CORRIGENDUM

It is notified for all concerned that the syllabus for "Food and Nutrition (Honours/ General, vide notification no. CSR/12/18, dt. 04.6.18) published on 06-06-18 is withdrawn and the corrected version of the syllabus is enclosed herewith.
UNIVERSITY OF CALCUTTA

Notification No. CSR/12/18

It is notified for information of all concerned that the Syndicate in its meeting held on 28.05.2018 (vide Item No. 14) approved the Syllabi of different subjects in Undergraduate Honours / General / Major courses of studies (CBCS) under this University, as laid down in the accompanying pamphlet:

List of the subjects

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject</th>
<th>Sl. No.</th>
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</tr>
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<tr>
<td>1</td>
<td>Anthropology (Honours / General)</td>
<td>29</td>
<td>Mathematics (Honours / General)</td>
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<td>Arabic (Honours / General)</td>
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<td>Microbiology (Honours / General)</td>
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<td>Persian (Honours / General)</td>
<td>31</td>
<td>Mol. Biology (General)</td>
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<tr>
<td>4</td>
<td>Bengali (Honours / General / LCC2 / AECC1)</td>
<td>32</td>
<td>Philosophy (Honours / General)</td>
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<tr>
<td>5</td>
<td>Bio-Chemistry (Honours / General)</td>
<td>33</td>
<td>Physical Education (General)</td>
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<td>6</td>
<td>Botany (Honours / General)</td>
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<td>Physics (Honours / General)</td>
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<td>7</td>
<td>Chemistry (Honours / General)</td>
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<td>Physiology (Honours / General)</td>
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<td>8</td>
<td>Computer Science (Honours / General)</td>
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<td>Political Science (Honours / General)</td>
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<tr>
<td>9</td>
<td>Defence Studies (General)</td>
<td>37</td>
<td>Psychology (Honours / General)</td>
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<td>10</td>
<td>Economics (Honours / General)</td>
<td>38</td>
<td>Sanskrit (Honours / General)</td>
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<td>11</td>
<td>Education (Honours / General)</td>
<td>39</td>
<td>Social Science (General)</td>
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<td>13</td>
<td>English ((Honours / General/ LCC1/ LCC2/AECC1))</td>
<td>41</td>
<td>Statistics (Honours / General)</td>
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<tr>
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<td>Environmental Science (Honours / General)</td>
<td>42</td>
<td>Urdu (Honours / General / LCC2 / AECC1)</td>
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<td>15</td>
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<td>43</td>
<td>Women Studies (General)</td>
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<td>16</td>
<td>Film Studies (General)</td>
<td>44</td>
<td>Zoology (Honours / General)</td>
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<td>17</td>
<td>Food Nutrition (Honours / General)</td>
<td>45</td>
<td>Industrial Fish and Fisheries – IFFV (Major)</td>
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<td>18</td>
<td>French (General)</td>
<td>46</td>
<td>Sericulture – SRTV (Major)</td>
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<td>Geography (Honours / General)</td>
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<td>Computer Applications – CMAV (Major)</td>
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<td>Tourism and Travel Management – TTMV (Major)</td>
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<td>Hindi (Honours / General / LCC2 / AECC1)</td>
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<td>Advertising Sales Promotion and Sales Management – ASPV (Major)</td>
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<td>22</td>
<td>History (Honours / General)</td>
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<td>Clinical Nutrition and Dietetics CNDV (Major)</td>
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<td>53</td>
<td>Bachelor of Fashion and Apparel Design – (B.F.A.D.) (Honours)</td>
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<td>26</td>
<td>Human Development (Honours / General)</td>
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<td>Bachelor of Fine Art (B.F.A.) (Honours)</td>
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<td>27</td>
<td>Human Rights (General)</td>
<td>55</td>
<td>B. Music (Honours / General) and Music (General)</td>
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<tr>
<td>28</td>
<td>Journalism and Mass Communication (Honours / General)</td>
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The above shall be effective from the academic session 2018-2019.

SENATE HOUSE
KOLKATA-700073
The 4th June, 2018

(Dr. Santanu Paul)
Deputy Registrar
SYLLABUS

FOR

B.Sc. (HONOURS)
IN
FOOD AND NUTRITION

UNIVERSITY OF CALCUTTA
2018
SEMESTER WISE COURSE FOR BSc FOOD AND NUTRITION HONOURS (FNTA)

<table>
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<tr>
<th></th>
<th>Sem-1</th>
<th>Sem-2</th>
<th>Sem-3</th>
<th>Sem-4</th>
<th>Sem-5</th>
<th>Sem-6</th>
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<td>2Th+ 2P</td>
<td>2Th+ 2P</td>
<td>3Th+ 3P</td>
<td>3Th+ 3P</td>
<td>2Th+ 2P</td>
<td>2Th+ 2P</td>
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<tr>
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<td>CC-1 &amp; 2</td>
<td>CC-3 &amp; 4</td>
<td>CC-5, 6 &amp; 7</td>
<td>CC-8, 9 &amp; 10</td>
<td>CC-11 &amp; 12</td>
<td>CC-13 &amp; 14</td>
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<td>Elective Courses:</td>
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<tr>
<td>i) Generic Elective (GE)</td>
<td>1Th+ 1P</td>
<td>1Th+ 1P</td>
<td>1Th+ 1P</td>
<td>1Th+ 1P</td>
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<tr>
<td></td>
<td>GE-1</td>
<td>GE-2</td>
<td>GE-3</td>
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<tr>
<td>ii) Discipline Specific</td>
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<td>DSE-A(1/2)</td>
<td>DSE-A(3/4)</td>
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<td>DSE-B(1/2)</td>
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<td>Ability Enhancement</td>
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<tr>
<td>Compulsory Course(AECC)</td>
<td>1Th+ 0 P</td>
<td>1Th+ 0 P</td>
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<tr>
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<tr>
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<td>1Th+ 0 P</td>
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<td>SEC-B(1/2)</td>
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<td>4x100=400</td>
<td>5x100=500</td>
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<td>4x100=400</td>
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<td>Marks</td>
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<td>Total Credits</td>
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<td>20</td>
<td>26</td>
<td>26</td>
<td>24</td>
<td>24</td>
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</table>

Th= Theory, P= practical

- CC/GE/DSE: Each theory and practical course have 4 and 2 credits respectively.
- GE: Covering two disciplines with two courses; any discipline in any semester; CC of different subjects in general course is to be treated as GE for Honours course.
- DSE/SEC: Choice must be group specific to each semester.
- AECC/ SEC: Each course has two credits.
- AECC1: Communicative English/ MIL; AECC2: Environmental Studies.
# Scheme and Syllabus for Choice Based Credits System for B.Sc. Honours Food and Nutrition

<table>
<thead>
<tr>
<th>Semester</th>
<th>Core Course (14)</th>
<th>Ability Enhancement Compulsory Course (AECC)</th>
<th>Skill Enhancement Course (SEC)</th>
<th>Discipline Specific Elective Course (DSE)</th>
<th>Elective: Generic Course (GE)</th>
</tr>
</thead>
</table>
| I        | FNT-A-CC-1-1-Th: BASIC FOOD SCIENCE-I  
FNT-A-CC-1-1-P: BASIC FOOD SCIENCE-I (PRACTICAL) |                                |                                |                                |                              |
|          | FNT-A-CC-1-2-Th: HUMAN PHYSIOLOGY-I  
FNT-A-CC-1-2-P: HUMAN PHYSIOLOGY-I (PRACTICAL) |                                |                                |                                |                              |
| II       | FNT-A-CC-2-3-Th: BASIC FOOD SCIENCE-II 
FNT-A-CC-2-3-P: BASIC FOOD SCIENCE-II (PRACTICAL) |                                |                                |                                |                              |
|          | FNT-A-CC-2-4-Th: HUMAN PHYSIOLOGY-II  
FNT-A-CC-2-4-P: HUMAN PHYSIOLOGY-II (PRACTICAL) |                                |                                |                                |                              |
| III      | FNT-A-CC-3-5-Th: HUMAN NUTRITION-I  
FNT-A-CC-3-5-P: HUMAN NUTRITION-I (PRACTICAL) |                                |                                | SEC-A-(1/2)                   |                              |
|          | FNT-A-CC-3-6-Th: COMMUNITY NUTRITION  
FNT-A-CC-3-6-P: COMMUNITY NUTRITION (PRACTICAL) |                                |                                |                                |                              |
|          | FNT-A-CC-3-7-Th: FOOD COMMODITIES  
FNT-A-CC-3-7-P: FOOD COMMODITIES (PRACTICAL) |                                |                                |                                |                              |
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<thead>
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<td>IV</td>
<td>FNTA-CC8Th: HUMAN NUTRITION-II</td>
<td>SEC-B(3/4)</td>
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<td>FNTA-CC8P: HUMAN NUTRITION-II (PRACTICAL)</td>
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<tr>
<td></td>
<td>FNT-A-CC-4-9-Th: DIET THERAPY-I</td>
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<td>FNT-A-CC-4-9-P: DIET THERAPY-I (PRACTICAL)</td>
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<td>FNT-A-CC-4-10-P: NUTRITIONAL BIOCHEMISTRY-I (PRACTICAL)</td>
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<tr>
<td>V</td>
<td>FNT-A-CC-5-11-Th: DIET THERAPY-II</td>
<td>DSE – A(1/2)</td>
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<td>FNT-A-CC-5-11-P: DIET THERAPY-II (PRACTICAL)</td>
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<td>FNT-A-CC-5-12-Th: NUTRITIONAL BIOCHEMISTRY-II</td>
<td>DSE– B(1/2)</td>
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<td>FNTA-CC12P: NUTRITIONAL BIOCHEMISTRY-II (PRACTICAL)</td>
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<td>VI</td>
<td>FNT-A-CC-6-13-Th: FOOD MICROBIOLOGY</td>
<td>DSE– A(3/4)</td>
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<td>FNT-A-CC-6-13-P: FOOD MICROBIOLOGY (PRACTICAL)</td>
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<td>FNT-A-CC-6-14-Th: FOOD PRESERVATION</td>
<td>DSE– B(3/4)</td>
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<td>FNT-A-CC-6-14-P: FOOD PRESERVATION (PRACTICAL)</td>
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## DISTRIBUTION OF CREDITS IN THE COURSE CURRICULUM

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<th>Semester</th>
<th>Name of the Course</th>
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<tr>
<td>II</td>
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<td>III</td>
<td>6x3=18</td>
<td>26</td>
</tr>
<tr>
<td>IV</td>
<td>6x3=18</td>
<td>26</td>
</tr>
<tr>
<td>V</td>
<td>6x2=12</td>
<td>24</td>
</tr>
<tr>
<td>VI</td>
<td>6x2=12</td>
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<td>Total Course</td>
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<tr>
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<td>II</td>
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</tr>
<tr>
<td>III</td>
<td>2x1=2</td>
<td>---</td>
</tr>
<tr>
<td>IV</td>
<td>2x1=2</td>
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<tr>
<td>V</td>
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<tr>
<td>VI</td>
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<th>Skill Enhancement Course (SEC)</th>
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<tbody>
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<tr>
<td>II</td>
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</tr>
<tr>
<td>VI</td>
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<table>
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<tr>
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<th>Discipline Specific Elective Course (DSE)</th>
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<tbody>
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<td>VI</td>
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<th>Generic Elective (GE)</th>
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<td>III</td>
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<table>
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<tr>
<th></th>
<th>(14×6)=84 credits</th>
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<tbody>
<tr>
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<td>(14×6)=24 credits</td>
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</tr>
<tr>
<td></td>
<td>(2×2)=4credits</td>
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</tr>
<tr>
<td></td>
<td>(2×2)=4credits</td>
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<tr>
<td></td>
<td>(4×6)=24 credits</td>
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</table>
NOTE:
1. 14 Core Courses (CCs) should be compulsorily studied for BSc.
Food and Nutrition (Honours) students.
2. 4 DSE & 2 SEC to be chosen by the Food and Nutrition (Honours) students (Choice based).
3. 4 GE subjects in Food and Nutrition Syllabus are to be studied by other discipline students.
4. Food and Nutrition Honours students have to choose chemistry as GE course.

### SUGGESTED MARKS DISTRIBUTION OF BSc FNTA CBCS SYLLABUS

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
<th>FULL MARKS</th>
<th>MARKS DISTRIBUTION</th>
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<td>AECC</td>
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<td>CC-Th</td>
<td>4</td>
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<td>GE-Th</td>
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<tr>
<td>DSE-Th</td>
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<td>DSE-P</td>
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<td>30</td>
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</tr>
</tbody>
</table>

Th= Theory,  P= Practical
FNT-A-CC-1-1-Th: BASIC FOOD SCIENCE 4 CREDITS

1. Basic concept on Food, Nutrition and Nutrients. Classification of Food, Classification of Nutrients.

2. Carbohydrates - Definition, Classification, Structure and properties.
   Monosaccharides - glucose, fructose, galactose.
   Disaccharides - Maltose, lactose, sucrose
   Polysaccharides - Dextrin, starch, glycogen, resistant starch.
   Carbohydrates - Sources, daily requirements, functions. Effects of too high and too low carbohydrates on health. Digestion and absorption of carbohydrate.


FNT-A-CC-1-1-P: FOOD SCIENCE (PRACTICAL) 2 CREDITS

1. Identification of Mono, Di and polysaccharides
2. Identification of Proteins
3. Identification of glycerol.
FNT-A-CC-1-2-Th: HUMAN PHYSIOLOGY-I  


FNT-A-CC-1-2-P: HUMAN PHYSIOLOGY-I(PRACTICAL)  

1. Determination of pulse rate in Resting condition and after exercise (30 beats/10 beats method).
2. Determination of blood pressure by Sphygmomanometer (Auscultatory method).
4. Determination of Bleeding Time (BT) and Clotting Time (CT).
5. Detection of Blood group (Slide method).
6. Measurement of Haemoglobin level (Sahli’s or Drabkin method ).
SECOND SEMESTER

[TOTAL CREDITS: 6 (THEORY-4, PRACTICAL-2)]

FNT-A-CC-2-3-Th: BASIC FOOD SCIENCE-II 4 CREDITS

1. Dietary Fibre-Classification, sources, composition, properties & nutritional significance.
3. Vitamins - Bio-Chemical and Physiological Role Physiological role, bio-availability and requirements, sources, deficiency & excess.

FNT-A-CC-2-3-P: BASIC FOOD SCIENCE-II 2 CREDITS

1. Determination of Ash content in food
2. Determination of Moisture content in food
3. Determination of calcium, iron, and Vitamin C content in foods.

FNT-A-CC-2-4-Th: HUMAN PHYSIOLOGY-II 4 CREDITS

1. Excretory system: Structure and function of skin, regulation of temperature of the body, Structure and functions of kidney in special reference to nephron, Physiology of urine formation.
2. Reproductive system: Structure and functions of gonads, concept on menstrual cycle, Brief idea of pregnancy, parturition, lactation and menopause. Brief concept on spermatogenesis and Oogenesis process.
3. Nervous System: Concept on sympathetic and parasympathetic nervous system, Brief anatomy and functions of cerebrum, cerebellum, hypothalamus and neuron, Concept on synapse and synaptic transmission. Reflexes, Special senses.
FNT-A-CC-2-4-P: HUMAN PHYSIOLOGY-II (PRACTICAL) 2 CREDITS

1. Harvard Step test
2. Identification with reasons of histological slides (Lung, Liver, Kidney, Small intestine, Stomach, Thyroid, Adrenal, Pancreas, Testis, Ovary and Muscle of mammals).
3. Qualitative determination of glucose acetone in urine.
4. Blood film staining and identification of different types of blood cells.

THIRD SEMESTER
[TOTAL CREDITS: 6 (THEORY-4, PRACTICAL-2)]

FNT-A-CC-3-5-Th: HUMAN NUTRITION-I 4 CREDITS

1. Concept and definition of terms—Nutrition, Malnutrition and Health: Scope of Nutrition.
4. Growth & Development from infancy to adulthood: Somatic, physical, brain and mental development, puberty, menarch, pre-pubertal and pubertal changes, Factors affecting growth and development. Importance of Nutrition for ensuring adequate development.

FNT-A-CC-3-5-P: HUMAN NUTRITION-I (PRACTICAL) 2 CREDITS

1. Process involved in cooking: pressure cooking, microwave, steaming, grilling, deep fat frying.
2. General concepts of weights and measures. Eye estimation of raw and cooked foods
3. Preparation of food from different food groups and their significance in relation to health.
4. Preparation of supplementary food for different age group and their nutritional significance.
5. Planning and preparation of low cost diet for Grade I and Grade II malnourished child

FNT-A-CC-3-6-Th: COMMUNITY NUTRITION 4 CREDITS

1. Concept of Community, types of Community, Factors affecting health of the Community.

2. Nutritional Assessment and Surveillance: Meaning, need, objectives and importance


4. Diet survey: Need and importance, methods of dietary survey, Interpretation - concept of consumption unit, individual and total distribution of food in family, adequacy of diet in respect to RDA, concept of family food security.

5. Clinical Signs: Need & Importance’s, identifying signs of PEM, vitamin A deficiency and iodine deficiency, Interpretation of descriptive list of clinical signs.

6. Nutritional anthropometry:Need and importance, standard for reference, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements. Use of growth chart.


FNT-A-CC-3-6-P: COMMUNITY NUTRITION (PRACTICAL) 4 CREDITS

1. Anthropometric Measurement of infant - Length, weight, circumference of chest, mid-upper arm circumference, precautions to be taken.


4. Clinical assessment and signs of nutrient deficiencies specially PEM (Kwashiorkor, marasmus) I vitamin A deficiencies, Anaemia, Rickets, B-Complex deficiencies.
5. Estimation of food and nutrient intake: Household food consumption data, adult consumption unit, 24 hours dietary recall 24 hours record, Weighment method, food diaries, food frequency data, use of each of the above, information available through each individual, collection of data, estimation of intakes.

FNT-A-CC-3-7-Th: FOOD COMMODITIES 4 CREDITS

1. Cereals and Millets: Structure, processing, storage, use in various preparation, variety, selection and cost. Cereal products, breakfast cereals, fast food.

2. Pulses and Legumes: Structures, Selection and variety. Storage, Processing and use in different preparations, Nutritional aspects and cost.

3. Milk and Milk products: Composition, Classification, Selection Quality and Cost, Processing, Storage and uses in different preparations, Nutritional aspects, shelf life and spoilage.

4. Eggs: Production, grade, quality selection, storage and spoilage, cost nutritional aspects and use in different preparations.


6. Vegetables and Fruits: Variety, Selection, purchase, storage, availability causes and nutritional aspects of raw and processed products and use in different preparations.

7. Sugar and sugar Products: Types of natural, sweeteners, manufacture, selection, storage and use as preserves, stages in sugar cookery.

8. Fats and Oils: Types and sources (animal and vegetable), Processing, uses in different preparations, storage, cost and nutritional aspects.


10. Food Adjuncts: Spices, condiments, herbs, extracts; concentrates essences, food colours, origin, classification, description, uses, specifications, procurements and storage.

11. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet.

12. Salt: Types and uses.


FNT-A-CC-3-7-P: FOOD COMMODITIES (PRACTICAL) 2 CREDITS

1. Detection of starch, sucrose, sucrose, formalin, boric acid, and urea in milk.

2. Detection of urea in puffed rice.

3. Detection of Vanaspati in Ghee/Butter.

4. Detection of Khesari flour in besan.
5. Detection of Metanil yellow in turmeric/coloured sweet products.
7. Detection of artificially colour / foreign matter in tea (dust/leaves).

FOURTH SEMESTER

[TOTAL CREDITS/ CORE COURSE: 6 (THEORY-4, PRACTICAL-2)]

FNT-A-CC-4-8-Th: HUMAN NUTRITION-II 4 CREDITS


5. Nutritional needs of toddlers, preschool, school going children-and adolescents- Dietary management.

FNT-A-CC-4-8-P: HUMAN NUTRITION-II (PRACTICAL) 2 CREDITS

Planning and preparation of adequate meal for different age groups with special reference to different physiological conditions: infants, pre-schooler, school children, adolescents, adults, pregnancy, lactation and old age.
FNT-A-CC-4-9-Th: DIET THERAPY-I 4 CREDITS

1. Basic concepts of diet therapy: Therapeutic adaptations of normal diet, principles and classification of the therapeutic diets.

2. Team approach to health care. Assessment of Patient’s needs.

3. Routine Hospital Diets: Regular, light, soft, fluid, parenteral and enteral feeding.

4. Diets for different febrile conditions: influenza, malaria and typhoid.

5. Etiological factors, symptoms, and management of common diseases of stomach-Gastritis and Peptic ulcer.


FNT-A-CC-4-9-P: DIET THERAPY-I (PRACTICAL) 2 CREDITS

1. Planning and preparation of normal diets.

2. Planning and preparation of fluid diets.

3. Planning and preparation of soft/semi solid diets.

4. Planning and preparation of Diets for the following diseases:
   
i) Peptic ulcer
   ii) Viral hepatitis
   iii) Anaemia

FNT-A-CC-4-10Th: NUTRITIONAL BIOCHEMISTRY-I 4 CREDITS

1. Introduction to Biochemistry: Definition, objectives, scope and inter relationship between biochemistry and other biological science.
2. Enzymes: Definition, types and classification of enzymes, definition and types of coenzymes, Functions of coenzymes and cofactors, Specificity of enzymes, Isozymes, enzyme Kinetics including factors affecting enzyme action, velocity of enzyme catalysed reactions, regulations of enzyme activity, zymogen, allosteric enzymes, enzyme inhibition.


4. Lipids: Oxidation and biosynthesis of fatty acids (saturated & mono-unsaturated), Synthesis and utilization of ketone bodies, Ketosis, fatty livers, Essential Fatty acids, Cholesterol and its clinical significance.

FNT-A-CC-4-10-P: NUTRITIONAL BIOCHEMISTRY-I (PRACTICAL) 2 CREDITS

1. Quantitative estimation of Sugars (Glucose, lactose, starch)
2. Estimation of acid value, iodine value, Saponification value of fats
3. Estimation of blood Glucose
4. Estimation of serum cholesterol

FIFTH SEMESTER

[TOTAL CREDITS: 6 (THEORY-4, PRACTICAL-2)]

FNT-A-CC-5-11-Th: DIET THERAPY-II 4 CREDITS


2. Diet in disease of the endocrine pancreas: Diabetes Mellitus: Classification, symptoms, diagnosis, management -insulin therapy, oral hypoglycaemic agents, glucose monitoring at home, dietary care and nutrition therapy, meal plan (with and without insulin), special diabetic foods and artificial sweeteners.


Nephrolithiasis - dietary management. Use of sodium and potassium exchange list.

FNT-A-CC-5-11-P: DIET THERAPY-II (PRACTICAL)  2 CREDITS

Planning and preparation of Diets for the following diseases:

i)  Obesity and Underweight
ii) Diabetes mellitus
iii) Hypertension and Atherosclerosis
iv)  Acute and chronic glomerulonephritis

FNT-A-CC-5-12-Th: NUTRITIONAL BIOCHEMISTRY-II  4 CREDITS

1. Brief Introduction of biological membranes to understand molecular transport, Transport of Large molecules, Receptor mediated endocytosis, exocytosis, Molecular aspects of transport; Passive diffusion, facilitated diffusion, active transport.

2. Introduction to Nucleic acids: Structure, replication, transcription, genetic code (in brief) elementary knowledge of biosynthesis of proteins.


FNT-A-CC-5-12-P: NUTRITIONAL BIOCHEMISTRY-II (PRACTICAL)  2 CREDITS

1. Qualitative analysis of amino acids
2. Qualitative analysis of proteins
3. Estimation of serum Protein
4. Estimation of serum creatinine
5. Estimation of serum Urea

SIXTH SEMESTER

[TOTAL CREDITS: 6 (THEORY-4, PRACTICAL-2)]
1. Brief history of food microbiology and introduction to important microorganisms in foods.
2. Cultivation of microorganisms, Nutritional requirements of microorganisms, types of media used, methods of isolation.

3. Primary sources of microorganisms in foods, physical and chemical methods used in the destruction of microorganism in foods: (Sterilisation & Disinfection).

4. Fundamentals of control of microorganism in foods: Extrinsic and intrinsic parameters affecting growth and survival of microbes, use of high and low temperature, dehydration, freezing, freeze-drying, irradiation and preservatives in food preservation.

5. Food Spoilage: Contamination and microorganisms in the spoilage of different kinds of foods and such as cereal and cereal products, vegetable and fruits, fish and other sea foods, meat and meat products, eggs and poultry, milk and products, canned foods.

FNT-A-CC-6-13-P: FOOD MICROBIOLOGY (PRACTICAL) 2 CREDITS

1. Introduction to microbiology:
   Use of equipment
   Understanding and use of compound microscope
   Use of Autoclave
   Use of Incubator and Inoculation chamber

2. Microscopic identification of microorganisms (prepared slides) : Bacterial, fungal strains

3. Preparation of liquid and solid media for culture of microorganisms.

4. Staining Techniques to study of Morphology of bacterial cells:
   Simple staining with methylene blue, methyl violet, carbol fuschin, etc.
   Differential staining with Gram stain technique

5. Microbiological techniques: Pure culture technique-Spread plate, Pour plate and Streak plate.

FNT-A-CC-6-14-Th: FOOD PRESERVATION 4 CREDITS

1. Food preservation: definition, objectives and principles of food preservation. Different methods of food preservation.
2. Preserved Products: Jam, Jelly, Marmalade, Sauces, Pickles, Squashes, Syrups-types, composition and manufacture, selection, cost, storage, uses and nutritional aspects.

3. Food Standards : ISI, Agmark, FPO, MPO, PFA, FSSAI.

FNT-A-CC-6-14-P: FOOD PRESERVATION (PRACTICAL) 2 CREDITS

1. Different methods of Food preservation – Drying, Freezing, Frying, canning, bottling etc.
2. Aseptic handling: Sources of contamination of foods.
3. Preparation of pickles, tomato sauce, chili sauce, jelly, tomato puree, squashes etc.

DISCIPLINE SPECIFIC ELECTIVE (DSE ) SYLLABUS


1. Health and Dimension of Health: Positive health Versus Absence of disease
2. Secondary Sources of Community Health data :Sources of relevant vital statistics of infant, child & maternal mortality rates
3. Immunization: Importance and Immunization schedule for children, adults and for foreign travellers.
4. Community Water and Waste Management: Importance of water to the community, etiology and effects of toxic agents, water borne infectious agents, sources of water, safe drinking water, potable water, waste and waste disposal, sewage disposal and treatment, solid waste and disposal, liquid waste disposal.
5. Concept of Epidemiology: Study of the epidemiologic approach-determinants of disease preventive & social means.
6. Communicable and infective disease control: Nature of communicable and infectious diseases, infection, contamination, disinfections, decontamination, transmission-direct & indirect, vector borne disease infecting organisms and positive agents, environmental agents and epidemiological principles of disease control.
7. Public health hazards due to contaminated foods: Food borne infections and intoxications: symptoms, mode of transmission and methods of prevention, investigation and detection of food borne disease out-break.
FNT-A-DSE-A-5-1-P: PUBLIC HEALTH (PRACTICAL) 2 CREDITS

1. Preparation of 3 audio visual aids like charts, posters, models related to health and nutrition education.
2. Formulation and preparation of low cost and medium cost nutritious/ supplementary recipe.
3. Field visit( health centre, immunization centre, ICDS, MCH centre, NGOs etc.).


1. Definition and characteristics of mushroom.
3. Identification and classification of mushroom
4. Nutritional and medicinal value of edible mushrooms; poisonous mushrooms
5. Types of edible mushrooms available in India- *Volvariella volvacea, Pleurotus citrinopileatus, Agaricus bisporus*.
7. Storage and nutrition: short term storage (Refrigeration- upto 24 hours), long term storage (canning, pickles, papads), drying, storage in salt solutions.

FNT-A-DSE- A-5-2-P: MUSHROOM CULTURE(PRACTICAL) 2 CREDITS

1. Visit to Mushroom Culture Centers/ Farms for:
   - Process involved in mushroom cultivation
   - Types and varieties of mushroom
   - Visual Identification of edible and poisonous mushroom
   - Marketing
2. Different Food preparation from mushroom

FNTA-DSE- A-6-3-Th : DIET COUNSELING AND PATIENT CARE 4 CREDITS

1. Introduction to term Dietician: Definition of Dietician, Difference between registered dietician & Nutrition
2. Role of dietician in hospital : work area of hospital dietician, role of dietician in hospital
3. Role of dietician in community :- work area of community dietician, role of community dietician
4. Introduction to Nutrition Care Process: Definition of Nutrition Care Process. Steps of Nutrition Care Process

5. Nutrition Assessment: Definition, Nutrition assessment component, Critical thinking


7. Nutrition diagnosis component: Nutrition vs. Medical diagnosis

8. Nutrition Interventions: Definition and objectives


FNT-A-DSE- A-6-3-P: DIET COUNSELING AND PATIENT CARE (PRACTICAL)
2 CREDITS

Visit and training to hospitals/nursing homes for 7-15 days:

1. Taking Case history and study
2. Routine Hospital diet
3. Distribution of food from kitchen to individual patient with specific diet.
4. Dietary management of patient in different diseases and diet chart for the particular patient.
5. Role of dietitian/nutritionist in diet counselling

FNT-A-DSE- A-6-4-Th: GERIATRIC NUTRITION
4 CREDITS

1. Definition of ageing, senescence, old age or aged people, gerontology, geriatrics, and Geriatric nutrition. Classification of old population.
2. Physiological and biochemical changes during old age.
3. Assessment of nutritional status of older adults.
4. Nutritional requirements and general dietary guidelines for elderly.
5. Major nutritional and health problems during old age.

FNT-A-DSE- A-6-4-P: GERIATRIC NUTRITION (PRACTICAL)
2 CREDITS

1. Visit to old-age homes.

2. Preparation of dishes suitable for older person - soft, semisolid and easily digestible balanced diet.

FNT-A-DSE-B-5-1-Th: THEORIES OF HUMAN DEVELOPMENT
4 CREDITS
1. Introduction to theories in Human Development: Key themes in the study of Human Development- Nature/nurture, active/ passive, continuity/discontinuity, individual differences and similarities. Understanding a theory, Role of theories in understanding Human Development.

**FNT-A-DSE-B-5-1-P: THEORIES OF HUMAN DEVELOPMENT ( PRACTICAL) 4 CREDITS**

1. Biography of a theorist with a focus on his/her family life and childhood experiences.
2. Depict the ‘eco-cultural’ network for a child using the ecological model of Bronfenbrenner.
3. Verification of selected theories using multiple methods
4. Observe/ analyze creation of media product for children or product such as toys/ clothes using theoretical base.
5. Locate a tool/ scale of psychometric tests and administer it
6. Autobiography

**FNT-A-DSE-B-5-2-Th:NON-FORMAL ADULT AND LIFE LONG EDUCATION 4 CREDITS**

1. Non Formal Education, Difference between formal & Non-Formal Education, Significance of Non-Formal Education in India New education policy & NFE Scope of NFE in communities-Techniques of community study, Domains of Non-Formal Education
2. Organizing NFE programmes- target group; Physical aspects; organizing and implementation of Non-Formal Programme; Planning and implementing publicity plan.
3. Adult Education: Meaning, concept and scope of Adult Education, Adult Education programme in India, Adult Education and Extension, Characteristics of Adult Learners, Difference between Adult & Child learning Learning theories; Characteristics of Adult learning, developmental tasks of Adults, Factors associated with Adult learning, Motivating and sustaining Adult learners.
4. Life Long Education : Definition, meaning and concept of Life Long Education, Life Long Education: Historical and contemporary perspectives, Components and objectives of Life Long
Education, Significance of Life Long Education in contemporary society, Forms and domains of Life Long Education, Principles of Life Long Education

5. Methods and Material for Non Formal/Adult/ Life Long Education: Methods and approaches for organizing NFE programmes for different target groups, Scope of communication methods and materials for NFE objectives

6. Programmes of Non Formal/Adult/ Life Long and Continuing Education: National and international programmes. Local, State, National and international agencies- policy and programmes, Monitoring and evaluation of NFE /Adult/ Life Long and Continuing Education programmes.

**FNTA-DSE-B-5-2-P: NON-FORMAL ADULT AND LIFE LONG EDUCATION (PRACTICAL) 2 CREDITS**

1. Visits to different NGO's involved in Non Formal/Adult/Life Long Education

2. Inviting experts from Government/Universities/ NGO's to share their experience of Non Formal/Adult/Life Long Education.

3. Reporting of Literacy news, events from periodicals and news papers.

4. Planning and organizing NFE/ continuing education programmes


**FNT-A-DSE-B-6-3-Th: CHILDHOOD DISABILITY AND SOCIAL ACTION 4 CREDITS**

1. Understanding Disability and Inclusion: Defining and understanding disability, Rights of persons with disability and UNCRPD, Perspective on disability: Individual and social, Attitudes towards disability- family, school, society and media


3. Disability and society: Overview of practices and provisioning related to addressing disability in India, Prevention, therapy, education and management, Families of children with disabilities, Policy and laws
FNT-A-DSE-B-6-3-P: CHILDHOOD DISABILITY AND SOCIAL ACTION (PRACTICAL) 2 CREDITS

1. Visits- Government and Private Institutions and Organisations (CGC, schools, NGO’s, Hospitals)
2. Observe the context
3. Case profile of child with disability
4. Program planning
5. Planning developmentally appropriate material for children with disability

FNT-A-DSE-B-6-4-Th: CHILD RIGHTS AND GENDER JUSTICE 4 CREDITS

1. Introduction to Child Rights: Concept of Child rights, Demographic profile of Indian children, Disadvantage, deprivation and social exclusion with reference to children, Laws, policies and programmes for children in India, UNCRC.
2. Children in need of care and protection: Vulnerable groups: causes and consequences. Street, homeless, institutionalized and working children

Child Abuse, Child Trafficking, Children in conflict with the law, Children living with: chronic illness, HIV.
4. Gender and Indian society: Sex and Gender, Masculinity and Femininity, biological and cultural determinants, Patriarchy and social institutions, Being male and female in Indian society-social traditions and contemporary issues, Exploring the issues of violence against females, Laws, policies and programmes for children and women.

FNT-A-DSE-B-6-4-P: CHILD RIGHTS AND GENDER JUSTICE(PRACTICAL) 2 CREDITS

1. Visits to organizations working in the area of Child Rights and Gender to understand their objectives programmes and experiences.
2. Workshops on relevant issues like Gender, domestic violence, gendering of public spaces.
3. Understanding child rights and gender issues in diverse social groups through field visits and interactions
4. Media portrayals of women and children.
SKILL ENHANCEMENT COURSE (SEC)

FNT-A-SEC-A-3-1-Th: SPORTS NUTRITION 2 CREDITS

1. Definition of physical activity, exercise, physical fitness, sports physiology and sports nutrition.
2. Benefits of physical activity and exercise.
3. Classification of Sports activities.
4. Nutritional requirements of sports person.
5. Pre-event meal.

FNT-A-SEC-A-3-2-Th: FOOD SERVICE MANAGEMENT 2 CREDITS

1. Organization of food service management: Definition, Various types of Food Service institutions, their characteristics and functions.
2. Planning a food service unit, layout design, planning of different work areas – preparation, cleaning, storing, serving and dining areas. Lighting and ventilation, working heights in relation to equipment.
3. Institutional Menu Planning: Factors influencing menu planning, principles of menu planning, different kinds of menus.
5. Importance of sanitation and hygiene in food, kitchen hygiene, Hygienic handling of Food, employee's health, hygiene of food service unit.
6. Personnel Management- selection, training and supervision of personnel, criteria for selection of Dietitian and Food Service staff.

FNTA-SEC- B-4-1-Th: NUTRITION AND HEALTH EDUCATION 2 CREDITS

1. Concept, objectives and importance of nutrition and health education
3. Nutrition and health education communication process.
4. Steps in planning health and nutrition education.
5. Methods involved in nutrition and health education
FNT-A-SEC-B-4-2-Th: BAKERY SCIENCE 2 CREDITS

1  Introduction and scope of bakery science.

2  Common bakery terms

3  Flours: Constituents of flour, water absorption power, gluten, grades of flour.

4  Raw materials required for bread and cake making.

5  Role of flour, water, yeast, salt, sugar, milk and fats in bakery.

6  Bread and cake making process.

7  Bread improver.

8  Knowledge of oven and baking temperatures.

9  Preparation of basic cookies, biscuits and pastries

SUGGESTED BOOKS AND JOURNALS

FOOD SCIENCE


HUMAN NUTRITION


HUMAN PHYSIOLOGY


COMMUNITY NUTRITION

1. Jelliffe DB. Assessment of the Nutritional Status of the Community; World Health Organisation.


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**FOOD COMMODITIES**

1. Swaminathan MS Food Science, Chemistry and Experimental Foods, Bangalore Print & Publishing Company.


DIET THERAPY


NUTRITIONAL BIOCHEMISTRY


**FOOD MICROBIOLOGY**


**FOOD PRESERVATION**


DISCIPLINE SPECIFIC ELECTIVES (DSE)

PUBLIC HEALTH


MUSHROOM CULTURE


DIET COUNSELING AND PATIENT CARE


GERIATRIC NUTRITION


3. Insel PM, Turner RE and Ross D (2004): Nutrition, Jones & Bartlett Learning,


THEORIES OF HUMAN DEVELOPMENT


NON-FORMAL ADULT AND LIFE LONG EDUCATION


CHILDHOOD DISABILITY AND SOCIAL ACTION


CHILD RIGHTS AND GENDER JUSTICE


SKILL ENHANCEMENT COURSES (SEC)

SPORTS NUTRITION

FOOD SERVICE MANAGEMENT

NUTRITION AND HEALTH EDUCATION


BAKERY SCIENCE


COURSE CURRICULUM FOR UNDERGRADUATE COURSES UNDER CHOICE BASED CREDIT SYSTEM

SYLLABUS

FOR

B. Sc. (GENERAL) IN FOOD AND NUTRITION

UNIVERSITY OF CALCUTTA

2018
**SCHEME AND SYLLABUS FOR CHOICE BASED CREDIT SYSTEM FOR B.Sc. FOOD AND NUTRITION GENERAL**

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<tr>
<td>V</td>
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<td></td>
<td>SEC-3DSE-1A</td>
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<td>DSE-3A</td>
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</table>
## DISTRIBUTION OF CREDITS IN THE COURSE CURRICULUM

<table>
<thead>
<tr>
<th>Semester</th>
<th>NAME OF THE COURSE</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Course (CC)</td>
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</tr>
<tr>
<td>I</td>
<td>6x3= 18</td>
<td>20</td>
</tr>
<tr>
<td>II</td>
<td>6x3= 18</td>
<td>20</td>
</tr>
<tr>
<td>III</td>
<td>6x3= 18</td>
<td>20</td>
</tr>
<tr>
<td>IV</td>
<td>6x3= 18</td>
<td>20</td>
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<tr>
<td>V</td>
<td>2x1=2</td>
<td>20</td>
</tr>
<tr>
<td>VI</td>
<td>2x1=2</td>
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<td></td>
<td>Total credits</td>
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<tr>
<td></td>
<td>CC</td>
<td>(18x4=72)</td>
</tr>
<tr>
<td></td>
<td>AECC</td>
<td>(2x2=4)</td>
</tr>
<tr>
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<td>SEC</td>
<td>(4x2=8)</td>
</tr>
<tr>
<td></td>
<td>DSE</td>
<td>(6X6=36)</td>
</tr>
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</table>

### NOTE:

1. 12 papers for Core Courses (CCs) from 03 Disciplines of Choice (DSC) should be compulsorily studied for BSc. General students. 4 courses from each of the DSC subjects are to be studied by the BSc General students.

2. The CC or DSC is equivalent to Generic Elective (GE) for BSc. (Honours) students of other discipline.

3. 6 DSE & 1/2 SEC to be chosen by the Food and Nutrition (General) students (Choice based).

4. GE subjects in Food and Nutrition Syllabus are to be studied by other discipline students.
### SEMESTER-WISE COURSES FOR BSc GENERAL

<table>
<thead>
<tr>
<th>Core Course (CC/GE)</th>
<th>Sem-1</th>
<th>Sem-2</th>
<th>Sem-3</th>
<th>Sem-4</th>
<th>Sem-5</th>
<th>Sem-6</th>
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<td>CC/GE-1</td>
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<td>3TH+3P/TU</td>
<td>3TH+3P/TU</td>
<td>3TH+3P/TU</td>
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<tr>
<td>CC/GE-2</td>
<td>CC/GE-3</td>
<td>CC/GE-4</td>
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<tr>
<td>Discipline Specific Elective (DSE)</td>
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<td>DSE-A</td>
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<td>DSE-B</td>
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<td>(1A+2A+3A)</td>
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<tr>
<td>(1B+2B+3B)</td>
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<tr>
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<tr>
<td>Skill Enhancement Elective (SEC)</td>
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<td>SEC-A</td>
<td>SEC-B</td>
<td>SEC-A</td>
<td>SEC-B</td>
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<td>SEC-B</td>
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<td>Total Courses and Marks</td>
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<td>4 ×100=400</td>
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<td>4 ×100=400</td>
<td>4 ×100=400</td>
<td>4 ×100=400</td>
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<tr>
<td>Total Credits</td>
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[Th= Theory P= Practical]

**N.B:**
- CC/DSE : Each Theory and Practical Course have 4 and 2 Credits respectively/ Each Theory and Tutorial Course have 5 and 1 Credit(s) respectively
- CC : 4 courses each from 3 subjects (one course from each subject under each semester)
- DSE : 2 courses each from 3 subjects (one course from each subject under each semester)
- AECC/SEC : Each Course has 2 credits
- AECC-1 : Communicative English/ MIL; AECC-2: Environmental Studies
- SEC: 4 courses; two courses each from two subjects
• DSE/SEC : Group (A & B) for specified semester
FNT-G-CC/GE-1-1Th: ELEMENTARY CHEMISTRY 4 CREDITS

1. Law of conservation of mass, chemical and physical changes, Mechanical mixtures and chemical compounds


5. Diffusion and Osmosis, Osmotic pressure, Isotonic solution, Definition and examples.

6. Colloids: Definition, Types of colloidal systems, Important properties of colloidal sols, Dialysis.


8. Chemistry of carbon compounds: Classification of organic compounds based on structural characteristics and functional groups, isomerism, Concept of optical isomerism. General methods of preparation, properties and reactions of structured and unstructured hydrocarbons, Aliphatic monohydric alcohols, Glycerol, Aldehyde, Ketones and fatty acids upto 3 atoms with nomenclature.

FNT-G-CC/GE-1-1 P: ELEMENTARY CHEMISTRY (PRACTICA) 2 CREDITS
1. Fitting of simple apparatus, experiment involving solution, filtration, distillation, and crystallization. Separation of constituents of mixture.
3. Simple chemical tests for carbohydrate- Starch, glucose, cane sugar, lactose, and dextrin.
4. Qualitative tests-Protein in milk and egg, Calcium, phosphorus, and iron in foodstuff.

FNT-G-CC/GE-2-2-Th: ELEMENTARY PHYSICS  4 CREDITS

1. Units –C.G.S. and F.P.S. system
3. Motion of body – displacement, velocity, acceleration units.
5. Hydrostatics–Pressure at a point, Archimedes Principles, Specific gravity, viscosity and surface tension.
6. Thermometry.
7. Calorimetry.
9. Three types of matter, changes of state, pressure cooker, Ice-machine.
10. Static electricity – Changing by friction, conductor and Insulator.
11. Primary cell, storage cell.
12. Electroplating.
16. Refrigerator, cold storage.
17. Electric fuse.

FNT-G-CC/GE-2-2-P: ELEMENTARY PHYSICS (PRACTICAL)  2 CREDITS

1. Use of balance( Weighing a body)
2. Determination of specific gravity of a solid (heavier and insoluble in water).
3. Determination of specific gravity of a liquid by hydrostatic balance.
4. Determination of specific gravity of a liquid by specific gravity bottle.
5. Reading of barometer.
6. Determination of lower and upper fixed point of a thermometer.
7. Fitting of electric fuses.

FNT-G-CC/GE-3-3Th: ELEMENTARY PHYSIOLOGY  4 CREDITS

2. Tissue: Definition, structure and functions of different types of tissue, e.g. epithelial, connective, nervous and muscular tissue (special emphasis on blood and bone).
3. Digestive system: Structure involve in digestive system (mouth, esophagus, stomach, small intestine, large intestine, liver, pancreas, gall bladder) and their functions. Digestion and absorption of Carbohydrate, protein and fat.

4. Elementary idea of metabolism, enzymes and hormones- name and their important functions. Metabolism in brief (Glycolysis, Glycogenesis, Gluconeogenesis, Cori’s cycle, Kreb’s cycle, Deamination, Transamination. Role of hormones in carbohydrate metabolism.

FNT-G- CC/GE-3-3-P: ELEMENTARY PHYSIOLOGY (PRACTICAL) 2 CREDITS

1. Demonstration for determination of blood pressure of humans being- (a) systolic and b) diastolic.
2. Identification of slides (Blood cells, Stomach, Small intestine, large intestine, Liver, pancreas).
3. Determination of Bleeding Time (BT) and Clotting Time (CT).
4. Detection of Blood group.

FNT-G- CC/GE-4-4-Th: BASIC NUTRITION AND FOOD SCIENCE 4 CREDITS

2. Carbohydrate, Protein, Fat, Vitamins and Minerals (calcium, phosphorus, sodium, potassium, iron, iodine, fluorine)- sources, classification, functions, deficiencies of these nutrients. Functions of water and dietary fiber.
4. Basic five food groups: Nutritional significance of cereals, pulses, milk, meat, fish, vegetable, egg, nuts, oils, sugar.

FNT-G-CC/GE-4-4-P: BASIC NUTRITION AND FOOD SCIENCE (PRACTICAL) 2 CREDITS

1. Elementary idea of weight and measure.
2. Preparation of cereals, pulses, vegetable, egg, milk, fish, nuts.
3. Demonstration of jam, jelly, squash, pickles.
4. Planning and preparation of diet often adult male/female Modification of diet during pregnancy and lactation.

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES

DSE-A (Opt any one in Semester-5)

FNT-G-DSE-A-5-1-Th: COMMUNITY NUTRITION  4 CREDITS

1. Concept and types of Community. Concept of community nutrition.
3. Elementary idea of health agencies - FAO, WHO, ICMR, ICDS, ICAR, CSIR, ANP, VHAI, NIN and CFTRI. Role of voluntary health organisation in the improvement of Community health.
4. Nutritional Intervention programmes to combat malnutrition. Concept of food fortification and food enrichment.

FNT-G-DSE-A-5-1-P: COMMUNITY NUTRITION (PRACTICAL) 2 CREDITS

1. Preparation of homemade ORS.
2. Preparation of weaning foods for infants.
3. Preparation of low cost and medium cost school tiffin.
4. Diet survey by 24 hours recall method.

FNT-G-DSE-A-5-2-Th: PUBLIC HEALTH  4 CREDITS

4. General idea about the contamination of food (Chemical and microbial)-Sources and transmission, Elementary ideas about food toxins, aflatoxin& food toxicology with reference to Lead, Cadmium & Zinc.

5. Contamination of water and prevention of contamination, different methods of water purification, water –borne diseases, elementary idea of microbiology of water-borne pathogens, diarrhoea, dysentery, typhoid, hepatitis, preventive measures and dietary management of such diseases.

**FNT-G-DSE-A-5-2-P: PUBLIC HEALTH (PRACTICAL) 2 CREDITS**

1. Calculation of BMI of an individual and interpretation of result.  
2. Growth charts - plotting of growth charts for growth monitoring.  
3. Formulation and demonstration of nutrition education tools such as charts, posters, models related to health and nutrition education.

**DSE-B(Opt any one in Semester-5)**

**FNT-G-DSE-B-6-1-Th: CLINICAL NUTRITION 4 CREDITS**

1. Definition of Dietetics, dietitian, Goals of Diet Therapy.  
3. Obesity and underweight: Causes, risk factors, dietary and general management of overweight and underweight.  
4. Diarrhoea, Constipation and Jaundice: Causes, symptoms and dietary management.  
5. Anaemia: Definition, causes, classification, and dietary management of Nutritional anaemia.  
6. Hypertension, Atherosclerosis and Diabetes mellitus: Definition, Causes, Types, risk factors, Signs, Symptoms and dietary Management.  
7. Fever: Definition, causes, types, symptoms and dietary management.

**FNT-G-DSE-B-6-1-P: CLINICAL NUTRITION (PRACTICAL) 2 CREDITS**

1. Planning and preparation of Therapeutic Diets for the following diseases:  
   i) Diabetes mellitus  
   ii) Hepatitis  
   iii) Hypertensi  
   iv) Obesity
1. The relationship of microorganisms to sanitation, Effects of microorganisms on food degradation and food-borne illnesses.

2. Importance of personal hygiene of food handlers: Habits, clothes, illness, education of food handler in handling and serving food. Concept of food contamination.

3. Food Safety: Definition and factors affecting food safety, safety of left over foods. Control of Food spoilage.


5. Food Laws and Standards:
   i) Codex Alimentations
   ii) Prevention of Food Adulteration (PFA) Act
   iii) Agmark
   iv) Fruit Products Order (FPO)
   v) Meat Products Order (MPO)
   vi) Bureau of Indian Standards (BIS)
   vii) Food Standards and Safety Authority of India (FSSAI)

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1. Detection of common adulterant in food:
   i) Khesari flour in besan
   ii) Vanaspati in Ghee/Butter.
   iii) Dried papaya seeds in black pepper
   iv) Metanil yellow in turmeric or coloured sweet products.
   v) Artificially foreign matter in tea (dust/leaves).
SEC-A (Opt any one either in semester-3 or in Semester-5)

FNT-G-SEC-A-3/5-1-Th: FOOD PRESERVATION 2 CREDITS

1. Elementary idea on food preservation: principles and different methods – drying, freezing, frying, canning etc.
2. Methods of preparation and packaging of jam, jelly, chilli sauce, tomato ketchup, squash, pickles etc.

FNT-G-SEC-A-3/5-2-Th: NUTRITION AND FITNESS 2 CREDITS

1. Understanding Fitness: Definition of fitness, health and related terms. Assessment of fitness, Approaches for keeping fit.
2. Importance and benefits of physical activity: Physical Activity – frequency, intensity, time and type with examples Physical Activity, physical activity guidelines and physical activity pyramid.
3. Importance of nutrition Role of nutrition in fitness, Nutritional guidelines for health and fitness, Nutritional supplements.
4. Importance of diet and exercise for weight management.

SEC-B (Opt any one either in semester-4 or in Semester-6)

FNT-G-SEC-B-4/6-1-Th: GERIATRIC NUTRITION 2 CREDITS

1. Definition of ageing, senescence, old age or aged people, gerontology, geriatrics, and Geriatric nutrition.
2. Physiological changes during old age.
3. Nutritional requirements and general dietary guidelines for elderly.

FNT-G-SEC-B-4/6-2-Th: BAKERY SCIENCE 2 CREDITS

1. Introduction and scope of bakery science.
2. Common bakery terms
3. Flours: Constituents of flour, water absorption power, gluten, grades of flour.
4. Raw materials required for bread and cake making.
5. Role of flour, water, yeast, salt, sugar, milk and fats in bakery.
6. Bread and cake making process.
7. Bread improver.
8. Knowledge of oven and baking temperatures.
9. Preparation of basic cookies, biscuits and pastries

REFERENCE BOOKS FOR FOOD AND NUTRITION GENERAL COURSE
CHEMISTRY AND PHYSICS


PHYSIOLOGY:


BASIC NUTRITION AND FOOD SCIENCE


COMMUNITY NUTRITION AND PUBLIC HEALTH


CLINICAL NUTRITION


**FOOD SAFETY AND QUALITY CONTROL**


**FOOD PRESERVATION**


**NUTRITION AND FITNESS**


BAKERY SCIENCE


MUSHROOM CULTURE

