

**MANGALORE UNIVERSITY**  
**DEPARTMENT OF BIOSCIENCES**  
**Syllabus and Scheme for two-year (Four semesters)**  
**M.Sc. in Food Science and Nutrition**  
**Choice-based Credit System (CBCS) 2021**

**Preamble:**

As per guidelines of the UGC and Higher Education Council, Government of Karnataka, the Board of Studies in Food Science and Nutrition, Mangalore University framed a new syllabus according to the regulations governing the Choice-based Credit System for the two-year (four semesters) M.Sc. Degree Programmes in 2016. The syllabus has been subsequently revised.

The M.Sc. programme in Food Science and Nutrition under CBCS scheme has a total of 92 credits consisting of *Hard core courses* for 54 credits (58%) and *Soft core courses* with choice for 28 credits (30%) and *Open elective courses* with choice for a total of 6 credits.

**Program Outcome:**

**PO 1 Interdisciplinary Program:** Food Science and Nutrition is an interdisciplinary programme imparting knowledge of food science and nutrition, dietetics, food microbiology, food biochemistry, food preservation and processing, human physiology, and their role in relation to food and health.

**PO 2. In-depth Understanding:** It also provides an in-depth understanding of the correlation between food and health, role of food under specific disease conditions and applications of food science in food processing industries.

**PO3: Hands-on skills and soft skills training:** Students are provided hands-on skill training through laboratory exercises and are enabled to prepare and deliver effective presentations of technical information to food science and nutrition professionals and to the general public.

**Program Specific Outcomes:**

PSO 1 Apply analytical principles of food and nutrients in diet formulation.

PSO 2 Develop comprehensive and analytical skills to work as trained human resource in food industries and health sectors

PSO 3 Gain insight in public health nutrition for employment food as safety officers, Government sectors like FCI, FSSAI etc.

PSO 4 Apply knowledge in the field of personalized nutrition with reference to nutrigenetics and nutrigenomics

PSO 5 Comprehend methods of assessing human nutritional requirements, nutritional assessment and diet planning.

PSO 6 Understand the applications of nutritional sciences in clinical interventions, communication for health promotion,

PSO 7 Acquire skills to work in R&D units of food processing, food products, nutraceuticals and undertake systematic research in the area of food science and nutrition.

PSO 8 Devise research strategies for empowering and promoting healthy living in the community.

PSO 9 Acquire entrepreneurial skills in the field of food science, processed foods and nutrition.

### **FIRST SEMESTER**

| Course Code                                | Course Title             | Teaching Hrs/weeks | Exam Hrs. | Marks |      | Total | Credits |
|--------------------------------------------|--------------------------|--------------------|-----------|-------|------|-------|---------|
|                                            |                          |                    |           | IA*   | Exam |       |         |
| HARD CORE COURSES – THEORY                 |                          |                    |           |       |      |       |         |
| FNH 401                                    | Food Science             | 4                  | 3         | 30    | 70   | 100   | 4       |
| FNH 402                                    | Principles of Nutrition  | 4                  | 3         | 30    | 70   | 100   | 4       |
| FNH 403                                    | Human Physiology         | 4                  | 3         | 30    | 70   | 100   | 4       |
| SOFT CORE COURSES- THEORY (CHOOSE ANY ONE) |                          |                    |           |       |      |       |         |
| FNS 404                                    | Nutritional Biochemistry | 3                  | 3         | 30    | 70   | 100   | 3       |
| FNS 405                                    | Food Microbiology        |                    |           |       |      |       |         |
| PRACTICALS                                 |                          |                    |           |       |      |       |         |
| FNP 406                                    | Food Science             | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 407                                    | Principles of Nutrition  | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 408                                    | Human Physiology         | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 409                                    | Nutritional Biochemistry | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 410                                    | Food Microbiology        |                    |           |       |      |       |         |
| Total                                      |                          |                    |           |       |      | 600   | 23      |

### **SECOND SEMESTER**

| Course Code                                 | Course Title                          | Teaching Hrs/weeks | Exam Hrs. | Marks |      | Total | Credits |
|---------------------------------------------|---------------------------------------|--------------------|-----------|-------|------|-------|---------|
|                                             |                                       |                    |           | IA*   | Exam |       |         |
| HARD CORE COURSES – THEORY                  |                                       |                    |           |       |      |       |         |
| FNH 451                                     | Vitamins in Human Nutrition           | 4                  | 3         | 30    | 70   | 100   | 4       |
| FNH 452                                     | Minerals in Human Nutrition           | 4                  | 3         | 30    | 70   | 100   | 4       |
| SOFT CORE COURSES - THEORY (CHOOSE ANY TWO) |                                       |                    |           |       |      |       |         |
| FNS 453                                     | Life Span Nutrition                   | 3                  | 3         | 30    | 70   | 100   | 3       |
| FNS 454                                     | Analytical Techniques in Food Science |                    |           |       |      |       |         |
| FNS 455                                     | Food Packaging                        | 3                  | 3         | 30    | 70   | 100   | 3       |
| FNS 456                                     | Food Safety and Quality Control       |                    |           |       |      |       |         |
| PRACTICALS                                  |                                       |                    |           |       |      |       |         |
| FNP 457                                     | Vitamins in Human Nutrition           | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 458                                     | Minerals in Human Nutrition           | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 459                                     | Life Span Nutrition                   | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 460                                     | Analytical Techniques in Food Science |                    |           |       |      |       |         |
| FNP 461                                     | Food Packaging                        | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 462                                     | Food Safety and Quality Control       |                    |           |       |      |       |         |
| OPEN ELECTIVES (CHOOSE ANY ONE)             |                                       |                    |           |       |      |       |         |
| FNE 463                                     | Food Safety                           | 3                  | 3         | 30    | 70   | 100   | 3       |
| FNE 464                                     | Food Preservation                     |                    |           |       |      |       |         |
| Total                                       |                                       |                    |           |       |      | 700   | 25      |

### **THIRD SEMESTER**

| Course Code                                 | Course Title                         | Teaching Hrs/week | Exam Hrs. | Marks |      | Total | Credits |
|---------------------------------------------|--------------------------------------|-------------------|-----------|-------|------|-------|---------|
|                                             |                                      |                   |           | IA*   | Exam |       |         |
| HARD CORE COURSES –THEORY                   |                                      |                   |           |       |      |       |         |
| FNH 501                                     | Clinical Nutrition and Dietetics – I | 4                 | 3         | 30    | 70   | 100   | 4       |
| FNH 502                                     | Community Nutrition and Statistics   | 4                 | 3         | 30    | 70   | 100   | 4       |
| SOFT CORE COURSES - THEORY (CHOOSE ANY TWO) |                                      |                   |           |       |      |       |         |
| FNS 503                                     | Dairy Technology                     | 3                 | 3         | 30    | 70   | 100   | 3       |
| FNS 504                                     | Principles of Food Processing        |                   |           |       |      |       |         |
| FNS 505                                     | Post Harvest Technology              | 3                 | 3         | 30    | 70   | 100   | 3       |
| FNS 506                                     | Functional Foods                     |                   |           |       |      |       |         |
| PRACTICALS                                  |                                      |                   |           |       |      |       |         |
| FNP 507                                     | Clinical Nutrition and Dietetics – I | 4                 | 3         | 15    | 35   | 50    | 2       |
| FNP 508                                     | Community Nutrition and Statistics   | 4                 | 3         | 15    | 35   | 50    | 2       |
| FNP 509                                     | Dairy Technology                     | 4                 | 3         | 15    | 35   | 50    | 2       |
| FNP 510                                     | Principles of Food Processing        |                   |           |       |      |       |         |
| FNP 511                                     | Post Harvest Technology              | 4                 | 3         | 15    | 35   | 50    | 2       |
| FNP 512                                     | Functional Foods                     |                   |           |       |      |       |         |
| OPEN ELECTIVES (CHOOSE ANY ONE)             |                                      |                   |           |       |      |       |         |
| FNE 513                                     | Nutrition for Health                 | 3                 | 3         | 30    | 70   | 100   | 3       |
| FNE 514                                     | Diet and Disease                     |                   |           |       |      |       |         |
| Total                                       |                                      |                   |           |       |      | 700   | 25      |

### **FOURTH SEMESTER**

| Course Code                                 | Course Title                          | Teaching Hrs/weeks | Exam Hrs. | Marks |      | Total | Credits |
|---------------------------------------------|---------------------------------------|--------------------|-----------|-------|------|-------|---------|
|                                             |                                       |                    |           | IA*   | Exam |       |         |
| HARD CORE COURSES – THEORY                  |                                       |                    |           |       |      |       |         |
| FNH 551                                     | Clinical Nutrition and Dietetics – II | 4                  | 3         | 30    | 70   | 100   | 4       |
| FNH 552                                     | Food Preservation                     | 4                  | 3         | 30    | 70   | 100   | 4       |
| SOFT CORE COURSES - THEORY (CHOOSE ANY ONE) |                                       |                    |           |       |      |       |         |
| FNS 553                                     | Food Fortification                    | 3                  | 3         | 30    | 70   | 100   | 3       |
| FNS 554                                     | Sports Nutrition                      |                    |           |       |      |       |         |
| FNS 555                                     | Food Service Management               |                    |           |       |      |       |         |
| PRACTICALS                                  |                                       |                    |           |       |      |       |         |
| FNP 556                                     | Clinical Nutrition and Dietetics – II | 4                  | 3         | 15    | 35   | 50    | 2       |
| FNP 557                                     | Food Preservation                     | 4                  | 3         | 15    | 35   | 50    | 2       |
| PROJECT WORK / INTERNSHIP                   |                                       |                    |           |       |      |       |         |
| FNP 558                                     | Project Work / Internship             | -                  | -         | 30    | 70   | 100   | 4       |
| Total                                       |                                       |                    |           |       |      | 500   | 19      |
| Grand Total                                 |                                       |                    |           |       |      | 2500  | 92      |

IA consists of Seminars, Assignments, Internal Tests, Objective test (MCQs)

|              | HARD CORE COURSES |         |               | SOFT CORECOURSES |         |               | OPEN ELECTIVES | PROJECT / INTERNSHIP | TOTAL     |
|--------------|-------------------|---------|---------------|------------------|---------|---------------|----------------|----------------------|-----------|
|              | No of Courses     | Credits | Total         | No. of Courses   | Credits | Total         | Credits        | Credits              |           |
| I            | 3Th+3 Pr          | 4+2     | 18            | 1Th+1 Pr         | 3+2     | 5             | -              | -                    | 23        |
| II           | 2Th+2 Pr          | 4+2     | 12            | 2Th+2 Pr         | 3+2     | 10            | 3              | -                    | 25        |
| III          | 2Th+2 Pr          | 4+2     | 12            | 1Th+1 Pr         | 3+2     | 10            | 3              | -                    | 25        |
| IV           | 2Th+2 Pr          | 4+2     | 12            | 1Th              | 3       | 3             |                | 4                    | 19        |
| <b>Total</b> |                   |         | <b>54=58%</b> |                  |         | <b>28=30%</b> | <b>6</b>       | <b>4</b>             | <b>92</b> |

**NOTE:**

**INTERNAL ASSESSMENT:** Marks in theory courses shall be awarded on the basis of theory test (70 Marks), Objective test (MCQs) (15 Marks), Seminars and Assignments (15 Marks). The marks obtained shall be reduced to 30. The tests will be conducted as per the university time schedule. Practical Internal Assessment marks shall be based on practical test and records. 30 marks for Practical test and 5 marks for Class record. The marks obtained shall be reduced to 15. 30 marks for Project/Internship work (Report/Dissertation and Presentation/Viva).

**THEORY QUESTION PAPER PATTERN:** Question Papers in all the four semesters consists of three sections (Model question paper enclosed). Section I: Write short notes on any five of the following (5x3=15 Marks) Section II: Write explanatory notes on any five out of the following: (5x5=25 Marks). Section III: Answer any three of the following out of five (3x10=30 Marks). Questions should be drawn from all the units of the syllabus by giving equal weightage.

**PRACTICAL QUESTION PAPER PATTERN:** 30 marks for practical examination proper (Major experiment (10 marks), Minor experiments (05+05 marks), Identify and Comment (5x2=10 marks) and Class record (05 marks). The Project work may be conducted either in the department or any other Institution/Industry/Hospital. Project/Internship Report/Dissertation carries 70 marks and evaluated as per regulations.