

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO.SU./B.Sc.CBC & GS/11/2022**

It is hereby inform to all concerned that, on the recommendation of Faculty of Science & Technology Meeting dated 24.08.2022, **the Academic Council at its meeting held on 29 August 2022 has accepted the following Syllabi of B.Sc. Degree under the Choice Based Credit & Grading System along with Rules and Regulation** as appended herewith:-

1.	B.Sc.Computer Science (Optional)	Ist and IInd semester
2.	B.Sc.Computer Application (Optional)	Ist and IInd semester
3.	B.Sc.Computer Application (Degree)	Ist and IInd semester
4.	B.Sc.Computer Science (Degree)	Ist and IInd semester
5.	B.Sc.Horticulture (Optional)	Ist to VIth semester
6.	B.Sc.Botany (Optional)	Ist to VIth semester
7.	B.Sc. Agrochemical & fertilizer (Optional)	Ist to VIth semester
8.	B.Sc.Home Science (Optional)	Ist and IInd semester
9.	B.Sc.Automobile Technology (Degree)	Ist and IInd semester
10.	B.Sc.Workshop Technology (Degree)	Ist and IInd semester
11.	B.Sc.Refrigeration and Air Conditioning (Degree)	Ist and IInd semester
12.	B.Sc.Environmental Science (Optional)	Ist and IInd semester
13.	B.Sc.Biotechnology (Degree)	Ist and IInd semester
14.	B.Sc.Biotechnology (Optional)	Ist and IInd semester
15.	B.Sc.Dairy Sci.& Tech (Optional)	Ist and IInd semester
16.	B.Sc.Zoology (Optional)	Ist to VIth semester
17.	B.Sc.Polymer Chemistry (Optional)	Ist and IInd semester
18.	B.Sc.Fisheries Science (Optional)	Ist and IInd semester
19.	B.Sc.Instrumentation Practice (Optional)	Ist semester
20.	B.Sc.Biochemistry (Optional)	Ist and IInd semester
21.	B.Sc.Non Conventional & Conventional Energy (Degree)	Ist and IInd semester

This is effective from the Academic Year 2022-23 and onwards.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.

Ref.No. SU/B.Sc./2022/ 8428-35

Date:-29.08.2022.

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[Signature]
**Deputy Registrar,
Academic Section**

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Copy forwarded with compliments to :-

- 1] **The Principal, concerned affiliated College,**
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
- 2] **The Director, University Network & Information Centre, UNIC, with a request to upload this Circular on University Website.**

Copy to :-

- 1] The Director, Board of Examinations & Evaluation,
- 2] The Section Officer,[B.Sc.Unit] Examination Branch,
- 3] The Programmer [Computer Unit-1] Examinations,
- 4] The Programmer [Computer Unit-2] Examinations,
- 5] The In-charge, [E-Suvidha Kendra],
Rajarshi Shahu Maharaj Examination Branch,
- 6] The Public Relation Officer,
- 7] The Record Keeper,

JS*29082022/-

**Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad - 431004 (MS) India**



**Undergraduate Bachelor Degree Program
in Science
B. Sc. (Home Science)**

**Course Structure and Curriculum
(Outcome based Curriculum)**

Choice Based Credit System

(Effective from Academic Year 2022-23)

**Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad - 431004 (MS) India**

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1. Preamble

Home Science has contributed a great deal towards national development by training students to take up leadership roles in extension and community outreach programs. The students are encouraged to develop a scientific temper. Familiarizing them with the use of newer technologies, methods in family and community linkages, and sustainable use of resources for human development are the hall mark of education in Home Science. As a discipline Home Science integrates the ingredients of the sciences, social sciences and technology to facilitate the study of and enhance the quality of human life. Its approach is therefore inherently interdisciplinary. Traditionally, Home Science has adopted an ecological approach in its curriculum that engages the student through teaching, research and extension. The education process in Home Science underscores the importance of the individual's dynamic relationship with his/her family, community and society as a whole, as well as with the resources in the environment. Higher education learning in Home Science subjects provides students the opportunity to sharpen their capacities with a sense of social responsibility.

In contemporary times, Home Scientists promote capacity building of individuals and communities for social and economic empowerment. They train community women and youth from various strata of society for entrepreneurship. Many Home Scientists have done exceptionally well as entrepreneurs themselves. They do not remain job seekers but have also become job creators. They gain and provide employment in research organizations, food and textile industries, dietetic practice, education and child development domains, accreditation of green buildings, strategic planning and communication technologies. Keeping in view the growing aspirations of today's youth and the capacity of Home Science discipline to deliver, the present 3-year choice based credit system has been drawn up.

Years of national and international experience in the field has contributed to the wisdom that all the five windows of opportunity that Home Science offers be opened, i.e. Food and Nutrition, Human Development and Childhood Studies, Resource Management and Design Application, Development Communication and Extension and Fabric and Apparel Sciences. In this course, the students will learn the fundamental principles and foundations of all the five areas. They are expected to internalize the principle of a Home Scientist, that is, to give back to the community from which they draw, for sustainable development. This is a major contribution of Home Science in both developed and developing societies.

2. Vision

The vision of Programme is to prepare the students to develop values and skills to promote, personal, family and social responsibilities. The course aims at training the students as wise consumers, systematic home makers and successful entrepreneurs.

3. Mission

- To produce socially committed resourceful generation of citizens capable of willing to shoulder social responsibilities with a deep sense of morality.
- To empowerment of students of rural and urban households through learning of the house hold management skills like Family Resources Management, Child Care, low Cost Diet Preparation, Diet Planning, textile and laundry science and Flower Decoration, Vocational Skills and Interior Decoration.
- To enhance the employable opportunities of the students.

4. Program Educational Objectives (PEOs)

The objectives of the present B.Sc. Program Home Science course are:

- To understand and appreciate the role of interdisciplinary sciences in the development and well- being of individuals, families and communities.
- To learn about the sciences and technologies that enhance quality the life of people
- To provide knowledge in the area of Food and Nutrition, Human Development, Resource Management, Textiles & Clothing and Extension Programme Planning.
- To acquire professional and entrepreneurial skills for economic empowerment of the student in particular, and community in general.
- To develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
- To take science from the laboratory to the people

5. Program Outcome (POs)

- Develop basic skills for cooking and nutritional knowledge of food ingredients.
- Develop understanding of household management practices.
- Gain better understanding and knowledge about different stages of human development and their characteristics.
- Develop skills in clothing construction and identification of fiber and fabric properties.

- Attain skills in making of teaching aids and understanding the basics of communication process.
- Students recognizes the role of housing in integrated development, essentials of interior decoration and landscape, designing and its applications.

6. Applicability of the Grading System

These guidelines shall apply to all undergraduate level degree, diploma and certificate programs under the credit system awarded by the University.

7. Definitions of Key Words

7.1. Academic Year: Two consecutive (one odd + one even) semesters constitute one academic year.

7.2. Choice Based Credit System (CBCS): The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).

7.3. Course: Usually referred to, as 'papers' is a component of a program. All courses need not carry the same weightage. The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ tutorials/laboratory work/ field work/outreach activities/project work/vocational training/viva/seminars/term papers/ assignments / presentations/self-study etc. or a combination of some of these.

7.4. Credit Based Semester System (CBSS): Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by the students.

7.5. Credit Point: It is the product of grade point and number of credits for a course.

7.6. Credit: A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work for 15 weeks in a semester.

7.7. Cumulative Grade Point Average (CGPA): It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

7.8. Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.

7.9. Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

7.10. Program: An educational program leading to award of a Degree, diploma or certificate.

7.11. Semester Grade Point Average (SGPA): It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

7.12. Semester: Each semester will consist of 15 weeks of academic work equivalent to 90 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June.

7.13. Transcript or Grade Card or Certificate: Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester and CGPA earned till that semester.

8. Duration of the programs, requirement and Options

The total duration of the B.Sc. program shall be of 3 years. The pattern of CBCS program shall be of semester type. There shall be **SIX** semesters each of six months duration. Each semester shall consist of at least 15 weeks of study with minimum of 90 working days (Including the time spent for the conduct of final examination of each semester). The candidate shall complete courses equivalent to at least 149 credits to become eligible for the Regular Bachelor Degree. He/she shall be eligible to rejoin the program within three years to complete the degree. Further, all candidates will be awarded Bachelor Degree on successfully completion of SIX semesters (Three academic years) of the undergraduate program.

9. Eligibility for Admission

A candidate shall be admitted to the First year B.Sc. (Home Science) six semester degree course only if he/she satisfies the following conditions: -

He / She must have passed the XII std examination conducted by Maharashtra State Board of Secondary and Higher Secondary education or an examination of any statutory Board or University recognized as equivalent thereto with 50 % marks (45 % marks for reserve category).

OR

Candidates having offered vocational course (10+2) with Home Science/ Hotel management & catering Technology/ Bakery/Confectionary/Cookery/Food Science/Technology.

10. Maximum Period for Completion of the Program

The candidate shall complete the program within the period as prescribed in the regulation governing the maximum period for completing various degree/diploma programs from the dates of admission. It is generally twice the number of years of the program. The term completing the program means passing all the prescribed examinations of the program to become eligible for the degree.

11. Medium of Instruction: The medium of instruction and examination shall be English and Marathi.

12. Outline of Choice Based Credit System

An undergraduate program degree in science disciplines may be awarded if a student completes 4 core papers each in three disciplines of choice, 2 Ability Enhancement Compulsory Courses (AECC), minimum 4 Skill Enhancement Courses (SEC) and 2 papers each from a list of Discipline Specific Elective papers based on three disciplines of choice selected.

12.1 Detailed description of courses.

1. Core courses: A course, which should compulsorily be studied by a candidate as core requirement is termed as Core course.

2. Elective courses: Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

i. Discipline Specific Elective (DSE) Course: Elective courses offered under the main discipline/subject of study is referred to as Discipline Specific Elective.

ii. Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure beyond discipline/s of choice is called a Generic Elective.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

3. Ability Enhancement Courses (AEC): The Ability Enhancement Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC). These are mandatory for all disciplines.

1. Ability Enhancement Compulsory Courses (AECC):

a. English Communication skill/SL

b. Environmental Science

2. Skill Enhancement Courses (SEC): SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

- **Practical's and/Tutorials** (One each with every core and discipline /generic specific elective paper).

A Norms & Procedure for Extra Credit Benefit for NSS, NCC or Sport Participation: - Universities/Institutes may evolve a system/policy about Extra Curricular Activities/ General Interest and Hobby Courses /Sports / NCC / NSS / Vocational courses / related courses on their own. **Evaluation of co-curricular and extension activities shall be as per the procedure evolved by the university from time to time.**

B. Course Pattern, Credit distribution and Scheme of Examination

The details of course patterns (hours of instruction per week) with course code and the scheme examination are given in detail. The syllabi of the course shall be as prescribed by the university.

12.1 Implementation of core course

Approved combinations among the following subjects. Biochemistry, Biotechnology, Botany, Chemistry, Computer Science, Electronics, Environmental Science, Genetics, Geology, Home Science, Instrumentation, Mathematics, Microbiology, Physics, Sericulture, Statistics, Zoology and such other subjects permitted by the university from time to time.

12.2 Implantation of Ability Enhancement Compulsory Course (AECC):

For the introduction of AE Courses, they may be divided into two categories:

AE Compulsory Courses: The universities participating in CBCS system may have common curriculum for these papers. There may be one paper each in the 1st four semester's viz. (i) Communication skills in English and SL, and one paper of Environmental Science in IVth semester.

Two languages are to be studied out of which one shall be English and other shall be either an Indian language or a Foreign language other than English, Kannada, Sanskrit, Hindi, Tamil, Telgu, Malayalam, Marathi, Kokani, Udru, Persian, Arabic, German, French, Latin, Russian, Japanese and any other language prescribed /approved by the university.

In addition to English, a candidate shall opt for any one of the two languages studied at the 10+2 or equivalent level. However, the candidate may opt for Marathi even if it is not studied at the 10+2 or equivalent level. With the permission of the University, a candidate may opt for any

other language listed above even if the candidate has not studied that language at 10+2 or equivalent level.

Note–Speech/hearing/visually impaired/mentally challenged and study disabled students are exempted from studying one of the language prescribed under 1. Above

12.3 Skill Enhancement Courses: Any four skill development courses in the third, fourth, fifth and sixth semesters, one in each semester as prescribed by respective Board of Studies, the concern faculty and approved by the Academic Council. Any one SEC course to be chosen (any one from three optional subjects) from the basket of SEC courses.

- a. The SEC consists of lecture course and practical course, as decided by respective B.O.S.
- b. All three SEC (Skill Enhancement Courses) have 2 credits in respective semester.

13 Rules and regulation

- 13.1** Number of Core papers for all Universities has to be same for both UG Honors as well as UG Program.
- 13.2** Credit score earned by a student for any elective paper has to be included in the student's overall score tally irrespective of whether the paper is offered by the parent university (degree awarding university/institute) or not.
- 13.3** The university/Institute may plan the number of seats per elective paper as per the facility and infrastructure available.
- 13.4** Total number of credits required for the completion of programs is 149 credits.
- 13.5** The credit(s) for each theory paper/practical/tutorial/project/dissertation will be as per the details given in A, and table 1 to 6 for B.Sc. Program.
- 13.6** CGPA will be calculated on the basis of core 149 credits only.
- 13.7** Each theory credit is equivalent to 15 clock hours of teaching and each practical credit is equivalent to 30 clock hours of teaching in a semester.
- 13.8** There is 15 weeks of teacher-student interaction during the semester.
- 13.9** The Universities/Institutes may offer any number of choices of papers from different disciplines under Generic Elective and Discipline Specific Elective as per the availability of the courses/faculty.
- 13.10** Universities/Institutes may evolve a system/policy about Extra Curricular Activities/ General Interest and Hobby Courses /Sports / NCC / NSS / Vocational courses / related courses on their own.

- 13.11 A student can opt for more number of Elective and AE Elective papers than proposed under the model curriculum of UGC. However the total credit score earned will not exceed 149 credits for UG Program degree.
- 13.12 The new scheme of UG courses should be given due consideration while framing the admission eligibility requirement for PG/Technical courses in Indian Universities / Institutions to ensure that students following inter and multi-disciplinary format under CBCS are not at a disadvantage. It is suggested that wherever required, obtaining 24 credits in particular discipline may be considered as the minimum eligibility, for admission in the concerned discipline, for entry to PG/Technical courses in Indian Universities/Institutions.
- 13.13 The student can perform their project any one of the optional subjects.
- 13.14 The project of the student should be examined by the external examiner at the time of ESE practical course.
- 13.15 Project work has a weightage of 2 credits as par mentioned in syllabus.
- 13.16 SL and English Communication are added as “General Interest & Hobby courses” in “AECC”.
- 13.17 Each theory lecture is of 50 minutes
- 13.18 There shall be Five (5) lectures/week of 50 minutes each for 3 credits to Ability Enhancement compulsory courses (AECC) “English Communication” to align with existing B.Sc. Pattern.
- 13.19 There shall be Five (4) lectures/week of 50 minutes each for 3 credits to Ability Enhancement compulsory courses (AECC) “SL ” to align with existing B.Sc. Pattern.
- 13.20 Two credits course of 50 Marks “**Constitution of India**” is mandatory to all faculties as per Dr. Babasaheb Ambedkar Marathwada University Letter Ref. No. SU/Con./I Yr/Cur/2020/7416-25 dated 28.01.2020.
- 13.21 Compulsory “Computer and information Technology Course “is mandatory for science faculty as per Dr. Babasaheb Ambedkar Marathwada University regulation 1473, Reference No. ACD/NP/COMP.SCI.ENV.SCI./20086587-6786 dated 20.06.2008. This course may be included in SEC course.
- 13.22 For all faculty environmental studies is mandatory course for all faculties as per Dr. Babasaheb Ambedkar Marathwada University regulation 1473. Reference No. ACD/NP/COMP.SCI.ENV.SCI./20086587-6786 dated 20.06.2008.

14 Attendance and change of subject:

- 14.1** A candidate shall be considered to have satisfied the requirement of attendance for a semester if he/she attends not less than 75% of the number of classes actually held up to the end of the semester in each subjects. There shall be no minimum attendance requirement for the Co-curricular and extension activities.
- 14.2** An option to change a language /subject may be exercised only once within four weeks from the date of commencement of the 1st semester.
- 14.3** Wherever a change in a subject is permitted the attendance in the changes subject shall be calculated by taking into consideration the attendance in the previous subjects studied.
- 14.4** If candidate represents his/her institution/university/Maharashtra state/Nation in sports/NCC/NSS/Cultural or any officially sponsored activities he/she may be permitted to claim attendance for actual number of days participated, based on the recommendation of the Head of the Institution concern. If a candidate is selected to participate in national level event such as Republic Day Parade etc., he/she may be permitted to claim attendance for actual number of days participated based on the recommendation of the Head of the Institution concerned.

15 Examination and Assessment rules

- 15.1** Assessment shall consist of End of Semester Examination (ESE) and Continuous Assessment (CA). The CA will be a continuous activity (Internal) conducted by Concern College and ESE will be conducted by university. Each CA & ESE shall have weightages of 10:40. There shall be combine passing for CA and ESE.
- 15.2** **Weightages-** for 2 Credits (50 Marks) paper:
- 15.3** CA = 10 marks and ESE = 40 marks (MCQ=10 & Subjective & descriptive questions = 30 marks on entire syllabus).
- 15.4** **Continuous Internal Assessment (CA)**
- 15.5** **Methods of assessment for internal examination (CA):**
 - a. **Theory (10 marks)** – Internal test 5 marks (Two internal tests of 5 marks each and average of two test will be considered) and five marks for assignment/tutorials (Written test, Field work, Assignment, Internship, Seminar presentation, Industrial Practicum, Case study, Project work (on approval of the Head of the Centre)).
 - b. **Practical-(10 marks);** 7 Marks for internal practical examination and 3 Marks for record book/submission of collection and filed survey report and excursion tour for each semester.

- 15.6** A student should obtained 40% marks in the combined examination of CA and ESE with a minimum passing of 40%.
- 15.7** To pass the UG degree program, a student shall have to obtain a minimum aggregate of 40% marks (P and above in the grade point scale) in each course.
- 15.8** If a student remains absent or fails in an internal assessment examination, he/she will have a second chance with the endorsement of the principal in consultation with the concerned teacher and Head of the department. The Principal in the consultation with the concerned teacher and HOD shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date suitable to the concerned teacher but before commencement of the concerned semester end examination. Such a second chance shall not be the right of student.
- 15.9** The marks of CA shall be published on the notice board of the department/college for information of students.
- 15.10** The CA marks shall be communicated to the Director, Board of Examination and Evaluation at least 10 days before the commencement of the University examinations.
- 15.11** CA marks shall not change. A student cannot repeat CA. In case she/he wants to repeat CA, then she/he can do only by registering their names for course during the semester in which the course is conducted and up to 3 years program provided the student has failed in that course.
- 15.12** Internal assessment marks shall be shown separately in the marks card. Candidate who has failed or rejected the result, shall retain the internal assessment marks.
- 15.Registration for (ESE) Examination:** A candidate shall register for all the papers of a semester when he/she appears for the examination of that semester for the first time.
- 15.1 Conduct of examination**
- The 3 years B.Sc. CBCS Program shall consist of 3 years consisting of 2 semesters each. Semester examination for theory papers shall be held at the end of each semester. The practical examination shall be held at the end of each semester/year.
- 15.2** The outline of the distribution of maximum marks for various aspects / mechanism towards ESE (Theory and Annual practical Examination) is as follows
- a. Theory examination:** ESE = 40 marks (MCQ =10 & subjective & descriptive questions = 30 marks on entire syllabus)
- b. practical Examination**
- Total marks 80 for each practical paper of B: Sc. For annual examination

1. Experimental Performance: 70 marks
 3. Viva-Voce on experiments -10 marks
 4. Certified Journal should be produced by the candidate at the time of ESE practical examination.
 5. The practical examination shall be conducted by two Examiners (one internal and one external) per batch.
 6. The statement of marks sheet and the answer books of practical examination shall be sent to the Director, Board of Examination and Evaluation by the Principal of the respective colleges respectively immediately after the practical examinations.
- 16. Letter Grades and Grade Points (Completion of degree)**

The Dr. Babasaheb Ambedkar Marathwada University, Aurangabad has decided to implement “absolute grading” system. A student who earns 149 credits, shall be considered to have completed the requirement of B.Sc. degree program and CGPA will be calculated for such student. On the basis of only 149 credits.

- i. The UGC recommends a 10-point grading system with the following letter grades as given below:

Table 1: Grades and Grade Points and description:

Marks obtained	Grade	Grade pints
$\Rightarrow 80$	O (Outstanding)	10
70-79	A+ (Excellent)	09
60-69	A (Very Good)	08
55-59	B+ (Good)	07
50-54	B(Above Average)	06
45-49	C (Average)	05
40-44	P (Pass)	04
< 40	F (Fail)	0
---	Ab (Absent)	0

Classification of degree

Classification	Overall letter Grade
First-class with Distinction	A+ and Above
First class	A
Higher Second class	B+
Second class	B
Pass	C to P

- ii. A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.
- iii. For noncredit courses 'Satisfactory' or "Unsatisfactory' shall be indicated instead of the letter grade and this shall not be counted for the computation of SGPA/CGPA.
- iv. The statutory requirement for eligibility to enter as assistant professor in colleges and universities in the disciplines of arts, science, commerce etc., is a minimum average mark of 50% and 55% in relevant postgraduate degree respectively for reserved and general category. Hence, it is recommended that the cut-off marks for grade B shall not be less than 50% and for grade B+, it should not be less than 55% under the absolute grading system. Similarly cut-off marks shall be fixed for grade B and B+ based on the recommendation of the statutory bodies (AICTE, NCTE etc.,) of the relevant disciplines.

17. Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

- i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

$$SGPA (S_i) = \Sigma (C_i \times G_i) / \Sigma C_i$$

Where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.

- ii. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

$$CGPA = \Sigma (C_i \times S_i) / \Sigma C_i$$

Where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester.

- iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.
- iv. Student who have failed in a course may reappear for ESE only twice in the subsequent period. The student shall be finally declared as failed if He /she does not pass in all credits within a total period of three years. After that such students shall have to seek fresh admission as per the admission rules prevailing at that time.
- v. While marks shall be given for all examinations, they shall be converted into grades.

- vi. The semester end grade sheets shall have only grades and final grade sheets and transcripts shall have grade points average and total percentage of marks up to two decimal points. The final grade sheet shall also indicate the UG Centre to which the candidate belongs.
- vii. A student cannot register for the III/IV semester, if she/he fails to complete 75% credits of the total credits expected to be ordinarily completed within two semesters (I/II). Also a student cannot register their name for V/VI semester if he/she fail to complete 100% credits of the total credits of I & II Semesters.

18. Assessment and Grade Point Average

- a. **The system of evaluation will be as follows:** Each CA and ESE shall be evaluated in terms of marks. The marks for CA and ESE will be added together and then converted into grade and later a grade point average.
- b. Result shall be declared for each semester.
- c. After gaining minimum number of credits towards a completion of UG program, a student will get a grade sheet with total grads earned and a grade point average.

Final Grade

CGPA	Grade
9.01-10.00	O
8.01- 9.00	A+
7.01-8.00	A
6.01-7.00	B+
5.01-6.00	B
4.01-5.00	C
4.00	P
< 4	F

- d. B+ Grade is equivalent to at least 55% of the marks as per circular No. UGC-1298/ [4619] UNI-4 dated December 11, 1999.
- e. A ten point grade system [guided by the Government of India Ministry of Human resource Development Department of Higher Education, Do No. SECYCHES/2014/139980 dated November 28, 2014].
- f. If the CGPA is higher than the indicated upper limit in three decimal digits then higher final grade will be awarded (e. g. a student getting GPA of 6.095 may be awarded B+ grade).
- g. For grade improvement a student may reappear for ESE for a minimum 40% credits.
- h. Students can appear only once for the grade improvement program only after successful completion of the degree and only within one year of completion of the Degree.

- i. The final CGPA will not be printed unless a student earns all credits from courses at UG programs.
- j. One credit is equivalent to 25 marks for evaluation purpose.
- k. The one credit is equivalent to 15 contact hours for fifteen weeks in a semester.
- l. If student failed to obtain a grade other than F in a course then such a course will not be taken into account for calculating CGPA and overall grade. In fact, all the courses in which a student has passed will be taken into account for calculating the CGPA and overall grade.
- m. The credit of SEC should be collected by the college appointed coordinator.
- n. Collected SEC credits will be communicated to controller of University examinations.
- o. The SEC consists of lecture course and practical course as decided by B.O.S
- p. The project of the student should be examined by the external examiner at the time of ESE practical course.
- q. There shall be revaluation of the answer scripts of semester-end examination of theory papers only but not internal assessment papers.

19. Promotion

Once the student is admitted to the concern college/course, he /she will be promoted to the next semester with full carryon; subject to the registration of student in every consecutive semester. Dropout student will be allowed to register for respective semester as and when the concerned course are offered by the college, subject to the condition that his /her tenure should not exceed more than twice the duration of course from the date of first registration at parent college. The admission of concern student will be automatically get cancelled if he/she fails to complete the course in maximum period (six years/twelve semesters)

20. Standard of Passing at B. Sc. Examination

- a. For a subject all papers shall from a separate head of passing i.e. Theory, and the Practical.
- b. A student shall have to secure 40% of marks in Theory, and Practical examination separately in order to pass in those heads of passing.
- c. He shall be declared to have passed the examination if he passes in all heads of passing at Ist to VI semester examinations separately.
- d. The class will be awarded on the aggregate total of all the subjects of I, II & III years examinations, excluding the marks of English or SL at Ist to IVth Semester.

21. Rejection of Results

- a. A candidate may be permitted to reject of the result of the whole examination of any semester. Rejection of result paper wise /subject wise shall be not be permitted. The

candidate who has rejected the result shall appear for the immediately following examination.

- b. The rejection shall be exercised only once in each semester and the rejection once exercised shall not be revoked.
- c. Application for rejection of results along with the payment of the prescribed fee shall be submitted to the Dy. Registrar (Academic) through the college of study together with the original statement of marks within 30 days from the date of publication of the result.
- d. A candidate who rejects the result is eligible for only class and not for ranking.

22. Transfer of candidate

Transfer of admission are permissible only for III and V Semester for the students of the other universities and within university.

22.1. Conditions for transfer of admission of students within university.

- 1. His /her transfer of admission shall be within the intake permitted to the college.
- 2. Availability of same combination of the subjects studied in the previous college.
- 3. He/she shall fulfill the attendance requirements as per the University regulation.
- 4. He/she shall complete the program as per the regulation governing the maximum duration of completing the program.
- 5. He/she shall complete the program as per the regulation governing the maximum duration of completing the program.

22.2. Conditions for transfer admission of students of other Universities

- a. A candidate migrating from any other University may be permitted to join III/V semester of the degree program provided he/she has passed all the subjects of previous semesters/years as the case may be. Such candidates must satisfy all other conditions of eligibility stipulated in the regulations of this University.
- b. His/her transfer admission shall be within the intake permitted to the college.
- c. He/she shall fulfill the attendance requirements as per the University regulations
- d. The candidate who is migrating from other Universities is eligible for overall classes and not for ranking.
- e. He/she shall complete the program as per the regulation governing the maximum duration of completing the program as per this regulation.

23. Power to remove difficulties

If any difficulties arises in giving effect to the provisions of these regulations, the Vice-Chancellor may by order make such provisions not inconsistent with the Act, Statutes, Ordinance or other regulations, as appears to be necessary or expedient to remove the

difficulty. Every order made under this rule shall be subject to ratification by the appropriate authorities.

24. **Grade Card:** The University shall issue at the beginning of each semester a grade card for the students, containing the grades obtained by the students in the previous semester and his semester Grade Point Average (SGPA)

The grade card shall contain

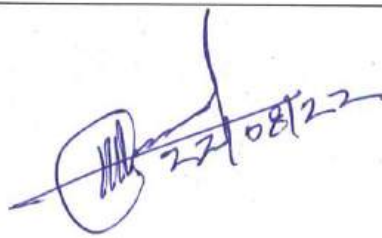
1. The title of the courses along with code taken by the students,
 2. The credits associated with the course
 3. The grade and grade points secured by the student
 4. The total credits earned by the student in the semester
 5. The SGPA of the student
 6. The total credits earned by the student till that semester and
 7. The CGPA of the student (at the end of the VI semester)
 8. **Cumulative Grade Card:** At the end of the VIth semester, the university shall issue Cumulative Grade Card to the students showing details of Grades obtained by the students in each subject in all semesters along with CGPA and total credits earned.
25. **Repeal and Savings:** The existing regulation governing three years Bachelor degree programs and shall stand repealed. However, the above regulation shall continue to be enforce for the students who have been admitted to the course before the enforcement of this regulation.

26. Course Structure and Scheme of examination

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad Choice Based Credit System (CBCS) Curriculum For Faculty of Science and Technology Course Structure and Scheme of Examination B.Sc. Home Science Three Year Undergraduate Degree Program Semester I								
	Course Code	Course Title	Teaching time/week	Credits	Scheme of Examination			
					Max Marks	CIA	UA	Min Marks
Core Courses	BHS-111	Human Physiology (Theory Paper-I)	3 hours	2	50	10	40	20
	BHS-112	Food Science & Nutrition (Theory Paper-II)	3 hours	2	50	10	40	20
	BHS-121	Food Science & Nutrition Practical	3 hours	1.5	50	10	40	20
	BHS-113	Human Development (Theory Paper-III)	3 hours	2	50	10	40	20
	BHS-114	Basics of Textiles & Clothing (Theory Paper-IV)	3 hours	2	50	10	40	20
	BHS-122	Basics of Textiles and Clothing Practical	3 hours	1.5	50	10	40	20
	BHS-115	Fundamentals of Home Science Extension Education (Theory Paper-V)	3 hours	2	50	10	40	20
	BHS-116	Family Resource Management-1 (Theory Paper-VI)	3 hours	2	50	10	40	20
	BHS-123	Family Resource Management -1 Practical	3 hours	1.5	50	10	40	20
Ability Enhancement compulsory courses (AECC-I)	BHS-131	Communication skills in English-I	5 hours	3	50	10	40	20
	BHS-132	Marathi/Hindi/Urdu/Sanskrit A student can opt for any one of these languages (SL-I)	4 hours	3	50	10	40	20
			36	22.5	550	110	440	
Total Credits for Semester I: 22.5 (Theory: 18; Laboratory: 4.5)								



Semester II								
	Course Code	Course Title	Teaching time/week	Credits	Scheme of Examination			
					Max Marks	CIA	UA	Min Marks
Core Courses	BHS-211	Human Development (Preschool-Late childhood (Theory Paper-I)	3 hours	2	50	10	40	20
	BHS-212	Principles of Food Processing (Theory Paper-II)	3 hours	2	50	10	40	20
	BHS-221	Principles of Food Processing-Practical	3 hours	1.5	50	10	40	20
	BHS-213	Introduction to Nutritional Biochemistry (Theory Paper-III)	3 hours	2	50	10	40	20
	BHS-214	Textile Science and Basics of Embroidery (Theory Paper-IV)	3 hours	2	50	10	40	20
	BHS-222	Textile Science and Basics of Embroidery-Practical	3 hours	1.5	50	10	40	20
	BHS-215	Early Childhood Care & Education-1 (Theory Paper-V)	3 hours	2	50	10	40	20
	BHS-216	Family resource Management-II (Theory Paper-VI)	3 hours	2	50	10	40	20
	BHS-223	Family resource Management-II Practical	3 hours	1.5	50	10	40	20
Ability Enhancement compulsory courses (AECC-2)	BHS-231	Communication skills in English-II	5 hours	3	50	10	40	20
	BHS-232	Marathi/Hindi/Urdu/Sanskrit A student can opt for any one of these languages (SL-II)	4 hours	3	50	10	40	20
Non-Credit Course /additional credits	BHS-217	Constitution of India	3 hours	2 *	50	10	40	20
	BHS-218	Compulsory Computer Course	3 hours	2*	50	10	40	20
			42	22.5	550	110	440	
Total Credits for Semester II: 22.5 (Theory: 18; Laboratory: 4.5)								

 22/08/22

27. Curriculum: Semester – I

**Syllabus of B. Sc (Home Science)
Semester I**

Human Physiology (Theory)

Code No.: BHS-111

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- About the functional organization of the human body.
- The normal functioning of the organ systems and their interactions.
- Interpretation common medical diagnostic tests and reports.

Course Learning Outcomes

After studying the above course students will learn about

- The current state of knowledge about the functional organization of the human body.
- Insight of normal functioning of all the organ systems of the body and their interactions.

Unit-I

1. Cell-Structure in brief.
2. Tissue-Classification and function
3. Locomotor system- Classification of bones and functions

Unit-II

1. Circulatory System: Blood
 - i) Composition and function
 - ii) Clotting
 - iii) Common blood groups, and importance of Rh factor Heart
2. Structure
 - i) Action of valves
 - ii) Coronary blood supply
 - iii) Structure and function of artery, vein and capillaries.
3. Respiratory System:
 - i) Structure and functions of respiratory organs"
 - ii) Process of respiration
 - iii) Transport of oxygen in brief

Unit-III

1. Digestive System:
 - i) Study of the anatomical organs in digestive tract
 - ii) Function of glands in digestion
 - iii) Digestion and absorption
2. Excretory System:

- i) Structure and function of excretory organs
 - ii) Formation of urine
3. Reproductive system:
- i) Male-female reproductive organs, structure and functions
 - ii) Menstrual cycle

Unit-IV

Endocrine glands: Structure, function of Pituitary gland, Thyroid gland and Adrenal gland in brief.

Books Recommended:

1. Human Physiology - C. C. Chatterjee
2. Anatomy and Physiology for Nurses - Pears
3. Text book of Medical Physiology- Janet S. Ross, Kathleen J. W. Wilson
4. Text Book of Human Physiology- Sharada Subramaniam and Madhavan Kutty
5. Applied Physiology- Wright - Samson, Oxford University press, Madras.
6. Elementary to Human Physiology- Threence, A. Rogers Wilson

Food Science and Nutrition (Theory)

Code No.: BHS-112

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- The relationship between food, nutrition and health.
- The functions of food, basic concepts of food groups and balanced diet.
- The functions of various nutrients and their sources.
- The various methods of cooking and to understand the selection, nutritional contribution of and effect of cooking on different food groups.

Course Learning Outcomes

After studying the above course students will learn about

- Comprehend relationship between food, nutrition and health.
- The functions of food, basic concepts of food groups and balanced diet.
- The selection, nutritional contribution and changes during cooking of the commonly consumed foods.
- The functions of various nutrients and their sources.
- The methods of preparing food.

UNIT-I: Introduction to Foods and Nutrition

- i) Concepts of Foods and Nutrition- Definition of Food, Nutrition, Balanced diet, RDA, Functional Food, Novel Food, Basic Terminologies etc.
- ii) Functions of Food.
- iii) Food Groups-Their nutritional significance

UNIT-II: -Cooking Methods

- i) Traditional-Boiling, Parboiling, Roasting, Frying
- ii) Advanced Pressure Cooking, grilling, baking, microwave cooking, solar cooking.
- iii) Improving nutritional quality- Germination, Fermentation, Supplementation, Fortification, Enrichment.

UNIT-III

- i) Relation of nutrition to Health
- ii) Nutrients-Carbohydrates, Proteins, Fats, Vitamins,
- iii) Minerals
- iv) Water-their functions, sources RDA, deficiency, excess

Food Science and Nutrition (Practical)

Code No.: BHS-121

Max. Marks: 50

Hrs/wk.: 3

Introduction to Laboratory Rules and Regulations

1. Use and care of kitchen equipment
2. Weights and Measures-Raw and cooked
3. One serving concept
4. Planning and preparation of nutrient rich recipes by using different cooking methods - Calorie, Proteins, Vit-A, Vit-B₂, Vit-B₂, Vit-B, Vit-C, Folic acid, Calcium, Iron (Calculation of nutritive value and cost), Planning for different income groups.

Books Recommended (Theory & Practical):

1. Applied nutrition- R. Rajlaxmi
2. Food Science by B. Sri Lakshmi, New Age International (P) Ltd., New Delhi.
3. Nutritive value of Indian foods - Gopalan C., Ramashastry B.V. & Balasubramanian. NIN, Hyderabad.
4. Food Science-Potter
5. Textbook of Human nutrition-Bamji, M.S. & Rao, N.P.
6. Food Science, Chemistry & Experimental Foods-Dr. M. Swaminathan
7. Essentials of Food & nutrition- Dr. M. Swaminathan

8. Normal & Therapeutic nutrition by Robinson CH & Lawers MR
9. Text book of Food Science, Nutrition and Dietetics- Begum. R.
10. Nutrition science- Srilakshmi. B., III edition, New Age International publishers, New Delhi.
11. A text book of Nutrition-Chintapalli Vidya, New Delhi: Discovery publishing house.

Human Development (Theory)
(Prenatal-Toddlerhood)

Code No.: BHS-113
Hrs/wk.: 3

Max. Marks: 50

Course Objectives

This course will make students understand

- Regarding various developmental tasks of different age groups.
- Concepts of human development and give students knowledge about the rights and needs of different age groups.
- Different behavioral problems of children

Course Learning Outcomes

After studying the above course students will learn about

- Concepts of various developmental task of different age group.
- The different development during infancy and toddlerhood
- Care and need of children.

UNIT-1: Introduction to Human development:

- i) Definition, meaning & scope, developmental periods
- ii) Understanding growth and development.
- iii) General principles of growth & development and factors affecting: heredity, environment, maturation and learning

UNIT-II: Prenatal Development:

- i) Fertilization, conception, stages (growth of foetus)
- ii) Factors influencing prenatal development and hazards during development.
- iii) Birth process-stages of labour, kinds of birth.

UNIT-III: Infancy and Toddlerhood:(0-2 yrs)

- i) Neonate an overview, reflexes, APGAR Scale & adjustments
- ii) Physical development-Anthropometric measurements
- iii) Motor Development - common motor skills

- iv) Language Development - pre speech forms of communication.
- v) Cognitive Development
- vi) Socio-emotional development

UNIT-IV:

- i) Care during infancy and toddlerhood
- ii) Feeding, weaning, teething, toilet training, bathing, clothing, sleeping, immunization & development of senses.
- iii) Importance of environment and training, Significance of stimulation during infancy-Visual, motor, auditory and language.
- iv) Role of toys in development.

Books Recommended:

1. Human Development: John W Santrock, 7th Edition, Brown & Bench Mark Publishers, U.S.A.
2. Developmental Psychology: Elizabeth Hurlock, 5th Edition 1981, Tata Mcgraw Hill Publishing Co. New Delhi.
3. Human Development: Diane E Papalia & Sally Wendkos Olds 5th Edition 1981, Tata Mcgraw Hill Publishing Co. New Delhi
4. Child Development: Suriyakamthi A. (1989) Javutga Publication Gandhi Gram.
5. Child Development: Harris A.C. (1986) West Pub. Unit.
6. Human Development: Graig G (1999) N. J. Peentice Hall. Hill,
7. Hurlock, E.B., Mc Graw New York 1988.
8. Text Book of child development: Devadas, R.P. and Jaya. N. Mc Mullan and Co., 1981.

Basics of Textiles and Clothing (Theory)

Code No.: BHS-114

Max.Marks:50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- The knowledge of textiles fibres and yarns in terms of their production, properties and application
- An in-depth information regarding the various fabric construction

Course Learning Outcomes

After studying the above course students will learn about

- To describe textile fibres in terms of their properties
- The various properties of yarns
- The various aspects of clothing construction

UNIT-1: Review of Textile fibre

- a) Classification of fibre
- b) Primary & Secondary properties of fibre

UNIT-II: Yarn

- a) Process of spinning
- b) Classification of yarn
- c) Twist- 'S' & 'Z'
- d) Types of yarns

UNIT-III: Fabric construction

- (a) Methods of fabric construction-Weaving, knitting, felting & braiding.
- (b) Types of looms-Handlooms & Machine loom
- (c) Types of Weaves-plain, twill, satin & sateen, pile, honey comb & dobby weave

UNIT-IV: Clothing construction

- a) Facts about fabric & selvedge
- b) Stitching & measuring equipments
- c) Method of taking body measurement
- d) Layout of cloth.

Basics of Textiles and Clothing (Practical)

Code No.: BHS-122

Max. Marks: 50

Hrs/wk.: 3

- 1) Introduction to tools and equipment used in clothing construction, sewing machine and its parts, repair, maintenance and care of sewing machine.
- 2) Hazards in the sewing process and remedies for the same Breaking of needle, slipping of stitches, breaking of thread (top & bobbin) Machine working hard, improper stitching, pleats and creases in cloth while stitching.
- 3) Making sample of different types of
 - a) Seams - Plain, French, Flat and fell, double seam
 - b) Tucks Pin tucks, crossed tucks, cord tucks c) Pleats Knife, box, inverted box.
 - d) Plakets Continuous, simple & Zipper
- 4) Garment

- a) Bib
- b) Diaper/Panty
- c) Baby frock with yoke or self help feature.

Books Recommended (Theory & Practical):

1. Household textile and laundry work-Durga Deulkar
2. Know about fabric & their manufactures - K. Thomas
3. Textiles fiber to fabric-Bernard P. Corbman
4. Zarpkar's Stitching & cutting- Part I & II - Zarpkar, Navneet Publications, Mumbai.
5. Practical clothing construction- Part I and II, Mary Mathews, Encydopedia of Textiles, Editor of American tabucs Magzine printr hall the U.S.A.prakashan, New Delhi,
6. Basic process and clothing construction- Doongaji, 6th Ed. Raj
7. Sewing book- Baines, 5 and Huttan, J singer

Fundamentals of Home Science Extension Education (Theory)

Code No.: BHS-115

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- The socio-cultural and economic environment of rural, urban and semi urban communities.
- To prepare a cadre of professionals to work with governmental and non-governmental organizations in various capacities.
- To develop competency in the preparation of participatory and innovative communication strategies for the dissemination of vital information to vulnerable sections of the population.

Course Learning Outcomes

After studying the above course students will learn about

- The meaning, importance and need of home Year science extension education
- Knowledge of extension education
- The process of communication in development work
- The term in extension approaches and models

UNIT-I: Extension education- Meaning, Definition, Objectives and Principles of Extension Education, Types of extension education - Formal and Non formal and adult education, Contribution of extension education in rural development.

UNIT-II: Home science extension education- Meaning, Definition and importance of Home Science extension education. Major fields of Home Science extension, philosophy of Home Science extension, variation between formal and non formal education

UNIT-III: Extension education programmes: Rural Development programmes of Government, Non-Government and aided organization, Role of Home Science extension in community building for upliftment of rural families.

UNIT-IV: Social Problems: Meaning & Importance of social problems, over population, Caste tension, Unemployment, Malnutrition, poor health and sanitation.

UNIT-V: Gender and Development: Sex ratio, Human development index, National policy on women and children.

Books Recommended:

1. Dahama O.P. & Bhatnagar O.P. "Education and Communication for Development". Oxford & IBH Publishing Co. New Delhi 1977.
2. Supe S.V. "An Introduction to Extension Education", Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi & Calcutta.
3. G. L. Ray, "Extension Communication & Management".
4. Dr. I. Satyasundaram "Rural Development".
5. Singh R. "Text Book of Extension Education". Sahitya Kala Prakashan, Ludhiana, 1987.
6. Woodford J.C.G. Edwin A & Cummins K.C. Organisational communication - The Keystone to Managerial Effectiveness, Mc Graw Hill Tokya, Japan, Kgakusha Ltd.
7. Rudramurthy B "Extension in Planned Social Change" Allied Publishers Pvt. Ltd. Chennai.
8. Waghmare S.K. "Teaching Extension" Prashant Publishers
9. Vallabh Vidyanagar, 1980. Reddi Adivi, "Extension Education Shree Laxmi Press, Bapatia, Gunthur A.P.

Family Resource Management-I (Theory)

Code No.: BHS-116

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- To educate student about management in the family as well as in other sphere of life.
- To make student aware about maximum utilization of their resources to meet their goals

Course Learning Outcomes

After studying the above course students will learn about

- Familiarize the students with the available resources, their uses and conservation
- Understand the family resources.
- Acquire knowledge about the management process
- Develop the ability to improve the work within less time and fatigue.
- Understand the ability how to make household budget to each income group

UNIT-I: Management- Meaning, Definition, Concept, Importance, General Principles, functions, Qualities of Manager, hurdles in the improvement of management.

UNIT-II: (1) Management process-Definition, importance, Steps:

- a) Planning-definition, steps, guidelines.
- b) Controlling
- c) Evaluation

UNIT-III:

- i) Values
- ii) Goals
- lii Standards
- iv) Decision making -Definition, types, steps, role in home management
- v) Family Resources-definition, types, characteristics

UNIT-IV: Management of Human Resources-Process & Importance

1) Time management:

- Tools in time management
- Time costs of home making activities
- Time demands life cycle in different stage of family
- Process of managing time
- Leisure time & Recreation

2)) Energy management:

- Energy demands in different stages of family life cycle
- Energy cost of home making activities
- Fatigue -Most Fatiguing tasks, Physiological fatigue, psychological fatigue
- Solar energy

3) Work simplification:

- Meaning & Importance
- Mendel's laws of changes
- Techniques of work simplification

Family Resource Management-1 (Practical)

Code No.: BHS-123

Max. Marks: 50

Hrs/wk.: 3

- 1) Preparation of time plans for college going students working & non working women.
 - 2) Time plan for alternating light and heavy jobs.
 - 3) Activities of working & non working women.
 - 4) Comfortable Reaching Heights
 - 5) Work-Simplification Techniques applied to different activities
- Process chart, operation chart, pathway chart.

Books Recommended (Theory & Practical):

- 1) Gross & Crandall "Management for Modern families, Meredith Publishing Co. Park Avenue South, New York.
- 2) Nickell P & Dorsey J.M. "Management in family living, Laguna Hills, California.
- 3) Mann M.K. "Home Management in Indian Families, Kalyani Publisher, Ludhiyana.
- 4) Ramaswamy, "Principles of Management", Himalaya Publishing House, Mumbai.
- 5) Goodyear & Klohr, "Managing for Effective living" John Wiley & Sons.
- 6) Swanson Bettye, "Introduction to Home Management", McMillan Pub. House, Inc. New York.
- 7) Vargese & Oagale, "Home Management".
- 8) Ruth E, Family Resource Management - Principles & Application.
- 9) Erma H. Gross, Elizabeth, "Management for Modern Families.

28 Curriculum: Semester – II

Human Development (Theory) (Preschool- Late childhood)

Code No.: BHS-211
Hrs/wk.: 3

Max. Marks: 50.

Course Objectives

This course will make students understand

- Regarding various developmental tasks of 2-6 years age groups.
- Concepts of human development and give students knowledge about the rights and needs of 2-6 years age groups.
- About the physical, cognitive, social development of preschool and late childhood children

Course Learning Outcomes

After studying the above course students will learn about

- The sequential stages of development during pre-school and late childhood
- The behavioral problems during pre-school and late childhood
- The skills for self-improvement

UNIT-1: Play

- Definition, meaning, values, types, Theories & Characteristics
- Discipline: Principles, meaning and types.

UNIT-II-Preschool years: (2-6 years)

- Characteristics
- Physical Development height, weight, body proportions.
- Motor skills
- Cognitive development Perception, concept formation questioning and curiosity.
- Emotional development Characteristics and common emotions like anger, fear and jealousy.
- Social development -common forms of social behaviour, parents, school and siblings.
- Personality development - sense of initiative V/S guilt
- Development tasks

UNIT-III-Late Childhood (school years) (6-12 years)

- Characteristics, development tasks.
- Physical development- Height, Weight and body proportions.
- Motor skills-Common motor skills Cognitive Development-Characteristics of thinking

- Language Development-Characteristics
- Personality Development-industry V/s inferiority
- Social Development-Factors affecting (family, role of family and its importance, expectations and sibling relation)
- Gang age-Peer Influence, sex antagonism. Moral Development-Characteristics

Books Recommended:

1. Child Development -John W. Santrock, 7th Brown & Bench mark publisher's U.S.A.
2. Human Development - Diane E Papalia & Sally Wendkos olds, 5th Edition, 1981, Tata Mcgraw Hill Publishing Company New Delhi.
3. Development Psychology -Elizabeth Hurlock, 5th Edition 1981, Tata Mcgraw Hill Publishing Company, New Delhi.
4. Human Development Graig G (1999) N.J. Prentice Hall
5. The Development of Children -Cole & Coles (1995) N.Y. Freeman & Co

Principles of Food Processing (Theory)

Code No.: BHS-212

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- Knowledge about principles of food preservation and different food processing methods.

Course Learning Outcomes

After studying the above course students will learn about

- Principles of food preservation and different food preservation methods.
- The role of microorganisms and fermentation.

Unit-I

Introduction to food micro-organisms, their classification, growth curve, contamination & spoilage of foods, causes and factors affecting food spoilage, importance of microbial cultures, its cultivation and preservation.

Unit-II

Importance and scope of food preservation, Basic principles and various methods of food preservation, Food preservation by salt and sugar.

Unit-III

Food preservation by use of low temperature Principle, equipments and effect on quality (Chilling, cold storage, freezing etc.)

Unit-IV

Food preservation by use of high temperature (thermal processing) Principle and equipments: Canning, Blanching, Pasteurization, Sterilization, Evaporation etc., Food preservation by drying, Dehydration and Concentration

Unit-V

Preservation by Radiation, Chemicals and Preservatives: Definition, Methods, Effect on Microorganisms, Effects on Quality of Foods. Preservation of food by fermentation- Definition, Advantages, Disadvantages, Types, Equipments.

Unit-VI

Recent methods in food preservation: Pulsed electric field processing, Microwave heating, High pressure processing, processing using ultrasound, Dielectric, Holmic and Infrared heating.

Principles of Food Processing (Practical)

Code No.: BHS-221

Max. Marks: 50

Hrs/wk.: 3

- Microscopy & Microscopic examination of bacteria, yeast & mold.
- Demonstration of various machineries used in food processing.
- Preparation of ready-to-serve beverages, squashes, cordials, syrups etc. Preparation of Jams, Jellies, marmalades, preserves, Chutneys, pickles ketchup/sauces, etc.
- Preparation of fruit bars, candies, toffees etc.
- Drying and dehydration of fruits and vegetable e.g. raisins, green leafy vegetables
- Preservation of food by fermentation (Sauerkraut, idli, tempeh, curd, dhokla etc.)
- Preservation of milk by condensation/concentration.
- Identification of types of spoilage & microbial count of spoiled foods.
- Demonstration on canning and bottling of fruits and vegetables, Visit to food processing industry/unit.

Books Recommended (Theory & Practical):

1. Microbiology by Prescott, Harley & Klein.
2. Food Microbiology by Frazier W.C.
3. Basic Food Microbiology by Banwart George, J.
4. Technology of Food Preservation- N. W. Desroiser and N.W. Desrosier, AVI Publishing Co. Inc London.
5. Introductions to Food Science and Technology- G.P. Stewart and M.A. Amerine.
6. Food Processing Operations- Vol. III, M.A. Joslyn and JJ. Heild.
7. Preservation of fruits & Vegetables by Giridharilal, Sidhappa and Tondon, ICAR, Publication, New Delhi.

8. Hand book of Analysis of Fruits & Vegetable products- Ranganna, S., Tata McGraw Hills Pub. Co., New Delhi.
9. Food Processing and Preservation- Subbulaksmi G., and Udipi S.
10. Principles of Food Science, Vol. II by G. Borgstron, The Mc. Millan Co. Ltd. London.
11. Principles of food preservation part I & II by Owen R. Fenemma.
12. Food Science- Potter, CBS publishers.

Introduction to Nutritional Biochemistry (Theory)

Code No.: BHS-213
Hrs/wk.: 3

Max. Marks: 50

Course Objectives

This course will make students understand

- Knowledge on basic concepts of biochemistry.
- The role of major nutrients.

Course Learning Outcomes

After studying the above course students will learn about

- The principles of biochemistry.
- The chemistry of major nutrients.
- The biological processes and systems as applicable to nutrition.
- Application of knowledge acquired to human nutrition.

UNIT-I:

Introduction to Biochemistry, relationship to food and nutrition. Its importance and relationship to food and Nutrition

UNIT-II:

CARBOHYDRATES: Digestion, absorption, metabolism.

UNIT-III-

LIPIDS: Digestion, Absorption, Metabolism, Oxidation, Rancidity

UNIT-IV:

PROTEINS: Digestion, Absorption, Metabolism, Protein quality estimation, enzymes hormones

UNIT-V:

Interrelationship of nutrients

Books Recommended:

- 1) Outlines of biochemistry by EF Corn & P. K. Stumpf
- 2) Text book of biochemistry by A. Lehninger
- 3) Biochemistry of food by Eskin N.A.M, Handerson H.M. Townsend R. J.

- 4) Food chemistry by Fennema O.R.
- 5) Nutrition & diet therapy-Sue Rodwell Williams Times mirror/ Mosby College publication.
- 6) Text book of biochemistry-West, Tod & Mansol
- 7) Food science, Chemistry and Experimental Foods- M. Swaminathan, the Bangalore printing and publishing company Ltd.,
- 8) Hand book of food science and Experimental Foods-M. Swaminathan the Bangalore printing and publishing company Ltd.,
- 9) Essentials of Food and Nutrition- M. Swaminathan Vol. I & II, Ganesh and Company, Madras.

Textile Science and Basics of Embroidery (Theory)

Code No.: BHS- 214

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- About physical and chemical properties of fibers
- The different types of clothing finishes
- Regarding surface ornamentation.
- The making of products with the help of basic embroidery stitches.

Course Learning Outcomes

After studying the above course students will learn about

- The physical and chemical properties of fibers
- The different finishes used on fabrics
- Develop skill in embroidery
- Encourage entrepreneurship

UNIT-I: Physical & Chemical Properties of fibers

- a) Cotton
- b) Silk
- c) Wool
- d) Jute
- e) Viscose Rayon
- f) Nylon
- g) Polyester
- h) Asbestos

UNIT-II: Finishes

- a) Introduction & Aims of finishes

b) Classification of finishes

(i) Mercerizing (ii) Singeing (iii) Scouring (iv) Sanforizing, (v) Bleaching (vi) Calendaring (vii) Weighing & Degumming (viii) Tenting (ix) Sizing (x) Waterproof finish (xi) Fireproof (xii) Mothproof (xiii) Shearing (xiv) Crease resistant (xv) Creeping (xvi) Embossing, (xvii) Mordanting (viii) Napping.

UNIT-III: Embroidery

1. History
2. Equipment used in embroidery Threads, cloth, scissors, needle, thimble, tracing wheel, carbon paper.
3. Rules of Embroidery
4. Selection of design
5. Colour combination
6. Types of tracing design
7. Machine embroidery

Textile Science and Basics of Embroidery (Practical)

Code No.: BHS-222

Max. Marks: 50

Hrs/wk.: 3

1. Physical & Chemical testing of different types of fiber
(1) Cotton, (2) Wool (3) Silk (4) Jute (5) Nylon (6) Polyester
2. Chemical testing of blended fabric.
3. Making a colour combination chart.
4. Embroidery-preparation of samples using different embroidery stitches (Any-10)

Books Recommended (Theory & Practical):

- 1) Deulkar Durga Household textile and Laundry work, orient Longman Delhi.
- 2) Dantya S-Fundamentals of Textile and their care, Orient, Longman, Delhi.
- 3) K.P. Hess Textile Fabric and their uses.
- 4) Embroidery -Ksynia Marko, Treasure Press London.
- 5) Thomas & Heedson-Manual of Dyes and fabrics.
- 6) Benard P. Cobman - Textile fiber to fabric.
- 7) Marjory Z. Joseph, Introductory Textiles science, hok, Rine Hart, and Winstone, New York.
- 8) Reader's Digest-Complete guide to Needle work
- 9) Verma, Dr. Kapil Cutting and tailoring (Practical drafting, Asian Publisher)

Early Childhood Care & Education-1 (Theory)

Code No.: BHS-215

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- The nature, aims and objectives of Early Childhood Care and Education.
- To develop skills in working with child using play and educational materials.
- To evaluate components of a quality programme for young children.

Course Learning Outcomes

After studying the above course students will learn about

- Developing skills in observing and documenting the developmental needs of children in different contexts
- Skills in assessing developmental indicators using tools and techniques.
- Skills in creating learning materials

UNIT-1: Dimensions of development

- Physical, motor, Cognitive, Language, Social, Emotional, moral and personality.
- Developmental tasks

UNIT-II:

- Crèche-Meaning, Importance, Salient features of a good crèche -Setup, Staff, Program planning, Records-Types & maintenance

UNIT-III: Significance of Early Childhood years

- Historical review- Rousseau, Pestalozzi, Froebel, Montessori, Rabindranath Tagore, Tarabai Modak
- Development of Pre-school education in India Christian missionaries, Badheka, Tarabai Modak Gram Bal experiment of Kosbad, Nutan Balshikshan Sangh
- NCERT, ICDS, IAPPE, Mobile crèche, Balshikshan Parishad

UNIT-IV: Approaches to Pre-school education:

- Formal & Informal, Advantages & Disadvantages
- Types of preschool education- Play group, Nursery school, Balwadi, Anganwadi
- Objectives of early childhood education, Role and Qualities of teacher and other personnel.
- Preschool building - Site & Location, Elements of a building, Space allotment for indoor & outdoor play
- Play equipments: Principles & Selection of equipment for various developments, Care and use of play equipment

Family Resource Management-II (Theory)

Code No.: BHS-216

Max. Marks: 50

Hrs/wk.: 3

Course Objectives

This course will make students understand

- To generate awareness on money management.
- To learn the process of clothing management
- To develop entrepreneur skills

Course Learning Outcomes

After studying the above course students will learn about

- Concepts of income and expenditure
- Skills to tackle family finance.
- The food management
- Management of clothing

UNIT-I: Management of Non-human Resources:

- i) Money Management- definition, concept of family income, sources, importance. Planning- Budget making-Definition, types, steps, importance, Account keeping
- ii) Saving-definition, importance, types, compulsory, voluntary ways to save the income.
- iii) Investment-Definition, Guidelines to invest the money, ways to invest mutual fund, shares, stocks, Bonds, deposit etc.!

UNIT-II: Management of material good

- i) Food management Process of planning, controlling & Evaluation
- ii) Clothing management Clothing demands/requirements during different stages of family life cycle, management responsibilities in clothing a family, Process of clothing management.

UNIT-III: Personnel management - Meaning, Definition, Selection, Recruitment & training of personal

Family Resource Management-II (Practical)

Code No.: BHS-223

Max, Marks: 50

Hrs/wk.: 3

1. Budget making and actual spending (for any event).
2. Budget making for families of low, middle and high income groups.
3. Seminar presentation on related topics

4. Attending seminars/conference- A Report.
5. Visit to Exhibitions/Trade Fair - A Report.

Books Recommended (Theory & Practical):

- 1) Gross & Crandall "Management for Modern families, Meredith Publishing Co. Park Avenue South, New York.
- 2) Nickell P & Dorsey J.M. "Management in family living, Laguna Hills, California.
- 3) Mann M.K. "Home Management in Indian Families, Kalyani Publisher, Ludhiyana.
- 4) Ramaswamy, "Principles of Management", Himalaya Publishing House, Mumbai.
- 5) Goodyear & Klohr, "Managing for Effective living John Wiley & Sons
- 6) Swanson Bettye, "Introduction to Home Management", McMillan Pub. House, Inc. New York.
- 7) Vargese & Oagale, "Home Management".
- 8) Ruth E, Family Resource Management - Principles & Application.
- 9) Erma H. Gross, Elizabeth, "Management for Modern Families.

29 Interpretation of Course Codes

The course offered by the Departments shall have an alphanumeric course code consisting of a string of six characters. The first three characters in a course code shall be capital letters identifying the responsible department offering the course. The next three numerical digits give the following information. The first digit specifies the year of study of the B.Sc. (Home Science) course. Second digit stands for semester and third digit specifies the serial number of the Course.

Coding System of Course/Paper Six-digit code for a Course (B.Sc. (Home Science) courses)
Where,

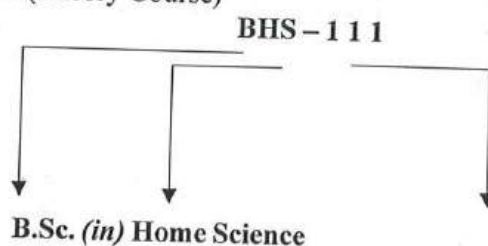
BHS stands for B.Sc. Home Science and

1st digit = Semester (1/2/3/3/4/5/6)

2nd digit = Theory (1) / Practical (2) / Ability Enhancement courses (3)

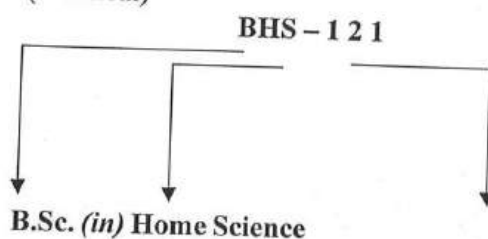
3rd digit = Sr. No. of course (1/2/3/4/5/6/7/8)

Example 1: (Theory Course)



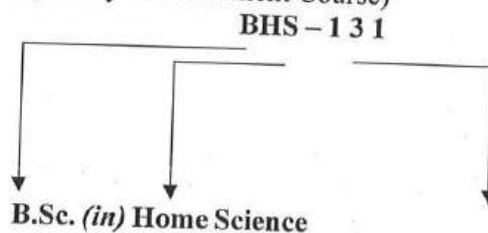
1 = First Semester
1 = Theory
1 = Sr. no. of Course

Example 2: (Practical)



1 = First Semester
2 = Practical
1 = Sr. no. of Course

Example 2: (Ability Enhancement Course)



1 = First Semester
3 = Ability Enhancement Course
1 = Sr. no. of Course