteristics, nutritional care 8. Cancer : Types of cancer, Nutritional effect of cancer, Nutritional disorders related treatment, diet in cancer. Historical background, prevalence, etiology, biochemical and clinical manifestation, preventive and therapeutic measures for the following - I. PEM II. Nutritional anaemia III. Vitamin A deficiency IV. IDD Osteomalacia and osteoporosis Etiology, symptoms and nutritional care, 11. Rickets 12. Dental carries: Etiology, nursing bottle carries. 13. Nutrition in AIDS.
LABORATORY WORK (HSc113)	1. Estimation of protein quality using different methods PER, B.V., N.P.U., NDP-Cal% 2. Estimation of energy value of food stuffs using bomb calorimeter. 3. Estimation of Energy Requirements. • BMR • Energy expenditure on physical activities. • Factorial approach 4. Balance studies – Nitrogen bance 5. Assessment of micronutrient status a. Iron b. Vitamin 'C' c. Vitamin 'A' d. Vitamin from 'B' Complex group. 6. Bioavailability of selected nutrients 7. Assessment of nutritional status including Body composition. 8. Physiological parameters like heart rate and blood pressure 9. Assessment of coronary risk profile- RISKO factor 10. Assessment of bone health 11. Planning diets and formulating dietary guide lines • Fitness and health • Prevention of chronic degenerative disorders • Obesity management • Management of diabetes mellitus and CVD 12. Review of existing alternative diet related systems for physical fitness and health. 13. Planning and preparation of diets for the elderly in health and sickness.

SUGGESTED READINGS

1. Atlas, M. Ronald (1995) principles of Microbiology, 1th Edition Mosby-year Book, Inc., Missour, U.S.A.
2. Topley and Wission's (1983) Principles of Bacteriology, Virology and Immunity, Edited by S.G. Wilson, A. Miles and M.T. Parkar, Vol.I
3. General Microbiology and Immunity, II: Systematic Bacteriology, 7th Edition, Edward Arnold Publish.
4. Block, J.G. (1999) Microbiology Principles and Exportations, 4th Edition John Wiley and Sone Inc.
5. Jay, James, M. (2000) Modern Food Microbiology, 6th Edition, Aspen publishers, Inc., Maryland.
6. Bansart, G. (1989) Basic Food Microbiology, 2th Edition, CBS Publisher.
7. Garbutt, J (1977) Essentials of Food Microbiology, 1st Edition, Arnold International Students Edition.
8. Doyle, P. Benehat, L.R. and Mantville, T.J. (1977): Food Microbiology, Fundamentals and Forntiers, ASM Press, Washington DC.
9. Bensaon, H.J. (1990) Microbiological applications, C. Brown Publishers U.S.A.
10. Roday, S. (1999) Food Hygiene and sanitation, 1st Edition, Tata Mcgraw Hilll, New Delhi.
11. Venderzant, C and D.F. splitts Toesser (1992): Compendium of Methods for the Microbiological Examination of Foods 3rd Edition. American Public Health Association, Washington D.C.
12. Frazier, W.C. and Westhoff, D.C. (1998) : Food Microbiology. Tata McGraw Hill Book Company, New Delhi, 4th Edition.
13. James, M.J. (1987) : Modern Food Microbiology, CBS Publishers, New Delhi, 3rd edition.
14. Pelezar, M.I. and Reid, RD. (1993) : Microbiology, McGraw Hill Book Company, New York, 5th edition.
15. Adams, M.R., Moss, M.O. (1995): Food Microbiology, New Age International (P.) Ltd.,

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)	IST SEMESTER
COURSE CODE: HScS01	COURSE TYPE: OSC
COURSE TITLE :RESEARCH METHODOLOGY & COMPUTER APPLICATION: BASIC S	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 80 CCA : 20	

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis data
- Achieves skills in various research writings
- Gets acquainted with computer Fundamentals and Office Software Package.

UNIT - 1 15 Hrs

CONCEPT OF RESEARCH :

Meaning and characteristics of research , Steps in research process , Types of research i Basic, applied and action research ii) Quantitative and qualitative research , Areas research in concern discipline

SELECTION OF PROBLEM FOR RESEARCH :

Sources of the selection of the problem , Criteria of the selection of the problem ,Drafting research proposal , Meaning and types of variables ,Meaning and types of hypotheses.

UNIT - 2 15 Hrs

TOOLS OF RESEARCH :

Meaning and general information about construction procedure of (i) Questionnaire, Interview, (iii) Psychological test, (iv) observation (v) Rating scale (vi) Attitute scale and (v check list ,Advantages and disadvantages of above tools

SAMPLING :

Meaning of population and sample , Importance and characteristics of sample , Samplin techniques - i) Probability sampling : random sampling, stratified random samplin systematic sampling, cluster sampling ii) Non-probability sampling: incidental samplin purposive sampling, quata sampling

UNIT - 3 15 Hrs

METHODS OF RESEARCH

Meaning and conducting procedure of following methods of research : Historical method , Survey method ,Case study, Causal comparative method , Developmental methods , Experimental methods

UNIT - 4 15 Hrs

TREATMENT OF DATA :

Level of measurements of data , Steps in treatment of data: editing, coding, classification, tabulation, analysis and interpretation of results

WRITING RESEARCH REPORT :

Sections of report : Preliminary section , Content section : various chapters , Supplementary section : appendices, references, abstract , Format and style

UNIT - 5 15 Hrs

Computer Fundamentals

Computer System : Features, Basic Applications of Computer, Generations of computers.

Parts of Computer System : Block Diagram of Computer System ; Central Processing Unit (CPU) ; Concepts and types of Hardware and Software, Input Devices - Mouse, Keyboard, Scanner, Bar Code Reader, track ball ; Output Devices - Monitor, Printer, Plotter, Speaker ; Computer Memory - primary and secondary memory, magnetic and optical storage devices.

Operating Systems - MS Windows : Basics of Windows OS ; Components of Windows - icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders ; Control panel : display properties, adding and removing software and hardware, setting date and time, screensaver and appearance ; **Windows Accessories :** Calculator, Notepad, WordPad, Paint Brush, Command Prompt, Windows Explorer.

UNIT - 6 15 Hrs

Office Software Package

Word Processing - MS Word : Creating, Saving, Opening, Editing, Formatting, Page Setup and printing Documents ; Using tables, pictures, and charts in Documents ; Using Mail Merge sending a document to a group of people and creating form, letters and label.

Spreadsheet - MS Excel : Opening a Blank or New Workbook, entering data/Function/ Formula into worksheet cell, Saving, Editing, Formatting, Page Setup and printing Workbooks.

Presentation Software - MS Power Point : Creating and enhancing a presentation, modifying a presentation, working with visual elements, adding Animations & Transitions and delivering a presentation.

SUGGESTED READINGS

Agrawal, Y. P. (1988). Better sampling : Concepts, Techniques and Evaluation. New Delhi : sterling Publishers Private Ltd. Best, J. W. (1993). **Research in Education** (6th ed.) New Delhi : Prentice-Hall of India Pvt. Ltd.

Broota, K. D. (1992) Experimental design in Behavioral Research (2nd ed.) New Delhi : Wiley Eastern Limited.

Dasgupta, A. K. (1968). Methodology of Economic Research. Bombay: Asia Publishing House. Edwards, A. L. (1957). Techniques of Attitude Scale construction. New York : Appleton-Contury

Gall, M. D., Gall, J. P. and Borg, W. R. (2007). Educational Research : An introduction (8th ed.) Coston : Allyn and Bacon.

Garrett, H. E. & Woodworth, R. S. (1969). Statistics in Psychology and Education. Bombay : Vakils, Fecffer & Simons Pvt. Ltd.

Goode, W. J. & Hatt, Paul K. (1952). Methods in Social Research. New York : McGraw-Hill.

Gopal, M. H. (1964). An Introduction to research Procedure in Social Sciences. Bombay : Asia Publishing House.

Hillway, T. (1964) Introduction to Research (2nd ed.) Noston : Houghton Miffin.

Hyman, H. H., et al. (1975). Interviewing in Social Research. Chicago : University of Chicago Press.

Kerlinger, F. N. (1983) Foundation of Behavioural Research. (2nd Indian Reprint) New York : Holt, Rinehart and Winston.

Kothari, C. R. (2007) Research Methodology: Methods & Techniques (3rd ed.) New Delhi : Wishwa Prakashan. Fundamentals Of Computers, Dr. P. Mohan, Himalaya Publishing House.

Microsoft First Look Office 2010, K. Murray, Microsoft Press.

Fundamental Of Research Methodology And Statistics, Y.K. Singh, New Age International (P) Limited, Publishers.Practical Research Methods, Dr Catherine Dawson,

The Essence Of Research Methodology, Jan Jonker & Bartjan Pennink, Springer

M.Sc (HOME SCIENCE) (FOOD & NUTRITION) IST SEMESTER

COURSE CODE: HScA01 COURSE TYPE: ECC/CB

COURSE TITLE: CONSTITUTIONALISM & INDIAN POLITICAL SYSTEM

CREDIT: 06	HOURS : 90
THEORY: 06	THEORY: 90

MARKS : 100

THEORY: 80 CCA : 20

OBJECTIVE:

- Understands the concept of Constitutionalism
- Gets acquainted with various Indian Political System
- Becomes familiar with various Union Executive
- Gets conversant with Legislatures, Legislative Bills
- Achieves skills in various writings

UNIT - 1 12 Hrs

Unit-I :

Meaning: Constitution, Constitutional government & constitutionalism; Difference between Constitution & Constitutionalism; Constitutionalism: Basis, Elements, Features & future. Forms of Government: Democracy & Dictatorship, Unitary & Federal, Parliamentary & Presidential form. Ideals of the Indian Constitution incorporated in the Preamble.

Special Features of the Indian Constitution.

UNIT - 2 24 Hrs

Unit-II :

Concept of State and Citizenship, Judicial Review and Fundamental Rights, Directive Principles of the State Policy, Fundamental Duties, Procedure to Amend the Indian Constitution, Judiciary: Supreme Court and High Court, Judicial Activism and Public Interest Litigation and Provisions relating to Emergency.

UNIT - 3 18 Hrs

Unit-III :

Union Executive- President, Prime Minister, Council of Ministers. State Executive- Governor, Chief Minister and Council of Ministers. Local Bodies & Panchayati Raj

UNIT - 4 24 Hrs

Unit-IV:
Parliament of India, State Legislatures, Legislative Bills: Ordinary, Money and Financial, Union State Relations, Principles of the 'Separation of Power and the 'Principles of Check & Balance'.
Political Parties and Pressure Groups.
Challenges before Indian Democracy: Terrorism, Regionalism, Communalism, Linguistics and National Integration.

UNIT - 5 20 Hrs

Unit-V:
Controller & Accountant General of India, Solicitor General, Advocate General, Election Commission, Union and State(s) Public Service Commission, Finance Commission.

SUGGESTED READINGS

HOBBES, Thomas, The Leviathan, Chapters XIII & XVII [entry]
LOCKE, John, The Second Treatise of Civil Government, Chapter IX [entry]
ROUSSEAU, Jean-Jacques, The Social Contract or Principles of Political Right
MONTESQUIEU, The spirit of the laws,
RAZ, Joseph, "The rule of law and its virtue", in The authority of law, Oxford University Press, 1979
Dicey on British constitution
P. Ishwara Bhat Inter-relationship between Fundamental Rights
M P Jain Indian Constitutional Law
H M Seervai Constitutional Law of India
V N Shukla Constitution of India
D D Basu Shorter Constitution of India
B Sivarao Constitutional Assembly Debates
J. V R Krishna Iyer Fundamental Rights and Directive Principles
Paras Diwan Human Rights and the Law
P K Tripathi Some Insight into Fundamental Rights
S P Sathe Fundamental Rights and Amendment to the Constitution
P B Gajendragadkar Law, Liberty and Social Justice
David Karrys Politics of Law

Sc (HOME SCIENCE) FOOD & NUTRITION — **IST SEMESTER**

URSE CODE: HScA02 — **COURSE TYPE: ECC/CB**

COURSE TITLE: **PUBLIC NUTRITION**

CREDIT:6		HOURS:90	
EORY: 6	**PRACTICAL:0**	**THEORY: 90**	**PRACTICAL: 0**

MARKS

THEORY: 100 (20+80)	PRACTICAL:0

OBJECTIVE:

- To understand the concept of Public Nutrition.
- To understand the national health care delivery System.
- To understand the causes and consequences of nutritional problems in the community.
- To orient the students with the strategies for improving the nutritional status of communities.
- To understand the concept of food and nutrition security.
- To learn about the various Government programmes aimed at improving health and nutritional status of the population.

UNIT-1 18 Hours

1. Concept of Public Health Nutrition : Relationship between health and nutrition. Role of public nutritionist in the health care delivery system.
2. Sectors and public policies relevant to nutrition.
3. National health care delivery system.

UNIT-2 18 Hours

4. Population Dynamics: Demography, demographic cycle, world population trend,birth rates, death rates, growth rates, demographic trends in India, age pyramid, sex ratio.
5. Environment and Health:
Water : Water pollution, surveillance of drinking water quality. Air : Air pollution

UNIT-3 18 Hours

6. Nutritional Status: Determinants of nutritional status of individual andpopulations. Factors affecting nutritional status.
7. Major Nutritional Problems : Etiology, prevalence, clinical manifestations. Preventive axtherapeutic measures of -
- Macro and micro deficiencies - LBW, PEM, xerophthalmia, nutritional anaemia.- Other nutritional problems like lathyrism, aflatoxicosis, alcoholism and fluorosis.

UNIT-4 18 Hours

8. National Nutrition Policy
9. Approaches and strategies for improving nutritional status and health.
10. Occupational health
11. Health planning and management

UNIT-5- 18 Hours	UNIT-V 12. Communication for Health Education. 13. Health planning in India. 14. Health Care of the Community Concept of health care, health system, level ofhealth care.
SUGGESTED READINGS	PREVENTIVE AND SOCIAL MEDICINE - J.E. Park, Universal Publication Public Nutrition MFN - 06 IGNOU Public Nutrition Manual. IGNOU New Delhi

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week				EoSE Duration (Hrs.)	
					L	T	P	Thy	P	
After appearing in the First semester examination irrespective of any number of back/ arrear papers	HSc 201	CCC	FOOD SCIENCE	5	4	2	00	3	00	
	HSc 211	CCC	FOOD SCIENCE-LABORATORY WORK	2	00	00	3	00	3	
	HSc202	CCC	FOOD CHEMISTRY	5	4	2	00	3	0	
	HSc 212	CCC	FOOD CHEMISTRY-LABORATORY WORK	2	00	00	3	00	3	
	HSc 203	CCC	THERAPEUTIC NUTRITION	5	4	2	00	3	0	
	HSc 213	CCC	THERAPEUTIC NUTRITION-LABORATORY WORK	2	00	00	3	00	3	
	HSc 221	PRJ/FST/EST	SOCIAL OUTREACH AND SKILL DEVELOPMENT	6	00	00	9	00	4	
	HScB01	ECC/CB	ENVIRONMENTAL AND FOREST LAWS	6	4	3	00	3	00	
	HSc B02	ECC/CB	FOOD PROCESSING - I							
	HSc B03	ECC/CB	PROGRAMME PLANNING IN PUBLIC HEALTH NUTRITION							
			TOTAL= 33							

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IIND SEMESTER
COURSE CODE: HSc 201			COURSE TYPE: CCC
COURSE TITLE : FOOD SCIENCE			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL:45
MARKS			
THEORY: 100 (20+80)		PRACTICAL: 33	

OBJECTIVE:

This course is designed to:

- Provide an understanding of composition of various foodstuffs.
- Familiarize students with changes occurring in various foodstuffs as a result of processing and cooking.
- Enable students to use the theoretical knowledge in various applications and food preparations.

UNIT-1- 15 Hours

UNIT-I 1. Introduction to Food Science:

2. Water: Physical properties of water and Ice, chemical, nature, structure of the water molecule.
   a) Absorption phenomena, types of water solutions and collidative properties.
   b) Free and bound water.
   c) Water activity and Food spoilage.
   d) Freezing and Ice structure.
3. Food Dispersions-Colloidal solutions, stabilization of Colloidal systems, Rheology of food dispersions.
   a) Gels: Structure, formation, strength, types and permanence.
   b) Emulsions: Formation, stability, surfactants and emulsifiers.
   c) Foams: Structure, formation and stabilization.

UNIT-2- 25 Hours

UNIT-II 4. Polysaccharides, Sugars and Sweeteners

a) Starch: Structure, gelatinization, methods for following gelatinization changes Characteristic of some food starches. gelatinization. Modified food starches.
b) Non-starch Polysaccharides: Cellulose, hemicelluloses, pectins, gums, anima polysaccharides.
c) Sugar and Sweeteners: Sugar, Syrups, potent sweeteners, and sugar products.
d) Sweetener chemistry related to usage in food products: Structural relationships t sweetness perceptions, hydrolytic reactions, solubility and crystallizatio hydroscopicity, fermentation, non- enzymatic browning.

UNIT-3- 15 Hours

UNIT-III 5. Cereals and Cereal Products

a) Cereal grains: Structural and composition.
b) Cereal products.
c) Flours and flour quality.
d) Extruded foods, breakfast cereals, wheat germ burger, puffed and flaked cereals.

6. Fats, Oils and Related Products

Sources, composition , effects of composition on fat properties. Functional properties of fat and uses in food preparations. Fat substitutes. Fat deterioration and antioxidants.

UNIT-4 -15 Hours

UNIT-IV 7. Proteins: Classification, composition, denaturation, non- enzymatic browning and other chemical changes.

8. Enzymes: Nature of enzymes: stability and action. Proteolytic enzymes oxidizes, lipases, enzymes decomposing carbohydrates and application. Immobilized enzymes.

UNIT-5- 20 Hours

UNIT-V 9. Milk and Milk Products: Composition. Physical and functional properties Denaturation.

Effects of processing and storage. Dairy products, Cultured milk, yoghurt, butter, whey cheese, concentrated and used products, frozen desserts,
dairy product substitutes

LABORATORY WORK (HSc211)

Effect of solutes on boiling point and freezing point of water.

2. Effect of types of water on characteristic of cooked vegetables, Pulses and cereals.
3. Sugar and Jaggery Cookery: Relative sweetness, solubility and sizes of sugars, stages of sugar cookery, caramelization, crystallization, factors affecting crystal formation
4. Starches Vegetables Gums and Cereals: Dextrinization, gelatinization, retro gradation, thickening power, Factors affecting gels. Gluten formation and factors affecting gluten formation.

SUGGESTED READINGS

1. Journal of Food Science Published by the Institute of Food Technologist, Chicago lu U.S.A.
2. Journal of Food Science and Technology published by Association of Food Sciencetists and Technologist (India) CFTRI- MYSORE.
3. Food Technology Published by the Institute of Food Technologist, Chicago lu, U.S.A.

M.Sc(HOME SCIENCE) (FOOD & NUTRITION)			IIND SEMESTER
COURSE CODE: HSc 202			COURSE TYPE: CCC
COURSE TITLE: FOOD CHEMISTRY			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL: 33	

OBJECTIVE:

To understand the nature of microorganisms involved in food spoilage, food infections and intoxications and also those used in food biotechnology (food fermentation and various food processing industries)

To gain knowledge of principles of various techniques used in the prevention and control of the microorganisms in foods(food preservation)

To understand criteria for microbiological safety in various foods operations to avoid public health hazards due to food contamination

UNIT-1 -18 Hours

UNIT-I 1. Meat and Poultry: Muscle composition, characteristics and structure. Post mortem changes processing, preservation and their effects. Heat induced changes in meat variables in meat preparation, Tenderizing treatments, meat products.

2. Eggs : Structure and composition, changes during storage. Functional properties of eggs, use in cookery. Egg processing, low cholesterol egg substitutes.

UNIT-2 -18 Hours

UNIT-II 3. Fish and sea foods : Types and composition, storage and changes during storage, changes during processing, by-product and newer products.

4. Pulses and Legumes: Structure, composition, processing, toxic constituents.
5. Nut ad oil seeds: Composition, oil extraction and by-products.
6. Protein concentrates : Hydrolysates and textured vegetable proteins, milk substitutes.

UNIT-3 -18 Hours

UNIT-III 7. Fruits and vegetables : Plant, anatomy, composition , Enzymes in fruits and vegetables. Flavor constituents, plant phenolics, pigments, post harvest changes. Texture of fruits and vegetables. Effects of storage, processing and preservation.

UNIT-4 -18 Hours

Spices and condiments : Composition, flavoring extracts - Natural and synthetic

UNIT-IV 9. Processed foods : Jams, jellies, squashes, pickles, dehydrated products.

10. Beverages : Synthetic and natural, alcoholic and non-alcoholic, carbonated and non-carbonated, coffee, tea, cocoa, malted drinks

UNIT-5 -18 Hours

UNIT-V 11. Traditional processed products : Fermented food - Cereal based, pulse based, fruit/vegetables based like vinegar, pickle

12. Leavened products: Leavening agents, biologically leavened and chemically leavened products. Batters and dough, backery products.

13. Salt and substitutes.

LABORATORY WORK (HSc-212)

Jams and Jellies: Pectin content of fruits, role of acid pectin and sugar in jam and jelly formation, Use of gums as emulsifiers / stabilizers.

6. Fat and Oils: Flash point, melting point and smoking point, Role of fast and oils in cookery as: Shortening agent, frying medium, Factors affecting fat absorption. Fat crystals.
   Plasticity of fats Permanent and semi- permanent emulsions.
7. Milk & Milk Products: Scalding denaturation ration. Effect of acid, salt, alkali, sugar, heat) enzymes, polyphenols on milk Khoa, curd, paneer. Cheese (ripened and unripened).
8. Egg: structure assessing egg in quality. Use of egg in cookery: Emulsions air incorporation, thickening, binding, and gelling. Method of egg cookery and effect of heat white foams and factors affecting foams:
9. Pulses: Effect of various cooking and processing methods on various functional properties of pulses and their products.
10. Gelatin: Gelatin gel strength and factors affecting gelatin.
11. Fruits and Vegetables: Pigments: Effects of cooking metal ions, ph, effect of various cooking processes on different characteristics of vegetables. Prevention of enzymatic browning.
12. Leavened Products: Fermentation- Use of microorganisms ((lactic acid yeast). Steam as an agent, Egg as a chemical agent.
13. Frozen Desserts: Factors affecting ice crystal formation. Quality characteristics of frozen Ecc Food processing & preservation

M.Sc(HOME SCIENCE) (FOOD & NUTRITION)			IIND SEMESTER
COURSE CODE: HSc 203			COURSE TYPE: CCC
COURSE TITLE: THERAPEUTIC NUTRITION			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL:45
MARKS			
THEORY: 100 (20+80)		PRACTICAL: 34	

OBJECTIVE:

To learn to critically evaluate the methodology and derivation of requirements for specific micronutrients.

- To understand nutritional management in special conditions.
- To understand critical periods in growth and development and impact of malnutrition on it.
- To understand the various methods of assessment of nutritional status.

UNIT-1- 20 Hours

UNIT-I 1. Etiopathophysiology, metabolism and clinical aberration: complications, prevention and recent advances in nutritional management of GIT Disorders

a) Gastritis _ Types, dietary modification
b) Peptic ulcer, etiology, symptoms, dietary modification
c) Intervals of feeding, bland diet, four stage diet Therapy, prevention of recurrence
d) Diarrhea – Classification, dietary consideration
e) Constipation, classification, dietary consideration
f) Ulcerative colitis symptom, dietary treatment
g) Sprue types, dietary consideration.

UNIT-2 20 Hours

UNIT-I 2. Disease of liver and gall bladder.

a) Diseases of liver and gall bladder
b) Jaundice – classification and dietary treatment
c) Hepatitis – types and dietary management.
d) Hepatic coma – causes and dietary management
e) Cirrhosis- Type and dietary management
f) Cholecystitis- Types and dietary management
g) Cholelithiases- etiology and dietary management

3. Pancreatic disorders: etiology, pathogenesis and nutritional care.

UNIT-3 -10 Hours

UNIT-III 4. Renal diseases

a) Basal renal functions, classification of renal disease.
b) Glomerulonephritis- Acute and chronic- symptoms and dietetic treatment
c) Nephrosis symptoms and principles of nutritional care.
d) Renal failure- Acute and chronic renal failure, dialysis.
e) Renal calculi- Etiology, types of stones and nutritional care acid and alkaline ash diet.
f) Fevers and infections-Types of fever, Tuberculosis, typhoid and malaria dietetic management

UNIT-4 -20 Hours

UNIT-IV 5. Cardiovascular diseases: Classification.

a) Hyperlipidemia _ Classification and nutritional care.
b) Atherosclerosis – Etiological factors, pathogenesis dietetic management.
c) Hypertension – Classification, etiology, nutritional care.

6. Weight Imbalance: Regulation of energy in take

a) obesity – Types, etiology, treatment, diet and other measures, complication of obesity
b) Under weight ness – causes, dietetics management.

UNIT-5- -20 Hours

UNIT-V 7. Historical background, prevalence, etiology biochemical and clinical manifestation, preventive and therapeutic measures for metabolic disorders.

8. Diabetic Mellitus.
   a) Incidence and predisposing factors
   b) Symptoms , types and diagnoses
   c) metabolism in diabetes
   d) dietary management and meal management
   e) Hypoglycemic agents and insulin
   f) complications of diabetes
   g) Disorders of thyroid gland: normal thyroid function
9. Hyperthyroidism _ symptoms and treatment

LABORATORY WORK (HSc-213)

Collection and storage of biological samples for clinical investigation.

2. Market survey of commercial nutritional supplements and nutritional suppo substrates.
3. Commonly used test for diagnosis of various - system — wise.
   - Interpretation of patient data and diagnostic tests and drawing up of patient die prescription, using a case study approach.
   - Follow up- acceptability of diet prescription, compliance, discharge diet plan.
4. Preparation of diet counseling aids for common disorders.
5. Planning and preparation of diets for patients with common multiple disorders and complications and discharge diet plans.

SUGGESTED READINGS

1. Collection and storage of biological samples for clinical investigation.
2. Market survey of commercial nutritional supplements and nutritional support substrates.
3. Commonly used test for diagnosis of various - system — wise.
   - Interpretation of patient data and diagnostic tests and drawing up of patient diet prescription, using a case study approach.
   - Follow up- acceptability of diet prescription, compliance, discharge diet plan.
4. Preparation of diet counseling aids for common disorders.
5. Planning and preparation of diets for patients with common multiple disorders and complications and discharge diet plans.

M.Sc. in COMPUTER SCIENCE
(SECOND SEMESTER)

COURSE CODE : HSc B01	COURSE TYPE : ECC/CB
COURSE TITLE : ENVIRONMENTAL AND FOREST LAWS	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 100 (20+80)	CCA : 20

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data
- Achieves skills in various research writings
- Gets acquainted with computer Fundamentals and Office Software Package

UNIT - 1 18 Hrs

EVOLUTION OF FOREST AND WILD LIFE LAWS

a) Importance of Forest and Wildlife
b) Evolution of Forest and Wild Life Laws
c) Forest Policy during British Regime
d) Forest Policies after Independence.
e) Methods of Forest and Wildlife Conservation.

UNIT - 2 18 Hrs

FOREST PROTECTION AND LAW

a) Indian Forest Act, 1927
b) Forest Conservation Act, 1980 & Rules therein
c) Rights of Forest Dwellers and Tribal
c) The Forest Rights Act, 2006
d) National Forest Policy 1988

UNIT - 3 18 Hrs

WILDLIFE PROTECTION AND LAW

a) Wild Life Protection Act, 1972
b) Wild Life Conservation strategy and Projects
c) The National Zoo Policy

UNIT - 4
18 Hrs

CHAPTER œBASIC CONCEPTS

a. Meaning and definition of environment.
b. Multidisciplinary nature of environment
c. Concept of ecology and ecosystem
d. Importance of environment
e. Meaning and types of environmental pollution.
f Factors responsible for environmental degradation.

CHAPTERœINTRODUCTION TO LEGAL SYSTEM

a. Acts, Rules, Policies, Notification, circulars etc
b. Constitutional provisions on Environment Protection
c. Judicial review, precedents
d. Writ petitions, PIL and Judicial Activism

CHAPTER œLEGISLATIVE FRAMEWORK FOR POLLUTION CONTROL LAWS

a) Air Pollution and Law.
b) Water Pollution and Law.
c) Noise Pollution and Law.

UNIT - 5
18 Hrs

CHAPTER- LEGISLATIVE FRAMEWORK FOR ENVIRONMENT PROTECTION

a) Environment Protection Act & rules there under
b) Hazardous Waste and Law
c) Principles of Strict and absolute Liability.
d) Public Liability Insurance Act
e) Environment Impact Assessment Regulations in India

CHAPTER œENVIRONMENTAL CONSTITUTIONALISM

a. Fundamental Rights and Environment
   i) Right to Equality .....Article 14
   ii) Right to Information .....Article 19
   iii) Right to Life .....Article 21
   iv) Freedom of Trade vis-à-vis Environment Protection
b. The Forty-Second Amendment Act
c. Directive Principles of State Policy & Fundamental Duties
d. Judicial Activism and PIL

SUGGESTED READINGS

Bharucha, Erach. Text Book of Environmental Studies. Hyderabad : University Press (India) Private limited, 2005.
Doabia, T. S. Environmental and Pollution Laws in India. New Delhi: Wadhwa and Company, 2005.
Joseph, Benny. Environmental Studies, New Delhi: Tata McGraw-Hill Publishing Company Limited, 2006.
Khan. I. A, Text Book of Environmental Laws. Allahabad: Central Law Agency, 2002.
Leelakrishnan, P. Environmental Law Case Book. 2nd Edition. New Delhi: LexisNexis Butterworths, 2006.
Leelakrishnan, P. Environmental Law in India. 2nd Edition. New Delhi: LexisNexis Butterworths, 2005.
Shastri, S. C (ed). Human Rights, Development and Environmental Law, An Anthology. Jaipur: Bharat law Publications, 2006.
Environmental Pollution by Asthana and Asthana, S,Chand Publication
Environmental Science by Dr. S.R.Myneni, Asia law House
Gurdip Singh, Environmental Law in India (2005) Macmillan.
Shyam Diwan and Armin Rosencranz, Environmental Law and Policy in India – Cases, Materials and Statutes (2nd ed., 2001) Oxford University Press.

JOURNALS :-
Journal of Indian Law Institute, ILI New Delhi.
Journal of Environmental Law, NLSIU, Bangalore.

MAGAZINES :-
Economical and Political Weekly
Down to Earth.

M.Sc. in HOME SCIENCE (FOOD & NUTRITION)
(SECOND SEMESTER)

COURSE CODE : HSc B01 COURSE TYPE : ECC/CB

COURSE CODE : SOCIAL OUT REACH & SKILL DEVELOPMENT
LABORATORY WORK

CREDIT: 6		HOURS: 135	
THEORY : 0	PRACTICAL : 6	THEORY : 0	PRACTICAL : 135

MARKS : 100

THEORY : 0	PRACTICAL : 100

OBJECTIVE: The aim of the project work or field work is to introduce students the research methodology in the subject and to prepare them for the pursuing in theoretical or computational areas of the subject.

Preparation of reports on following issues

experimental assets — river/ forest/grassland/hill/mountain etc.

- Environmental pollution - Urban/ Rural/ Industrial/ Agricultural/mining
- Study of common plants / insects / birds / wild lives etc.
- Study of simple ecosystems — pond / river / hill slopes, etc.
- Human population & Environment
- Municipal Solid waste management and handling.

Visit to mently Retarted chikdre Centren, Childcare Centre, Hospital, Welfare Centre, Juveitle court etc.

Anganwadi Centre, pre school Centre, Old Home, Women Welfare Centre.

M.Sc(HOME SCIENCE) (FOOD & NUTRITION) IIND SEMESTER

COURSE CODE: HSc B02 COURSE TYPE: ECC/CB

COURSE TITLE: **FOOD PROCESSING - I**

CREDIT:6		HOURS:90	
THEORY: 6	PRACTICAL:0	THEORY: 90	PRACTICAL: 0

MARKS

THEORY: 100 (20+80)	PRACTICAL : 0

OBJECTIVE:

To impart systematic knowledge of basic and applied aspects in food processing and technology

To enable the student to understand food composition and its physico chemical, nutritional and sensory aspects.

To gain in depth knowledge about processing and preservation techniques of cereal and cereal products and meat and meat products.

To optimise process parameter for consistent quality processed food products.

UNIT-1 18 Hours	**Cereals :** Wheat, rice, maize, barely, oat, rye- Structure, cultivation, harvesting, properties, composition and commercial value. **Milling process :** Complete milling process, break rolls, reduction rolls, milled products and their nutritive value and applications.
UNIT-2 18 Hours	**Baking technology :** Bread, biscuits/ Cookies and cake, Principles of baking, Ingredients and their functions, methods of preparation, in-process control, faults, causes and remedies, methods of leavening : physical, biological and chemical, scoring of quality parameters.
UNIT-3 18 Hours	**Meat :** Composition, variety, slaughtering and related practices, preslaughter handling, grading, ageing, curing, smoking and tenderizing of meat, meat pigments and colour changes,cooking, storage, methods of preservation for value addition and spoilage.
UNIT-4 18 Hours	**Poultry :** Production considerations, Processing plant operations (slaughter and bleeding, scalding, defeathering, eviscerating, chilling and packaging), cooking, tenderness, flavour and colour changes. **3 Eggs :** Composition, quality factors, storage, bacterial infection and pasteurization, freezing, drying and egg substitutes.

UNIT-5- 18 Hours	**Fish :** Composition, onboard handling & preservation, drying and dehydration, salt curing, smoking, marinades, fermented products, canning, Modified Atmosphere Packaging, and quality factors.
SUGGESTED READINGS	Fabriani, G and Lintas C. (1988) Durum Wheat Chemistry and Technology. American Association of Cereal Chemistry Inc. • Kent N L.(1993) Technology of Cereals. 4 th Edi. Pergamon Press. • Olson, V M; Shemwell G A and Pasch, S (1998) Egg and Poultry Meat • Processing, VCH P, New York • Winton & Winton, (1991) Techniques of Food Analysis. Allied Scientific Publishers. • Matz A Samuel, Bakery Technology and Engineering. • Pomeranz Yeshuraj, Food Analysis: Theory and Practice

M.Sc(HOME SCIENCE) (FOOD & NUTRITION)			IIND SEMESTER
COURSE CODE: HSc B03			COURSE TYPE: ECC/CB
COURSE TITLE: PROGRAMME PLANNING IN PUBLIC HEALTH NUTRITION			
CREDIT:6		HOURS:90	
THEORY: 6	PRACTICAL:0	THEORY: 90	PRACTICAL: 0
MARKS			
THEORY: 100 (20+80)		PRACTICAL : 0	

OBJECTIVE:

UNIT-1- 18 Hours	**PROGRAMME PLANNING AND MANAGEMENT IN PUBLIC HEALTH NUTRITION** • Basic principles and models of programme planning • Planning process in public nutrition
UNIT-2- 18Hours	**PROGRAMME MONITORING AND EVALUATION:** Definition, significance and purpose of monitoring the food and nutrition programmes Identification and selection of indicators for monitoring, data collection and analysis system (e.g. MIS) Definition, significance and purpose of evaluation in food and nutrition programmes
UNIT-3- 18 Hours	Principles of evaluation, types, models and steps of evaluation • Identification and selection of indicators for evaluation • Strategies for data collection (qualitative and quantitative)
UNIT-4- 18 Hours	**NUTRITIONAL SURVEILLANCE** • Objectives, initial assessment indicators for use in nutritional surveillance • Nutritional surveillance for programme planning, Triple A approach • Current programme monitoring systems in India

UNIT-5- 18 Hours	**NUTRITION IN EMERGENCIES AND DISASTERS:** • Natural and manmade disasters resulting in emergency situations • Nutritional problems in emergencies in vulnerable groups - Macro and micronutrient deficiencies - Infection • Assessment and surveillance of affected population groups – clinical, anthropometric and dietary Nutritional relief and rehabilitation – assessment of food needs, food distribution strategy, mass and supplementary feeding, sanitation and hygiene, evaluation of feeding programmes Public nutrition approach to tackle nutritional problems in emergencies
SUGGESTED READINGS	Edelstein S. (2006) Nutrition in Public Health. A handbook for developing programmes and services. Second Edition. Jones and Bartlett Publishers. • Goyet, Fish. V. Seaman, J. and Geijer, U. (1978) The Management of Nutritional Emergencies in Large Populations, World Health Organization, Geneva. • FAO. (1983) Selecting Interventions for Nutrition Improvement. A Manual Nutrition in Agriculture. No. 3. • Gibney M.J., Margetts, B.M., Kearney, J. M. Arab, I., (Eds) (2004) Public Health Nutrition, NS Blackwell Publishing. • Klein, R. E. (Ed) (1979) Evaluating the Impact of Nutrition and Health • Programmes. London and New York: Plenum Press. • Owen. A. Y. and Frankle, R. T. (1986) Nutrition in the Community. The Art of Delivering Services, 2nd ed. Times Mirror/ Mosby. • WFP/ UNHCR (1998) WEP/ UNHCR Guidelines for Selective Feeding Programmes in Emergency Situations. Rome and Geneva: WEP & UNHCR.

Eligibility Criteria (Qualifying Exams)	Course Code	Course: Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
After appearing in the Second semester examination irrespective of any number of back/ arrear papers	HSc 301	CCC	ADVANCED NUTRITION ✓	5	4	2	00	3	00
	HSc 311	CCC	ADVANCED NUTRITION-LABORATORY WORK ✓	2	00	00	3	00	3
									00
	HSc 312	CCC	NUTRITIONAL BIOCHEMISTRY-* ✓ LABORATORY WORK	2	00	00	3	00	3
	HSc 303	CCC	METHODS OF INVESTIGATION * ✓	5	4	2	00	3	00
	HSc 313	CCC	METHODS OF INVESTIGATION-LABORATORY WORK	2	00	00	3	00	3
	Hsc 02	OSC	Intellecfual Property Human Rights & Env. Basics ✓	6	4	3	0	3	00
	HSc C 01	ECC/CB	TRIBAL STUDIES	6	4	3	00	3	00
			NUTRITION FOR HEALTH OF WOMEN AND CHILDREN ✓						
				TOTAL= 33					

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)		IIIRD SEMESTER	
COURSE CODE: HSc 301		COURSE TYPE: CCC	
COURSE TITLE: ADVANCED NUTRITION			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL:33	

OBJECTIVE:

(a) Provide in depth knowledge of the physiological and metabolic role of various nutrients and their interactions in human nutrition.

b) Enable students to understand the basis of human nutritional requirement and recommendations through the life cycle.

c) Enable students to understand the pharmacological actions of nutrients and their implications.

UNIT-1- 15 Hours

UNIT-I 1. Energy: Energy content of foods. Physiological fuel value- review. Measurement of Energy Expenditure: BMR, RMr thermic effect of feeding and physical activity, methods of measurement of basal metabolism. Estimating energy requirements of individuals. Regulation of energy metabolism: control of food intake, digestion, absorption and body weight.

4. Lipids: Classification digestion, absorption, transport- review – Functions of fat E.F.A. Role of n-3 n-6 fatty acids in health and disease.Requirements of total fat and fatty acids. Trans fatty acids, prostaglandins,phospholipids, cholesterol.

UNIT-2 -20 Hours

UNIT-I 2. Carbohydrates: Types, classification, digestion and transport- review,dietary fibre, fructo, oligosaccharides, resistant starch- chemical composition and physiological effects Glycemic index of foods. Sweeteners nutritive and nonnutritive.

UNIT-3- 15 Hours

UNIT-III 3. Proteins: Classification, digestion, absorption and transport- review. Metabolism of proteins: Role of muscle, liver and gastro intestinal tract.in protein metabolism. Protein quality, methods of evaluating protein quality. Protein and amino acid requirements. Therapeutic applications of specific amino acid.

UNIT-4- 25 Hours

UNIT-IV 5. Water: Regulation of intra and extra cellular volume – Osmolality, water balance and its regulation.

6. Minerals: (Note: For each nutrient sources, bio-availability, metabolism, function, requirements, RDA, deficiency and toxicity, interactions with other nutrients are to be discussed)
7. Macro minerals: calcium, phosphorus, magnesium, sodium, potassium and chloride.
8. Micro minerals: Iron, copper, zinc, manganese, iodine, fluoride.
9. Trace minerals: Selenium cobalt, chromium, Cadmium, silicon ,boron, nickel.

UNIT-5- 15 Hours

UNIT-V 10. Vitamins: Historical background, structure, food sources, absorption and transport metabolism biochemical function, and assessment of status. Interactions with other nutrients. Physiological, pharmacological and therapeutic effects, toxicity and deficiency with respect to the following.

a. Fat soluble Vitamins A,D,E, & K
b. Water Soluble: thiamine riboflavin, niacin, biotin, pyridoxine, folic acid, pantothenic acid, ascorbic acid, cyanocobalamin, choline, inositol, ascorbic acid.

LABORATORY WORK (HSc311)

Calcium : Estimation of calcium in foods and serum.
2. Phosphorous : Estimation of inorganic phosphorous in foods and serum.
3. Ascorbic acid : Estimation of ascorbic acids in foods.
4. Proteins:
   (a) Estimation of proteins in foods.
   (b) Estimation of albumin, globulin and albumin/globulin ratio in serum and urine.
   (c) Estimation of haemoglobin.
5. Glucose: Estimation of glucose in blood and urine.
6. Cholesterol: Estimation of cholesterol in blood.
7. Enzyme assay: Estimation of activity of serum alkaline phosphates and trans aminase.
8. Urea and creatinine: Estimation of urea and creatinine in serum and urine.
9. Survey of pathological laboratories.

SUGGESTED READINGS

1. Scrimshaw, N.S. and Gleason, G.R. (1992) Assessment Procedures. Qualitative Methodologies for Planning and Evaluation of Health related Programmes. International Nutrition foundation for Developing Countries, Boston.
2. Van Maanen (1983)" Quantitative Methodology, Sage Publication.
3. Cook, T.D. and Richard, C.S. (1979): Qualitative Methods in Evaluation Research, Sage Publications, and London.
4. Patton, M.Q. (1980): Qualitative Evaluation Methods Sage Publications.
5. Pettitti, D.B. (2000): Meta analysis, Decision Analysis and cost- effectiveness Analysis:Methods for Quantitaive Methods in Mecinine. Oxford University Press, New York.
6. Hunter, J.E. and Shmidt (1990): Methods of Meta- analysis- Correcting Error and Blas in Research Findinge, sage Publications London.
7. Walker, R. (1983): applied Qualitative Research, gower, London.
8. Margan, D. (1988): rocus Groups as Qualitative research Sage Publication, London.
9. Creswell, J. (1994): Research Design: Qualitative and Quantitative Approaches. Thousand Oaks, CA Sage Publications.
10. Margan, D (1993): Successful Focus Groups. Sage Publications.
11. Mischler, E.G. (1986), Research Interviewing. Context and Narrative, Harvard University Press Cambridge.
12. Denzin, N.K. and Licoin Y.S. (1994): Handbook of Qualitative Research, Sage Publications.
13. Janesick , V.J. (1993): Stretching Exercises for Cultivative researches, Sage Publications.
14. Mienert, C.L. (1986): Clinical Trials: Design, conduct and Analysis, oxford, New York
15. Schlessetman, J.J. (1982): Case control studies: Design Conduct and Analysis. Oxford New York.
16. Bryman, A. and Crame: D (1994) Quantitative Data Analysis for Social Scientists.
17. Bryman, A. and Crame: D (1996) Quantitative Data analysis with Minitabs, Rutledge, B.Sc. (Home Science) - Part-I,II,III, M.H.Sc (72) London.
18. Cameron, M.E. and van Staveren, W.A. (1988): Manual on Methology for Food consumption Studies, Oxford University Press Oxford.
19. Quandt. S.A. and Ritenbaugh, S. (1986): Training Manual in Nutritional Anthropology American Association of Anthropology, Washington, D.C.

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IIIRD SEMESTER
COURSE CODE: HSc 302			COURSE TYPE: CCC
COURSE TITLE: NUTRITIONAL BIOCHEMISTRY			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL:33	

OBJECTIVE : To understand the basics of Biochemistry of Nutritonal importance.

UNIT-1 18Hours

UNIT-I 1. Hetero polysaccharides- Definition classification structure and properties of glycoprotein, and proteoglycans.

2. Inter mediatory metabolism- Reactions, standard for energy changes, and regulating, carbohydrates- glycolysis, gluconeogenesis, citric acid cycle, hexose-mono-phosphate pathway.

UNIT-2- 15 Hours

UNIT-I 3. Lipids- Beta oxidation synthesis of fatty acids. Synthesis and breakdown of unsaturated fatty acids, cholesterol, phospholipids. And triacylglycerol.

4. Purines and pyrimidines- Synthesis and break down source of various atoms of the purine base. salvage reaction, Biosynthesis of purines and pyrimidines.

UNIT-3- 18 Hours

UNIT-III 5. Plasma proteins- Nature Properties and functions

6. Nucleic acids- DNA replication and transcription method of replication fork, okazaki segment, rule of sigma factor and core enzyme, DNA recombinant-Bio medical importance, restriction enzyme clowning, libraries & libraries construction.
7. Protein bio synthesis, initiation, formation of UOS, complex formation of complex, elongation.

UNIT-4- 18 Hours

UNIT-IV 8. Hormones, general characteristic of hormones classification of hormones, mechanism of action. Assay of hormone, functions of Hormones, Thyroxine,TSH.LH. ACTH and insulin.

9. Minerals, trace elements, their physiological function sources, absorption, excretions & deficiency of iron, copper, iodine zinc and selenium

UNIT-5- 18 Hours

UNIT-V 10. Detoxification in the body- Metabolism of foreign compounds oxidation conjugation, reduction hydrolyses.

11. Major alteration in CHO protein and fat metabolism in chronic nutrition, related generative diseases diabetes, heart diseases.

LABORATORY WORK (HSc312)	10. Acids and alkalis: Preparation of dilute solutions of common acids and alkalis and determining their exact normality. 11. Buffers ; Preparation of phosphate, carbonate-bicarbonate, ascorbic acid, acetate, chloride and pthalate buffers and determination of their pH by the use of indicators and pH meters
SUGGESTED READINGS	1. Biochemistry- Harper 2. Biochemistry- A.Palta 3. Biochemistry- A.Chaudhary 4. Human Physiology- C.Chaterjee

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IIIRD SEMESTER
COURSE CODE: HSc 303			COURSE TYPE: CCC
COURSE TITLE: METHOD OF INVESTIGATION			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL:34	

OBJECTIVE: To understand the relevant issues & topi cs related to methods of investigation of nutrients.

UNIT-1 30 Hours	UNIT-I 1. Electrolytic dissociation : Principle, technique and theory of electrolytic dissociation. 2. Hydrogen ion concentration : Principle and measurement of pH, indicators, buffer. 3. Physiochemical techniques : Principles and methodology of the following - (a) Diffusion (b) Osmosis (c) Filtration (d) Surface tension (e) Adsorption (f) Centrifugation
UNIT-2 10 Hours	UNIT-I 4. Chromatography : Principles, techniques and application of the following - (a) Paper chromatography - Circular, ascending and descending. (b) Ion exchange chromatography (c) column chromatography (d) Thin layer chromatography (e) Gas liquid chromatography (f) High performance liquid chromatography
UNIT-3 15 Hours	UNIT-III 5. Electrophoresis :Principles and techniques of paper and gel electrophoresis. 6. Microbiological assay : Principle and methodology of the following - (a) Vitamins (b) Amino acids
UNIT-4 20 Hours	UNIT-IV 7. Colorimetry : Principle, colorimeter applications. 8. Radioactive isotopes : Properties of radioactive isotopes, detection of radiations. Uses of radioactive isotopes in medical science

UNIT-5- 15 Hours	UNIT-V 9. Immunological methods : Principle and technique of the following - (a) Radio Immuno Assay (RIA) (b) Enzyme Linked Immunosorbent Assay (ELISA) 10. Collection of biological samples.
LABORATORY WORK (HSc-313)	Spectrometer, Beer Lambert Law, Absorption maximum, Preparation & standard curve, nutrient estimations in UV and visible range, AAS, AES, flame photometry. 13. Fluorimetry: Estimation of thiamin and riboflavin. 14. Chromatography: Paper - Identification of amino acid by circular, ascending and descending methods. Ion-exchange - Separation of amino acids. column Separation of proteins. Thin layer - Identification of amino acids, Gas-liquid Estimation of fatty acids, HPLC - Estimation of â-carotene and á-tocopherol. 15. Electrophoresis: Fractionation of plasma proteins.
SUGGESTED READINGS	Hawk, P.B., Oser, B.K. and Summerson, W.H. Practical Psysiological Chemistry. Tata McGraw Hill. 2. Varley, H. Practical Clinical Biochemistry. The English language Book Society. 3. Das, Debjyoti Biophysics and Biophysical Chemistry. Academic Publisher, Calcutta. 4. Okotore, R.O. : Basic Separation Techniques in Biochemistry. New Age International (P) Ltd. Publishers. 5. Manual of Laboratory Techniques. National Institute of Nutrition, Hyderabad.

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)	IIIRD SEMESTER
COURSE CODE : HSc S02	COURSE TYPE : OSC
COURSE TITLE INTELLECTUAL PROPERTY RIGHTS, HUMAN RIGHTS & ENVIRONMENT: BASICS	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 80 CCA : 20	

OBJECTIVE :

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data.

UNIT - 1 12 Hrs	• Patents :- Introduction & concepts, Historical Overview. • Subject matter of patent. • Kinds of Patents. • Development of Law of Patents through international treaties and conventions including TRIPS Agreement. • Procedure for grant of patents & term of Patent. • Surrender, revocation and restoration of patent. • Rights and obligations of Patentee • Grant of compulsory licenses • Infringement of Patent and legal remedies • Offences and penalties • Discussion on leading cases.
UNIT - 2 24 Hrs	• Meaning of Copyright, Historical Evolution, • Subject matter of copyright. • Literary works • Dramatic Works & Musical Works • Computer Programme • Cinematographic films • Registration of Copyrights • Term of Copyright and Ownership of Copyrights • Neighboring Rights • Rights of Performers & Broadcasters • Assignment of Copyright. • Author's Special Rights (Moral Rights) • Infringement of Copyrights and defenses • Remedies against infringement (Jurisdiction of Courts and penalties) • International Conventions including TRIPS Agreement WIPO, UCC, Paris Union, Berne Convention, UNESCO. • Discussion on leading cases.

UNIT - 3 10 Hrs	• Rights: Meaning • Human Rights- Meaning & Essentials • Human Rights Kinds • Rights related to Life, Liberty, Equals & Disable
UNIT - 4 24 Hrs	• National Human Rights Commission • State Human Rights Commission • High Court • Regional Court • Procedure & Functions of High & Regional Court.
UNIT - 5 20 Hrs	• Right to Environment as Human Right • International Humanitarian Law and Environment • Environment and Conflict Management • Nature and Origin of International Environmental Organisations (IEOs) • Introduction to Sustainable Development and Environment • Sustainable Development and Environmental Governance
SUGGESTED READINGS	1. G.B.Reddy, Intellectual Property Rights and Law, Gogia Law Agency, Hyderabad. 2. S.R.Myneni, Intellectual Property Law, Eastern Law House, Calcutta 3. P Narayanan Intellectual Property Rights and Law (1999), Eastern Law House, Calcutta, India 4. Vikas Vashistha, Law and Practice of Intellectual Property,(1999) Bharat Law House, New Delhi. 5. Comish W.R Intellectual Property,3rd ed, (1996), Sweet and Maxwell 6. P.S. Sangal and Kishor Singh, Indian Patent System and Paris Convention, 7. Comish W.R Intellectual Property, Patents, Copyrights and Allied Rights, (2005) 8. Bibeck Debroy, Intellectual Property Rights, (1998), Rajiv Gandhi Foundation.

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)	IIIRD SEMESTER
COURSE CODE: HSc C01	COURSE TYPE : ECC/CB
COURSE TITLE TRIBAL STUDIES	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 80 CCA : 20	

OBJECTIVE :

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data
- Achieves skills in various research writings
- Gets acquainted with computer Fundamentals and Office Software Package .

UNIT - 1 12 Hrs	**Tribal Studies :** Meaning, Nature, Scope, Need & importance of tribal studies. Meaning, Definition & characteristics of Tribe, Caste & Race.
UNIT - 2 24 Hrs	**Scheduled Tribe in India :** Population Composition of tribal, classification of Indian Tribe – Racial, Lingual, Geographical, Cultural. **Some Major Tribes in India :** Santhal, Khasi, Munda, Bhils. **Some Major Tribes in Central India :** Gond, Baiga, Bharia, Korkus.
UNIT - 3 10 Hrs	**Illiteracy :** Poverty, Indebness, Unemployment, migration & Exploitation Environmental & Degradation. **Problem of Health and sanitation :** Prostitution, Culture Decay due to assimilation. Replacement & Rehabilitation of Tribal population.
UNIT - 4 24 Hrs	**Welfare-Concept, Characteristics :** Tribal Welfare in post independence period. Constitutional provision & safe guard after independence, Legislation & Reservation Policy.
UNIT - 5 20 Hrs	**Tribal Development Programs for Scheduled Tribes :** Medical, Education, Economy, Employment & Agriculture Evaluation of Programs **Tribal Welfare & Advisory Agencies in India :** Role of NGO's in tribal development, Role of Christian missionaries in tribal welfare & development. Tribal Welfare Administration.

SUGGESTED READINGS	
	1. Tribal Development In India (Orissa) by Dr. Taradutt 2. Books on Tribal studies by PK Bhowmik 3. Books on 'Tribal Studies' by W.G. Archer

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)		IIIRD SEMESTER	
COURSE CODE: HSc C02		COURSE TYPE: ECC/CB	
COURSE TITLE: NUTRITION FOR HEALTH OF WOMEN AND CHILDREN			
CREDIT:6		HOURS:90	
THEORY: 6	PRACTICAL:0	THEORY: 90	PRACTICAL:0
MARKS			
THEORY: 100 (20+80)		PRACTICAL : 0	

OBJECTIVE : To understand the importance of nutrition & health for women & children & related issues.

UNIT-I 4 Hours	UNIT-I 1. Role of women in national development. 2. Women in family and community: Demographic changes menarche, marriage, fertility, morbidity, mortality, life expectancy, sex ratio, aging, widowhood. 3. Women in society: Women's role, their resources, and contribution to family, and effect of nutritional status.
UNIT-I 2 Hours	UNIT-I 4. Women and health: Health facilities. Disease pattern and reproductive health. 5. Policies and programs for promoting maternal and child nutrition and health. 6. Concept of small family. Methods of family planning-Merits and demerits.
UNIT-III 18 Hours	UNIT-III 7. Importance of nutrition prior to and during pregnancy- Prerequisites for successful outcome. Effect of under nutrition on mother and child including pregnancy outcome and maternal and child health- Short term and long term effect. 8. Physiology and endocrinology of pregnancy, embryonic and foetal growth and development. 9. Nutritional requirements during pregnancy: Adolescent pregnancy, pregnancy and T.B., TUGR, gestational diabetes.
UNIT-IV 18 Hours	UNIT-IV 10. Lactation- Development of memory tissue and role of hormones- Physiology and endocrinology of lactation. Synthesis of milk component, let down reflex, role of hormones. Lactational amenorrhea, effect of breast feeding on maternal health. 11. Human milk composition and factors affecting breast feeding. Human milk banking. 12. Management of lactation : Prenatal breast feeding, skill education. Rooming in problems – Sore nipples, engorged breast, inverted breast. 13. Exclusive breast feeding.
UNIT-V 18 Hours	UNIT-V 14. Infant physiology: Preterm and low birth weight infant- Implication for feeding and management. 15. Growth and development during infancy, childhood and adolescents. 16. Feeding of infants and children and dietary management. 17. Malnutrition- Etiology and management.

SUGGESTED READINGS
Clinical Nutrition- F.P. ANTIA
Hand Book of Food & Nutrition- M. SWAMINATHAN
Diabetics & Nutrition- DAVIDON, PASSMORE
Human Nutrition- RAJ LAKSHMI
Preventive & Social Medicine- J.E.PARK

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
After appearing in the Third semester examination irrespective of any number of back/ arrear papers	HSc 401	CCC	NUTRITION FOR HEALTH AND FITNESS	5	4	2	00	3	00
	HSc 411	CCC	NUTRITION FOR HEALTH AND FITNESS-LABORATORY WORK	2	00	00	3	00	3
	HSc 402	CCC	GERIATRIC NUTRITION	5	4	2	00	3	00
	HSc 412	CCC	GERIATRIC NUTRITION-LABORATORY WORK	2	00	00	3	00	3
	HSc 403	CCC	INSTITUTION MANAGEMENT	5	4	2	00	3	00
	HSc 413	CCC	INSTITUTION MANAGEMENT-LABORATORY WORK	2	00	00	3	00	3
	HSc 421	SSC/PRJ	DISSERTATION AND CURRENT TRENDS IN RESEARCHES IN NUTRITION	6	00	00	9	00	4
	HSc D 01	ECC/CB	STATISTICS AND COMPUTER APPLICATION	6	4	3	00	3	00
				TOTAL= 33					

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IVTH SEMESTER
COURSE CODE: HSc 401			COURSE TYPE: CCC
COURSE TITLE: NUTRITION FOR HEALTH AND FITNESS			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (20+80)		PRACTICAL:33	

OBJECTIVE :

- Make nutritional, dietary and physical activity recommendations to achieve fitness and well- being.
- Develop ability to evaluate fitness and well- being.

UNIT-1 -18 Hours	UNIT-I 1. Definitions, components and assessment criteria of age: specific fitness and health status. 2. Anatomical fitness 3. Physiological fitness 4. Psychological fitness 5. Physiological fitness; Growth and development ,strength ,speed skill stamina, or endurance, specific fitness, general fitness, and health status. 6. Holistic approach to the management of fitness and health: Energy input and output. Diet and Exercise, Effect of specific nutrition on work performance and physical fitness, Nutrition, exercise, physical fitness and health inter- relationship
UNIT-2- 18 Hours	UNIT-I 7. Review of different energy systems for endurance and power activity: Endurance -Definition, classification, and factors affecting endurance. Fuels and nutrients to support physical activity: Shifts in carbohydrate and fat metabolism mobilization of fat stores during exercise. 8. Nutrition in Sports: Sports specific requirement.
UNIT-3- 18 Hours	UNIT-III 9. Pre-game and post- game meals. Assessment of different mutagenic acids and commercial supplements. Diets for persons with high energy requirements, stress, fracture and injury. 10. Water and electrolyte balance: Losses and their replenishment during exercise and sports events, effect of dehydration, sport drink

UNIT-4- 18 Hours	UNIT-IV 11. Significance of physical fitness and nutrition in the prevention and management of weight control, obesity, diabetes mellitus, CV disorders, bone health and cancer 12. Nutrition and exercise regimes for pre and postnatal fitness. 13. Nutritional and exercise regimes for management of obesity. Critical review of various dietary regimes for weight and fat reduction. Prevention of weight cycling.
UNIT-5- 18 Hours	UNIT-V 14. Defining nutritional goals/ guidelines appropriate or health fitness and prevention and management of the chronic de-genearative disorders 15. Alternative systems for health and fitness like Ayurveda, Yoga, Meditation, Vegetarianism and Traditional diet
LABORATORY WORK (HSc 411)	1.Diet planning for degenerative diseases , Diabetes mellitus , cardiovascular disorders , obsecity, cancer etc. 2. Pre and post meal plan for sports person 3. Preparatin of sports drinks.
SUGGESTED READINGS	1. L.K.&Ecott Stump,S. (2000)Krauses's Food Nutrition and diet therapy, edition, W.B.Saunders Ltd. 2. Sizer, F & Whitney , E. (2000); Nutrition Concepts & Controversies. 8th Edition, Wadsworth, An International Thomson Publishing Co. 3. Whitney, E.N. & rolfes, S.R. (1999); Understanding Nutrition, 8th Edition, West/ WadsworthThomson learning. 4. Ira Wokinsky (Ed.) (1998): Nutrition in Exercise and sports, 3rd Edition, CRC Press. 5. Parizkova, J. Nutrition, Physical activity and health in early life Ed. Wolinsky, I. CRC Press. 6. Shils, M.E. Olson, J.A. Shike N. and Ross, A.C. (Ed.) (1999): Modern Nutrition in Health & Disease 9th Edition, Williams & Wilkins. 7. McArdle, W. Katch, F and Katch, V. (1996) Exercise Physiology, Energy, Nutrion and Human Performance, 4th Edition. Williams and Wikins, Philadelphia.Journals 8. Medicine and Science in Sports and Exercise. 9. International Journals of Sports Nutrition.Ccc ii

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IVTH SEMESTER
COURSE CODE: HSc 402			COURSE TYPE: CCC
COURSE TITLE: GERIATRIC NUTRITION			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL:45
MARKS			
THEORY: 100 (20+80)		PRACTICAL:33	

OBJECTIVE :

The course is designed to -

- Familiarize the students with the multifaceted aspects of ageing.
- Make the students competent for nutritional and health care of the elderly

UNIT-1- 18 Hours	UNIT-I 1. Ageing : Definition (A) Molecular changes during ageing - (i) Changes in proteins, (ii) Chromatin, (iii) Crosslinkers, (iv) Immune response, (v) Hormones, (vi) Ageing ofcells in culture, (vii) Age pigment. 2. Mechanism of Ageing - (A) Somatic mutation, (B) Errors in proteins © Gene regulation 3. Socio-psychological aspects of ageing - Especially problems of elderly women.
UNIT-2- 18 Hours	UNIT-I 4. Nutritional and food requirement during old age - Progress of ageing, nutritional requirements, food requirements. 5. Nutrition related problems of old age - (i) Osteoporosis, (ii) Obesity, (iii) Neurological dysfunction, (iv) Anaemia, (v) Malnutrition, (vii) Constipation.
UNIT-3- 18Hours	UNIT-III 6. Degenerative diseases in old age - (1) Atherosclerosis, (ii) Hypertension, (iii) Cancer, (iv) Diabetes mellitus, (v) Arthritis. 7. Common complaints during old age. 8. Dietary guidelines
UNIT-4- 18 Hours	UNIT-V 12. Exercise, yoga, meditation in old age. 13. Policies and programmes of the government to the elderly. 14. Policies and programmes of the NGO sector pertaining to the elderly.

UNIT-5- 18 Hours	UNIT-IV 9. Drug - Food and nutrient reaction in elderly. (a) Effect of drugs on food intake and absorption. (b) Effect of various foods and beverages on drug action. (c) Drug nutritional interaction. 10. Ageing and immunity. 11. Ageing and nutrition, nutrition and longevity, food habits of elderly people, stress during old age.
LABORATORY WORK (HSc412)	1. Diets for elderly person 2. Yoga practice 3. Oldage home visits 4. Low cost Nutritious recipe preparation 5. Preparation of traditionl diets

SUGGESTED READINGS

1. International Symposium of Gerontology and Seventh Conference of the Association of Gerontology (India).
2. Bagchi, K. and Pun, S. (Ed) (1999) Diet and Aging - Exploring Some Facets. Soc. For Gerontological Research, New Delhi and Help Age India, New Delhi.
3. Chaudhary, A. (Ed) (2001) Active Aging in the New Millennium, Pub. Anugraha, Delhi.
4. Shils, M.S., Olson, J.A., Shike, M. and Ross, A.C. (Ed) (1999) 9th Edition, Williams and Wilkins.
5. Sharrna, O.P. (Ed) (1999) : Geriatric Care in India - Geriatrics and Gerontology A Text book, Mls, AND Publishers.
6. Aiken, L.R. (1978) The Psychology of Later Life, Philadelphia, WB Saunders Company.
7. Bergmann, Klaus (1972) : Aged Their Understanding and Care, London, Wolfe Pub.
8. Binstock, R.H. and F. Shanes (eds) (1986) : Handbook of Aging and Social Sciences, V.N. Reinhold Co., New York.
9. Blau, Zana Smith (1983); Old Age in a Changing Society, New York Prints, New York.
10. Bose, A.B. and K.D. Gangrade (1988) : Aging in India : Problems and Potentialities, Abhinav Pub., New Delhi.
11. Cook Alicia Skinner (1983): Contemporary Perspectives on Adult Development and Aging, New York, MacMillan.
12. Desai, K.G. (1985): Problems of Retired People in Greater Bombay, TISS, Series No.27.
13. Ghosh, B. (1988): Contemporary Social Problems in India, Bombay, Himalaya Pub.
14. Homban, D. (1978) Social Challenges in Aging, London, Groom Helm.
15. Johnson Elizabeth (1982) : Growing old: Social Problems of Aging, New York, Holt Rinehart and Winston.
16. Kennedy Caroll (1988): Human Development, New York, MacMillan.
17. Kimmel Douglas (1974): Adulthood and Aging, New York, Wiley.
18. Mishra Saraswati (1987) : Social Adjustment in Old Age, Delhi, B.R. Pub. Corp.
19. Pinkston, P.H. and N.K. Linsk (1984): Care of the Elderly : A family approach, New York, Pergaman Press.
20. Schiamberg Lawrence, B. (1985): Human Development, New York, MacMillan.

Journals:

1. American Journal of Clinical Nutrition
2. Gerontology
3. Journal of American Geriatric Society
4. Age Ageing
5. Journal of Applied Gerontology
6. Age
7. Journal of Gerontology

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IVTH SEMESTER
COURSE CODE: HSc 403			COURSE TYPE: CCC
COURSE TITLE: INSTITUTION MANAGEMENT			
CREDIT:7		HOURS:135	
THEORY: 5	PRACTICAL:2	THEORY: 90	PRACTICAL:45
MARKS			
THEORY: 100 (20+80)		PRACTICAL : 0	

OBJECTIVE : To study the scope & development, planning cost control, accounts of food services & institution management.

UNIT-1- 18 Hours	UNIT-I 1. Development and scope of food service History of Food Service. 2. Food & Economics Money
UNIT-2- 18 Hours	UNIT-I 3. Quantity Cookery: a. Purchase, Selection. Storage and handling of food in relation to cost and food value b. Food preparation and different types of service of meals shacks. Drink etc. and their evaluation. c. Meal planning or various institutions taking into account regional food habits. d. Comparative study of different food groups.
UNIT-3- 18 Hours	UNIT-III 4. Organization and Management of food services: a. Personnel Management. Selection training. Supervision labour laws. b. Organization of work, space, time tables and work simplification
UNIT-4- 18 Hours	UNIT-IV 5. Food service planning: a. Selection of furnishings and equipment for institution kitchens and dining rooms. b. Sanitation and cleaning c. Differences in organization and management problems of hostels, annapurnas cafeteria. Hospital. School Lunch Programme with reference to foodservices
UNIT-5- 18 Hours	UNIT-V 6. Accounting procedure and cost control: a. Total budget and its distribution. b. Record keeping and accounting. c. Selling price and total incomes. d. Profit, loss and balance sheet.

LABORATORY WORK (HSc-413)	1. Practical work at least in one institution related to the above topics. 2. Field trips 3. Management of a canteen in your institution.
SUGGESTED READINGS	1. Institutional Management- New Age International Publications, New Delhi

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IVTH SEMESTER
COURSE CODE: HSc D01		COURS	E TYPE: ECC/CB
COURSE TITLE :DESSETATION & CURRENT TRENDS IN RESEARCHES IN NUTRITION			
CREDIT : 6			HOURS: 135
THEORY: 0	PRACTICAL: 6	THEORY: 0	PRACTICAL: 135
MARKS : 100			
THEORY: 0		PRACTICAL : (50+50) = 100	
OBJECTIVE : The main objective of self study course is to enable the students to learn on their own as well development of skill related to research & development.			
Course Report Submission : 50 Mark Viva Voce : 50 Marks			

M.Sc (HOME SCIENCE) (FOOD & NUTRITION)			IVTH SEMESTER
COURSE CODE: HSc D01		COURS	E TYPE: ECC/CB
COURSE TITLE:	STATISTICS AND COMPUTER APPLICATION		
CREDIT:6		HOURS:90	
THEORY: 6	PRACTICAL:0	THEORY:9	PRACTICAL:0
MARKS:			
THEORY: 100 (20+80)		PRACTICAL : 0	

OBJECTIVE:

1. To understand the significance of statistics and research methodology in Home Science research.
2. To understand the types, tools and methods of research and develop the ability to construct data gathering instruments appropriate to the research design.
3. To understand and apply the appropriate statistical technique to the measurement scale and design.
4. To understand the role of statistics and computer application in research.
5. To apply statistical techniques to research data for analysis and interpreting data meaningfully

UNIT-1- 15 Hours

UNIT-I

1. Conceptual understanding of statistical measures- Meaning, definition, scope, importance, characteristics, distrust of statistics
2. Classification & tabulation of data
3. Measurement of central tendency
   - Mean
   - Median
   - Mode

UNIT-2- 15 Hours

UNIT-II

4. Graphic presentation of data
   - Frequency distribution
   - Histogram
   - Frequency polygons
   - Frequency curve
   - Ogive
   - Binomial distribution
   - Parametric and non-parametric tests

UNIT-3- 20 Hours

5. Methods of Dispersion and variation- Mean déviation
   - Standard déviation
   - Quartile deviation
   - Independence of attributes 2×2 and r×c contingency tables
   - Analysis of variance – one way method Direct and short cut.
6. What is computers characteristics components of computer system, block diagram of computer, CPU, I/O devices and memory (RAM and ROM) second storage devices (hard disk Floppy disk ,Magnetic tape etc.)

UNIT-4- 20 Hours

7. Computer generations –Classification of computers; Analog digital hybrid general and special
8. Types of computers- Micro Mini Mainframe and super computer
   - Chi square test Goodness of it
   - Application of student 't' test for small samples

UNIT-5- 20 Hours

9. Correlation- definition, meaning and types.
10. Methods of determining coefficient of correlation
    - Product moment correlation
    - Rank correlation.
11. Working with MS Word
    - Getting started with word, formatting text and paragraph.
    - Applying text and language tools, designing pages, with columns and tables, using graphics.

SUGGESTED READINGS

Garrett, Henry E. 1971: statistics in psychology and education, David and co.