

# College of Horticulture

## Nauni, Solan (HP)

Undergraduate Courses  
BSc (Hons.) Horticulture (5<sup>th</sup> Dean's committee)  
Semester-wise courses

Semester-I		
Course Code	Title of the Course	Cr. Hrs.
BSB-111	Introductory Crop Physiology	1+1=2
BSM-111	Introductory Microbiology	1+1=2
FLA-111	Commercial Floriculture	2+1=3
FSC-111	Fundamentals of Horticulture	2+1=3
FSC-112	Plant Propagation and Nursery Management	1+1=2
FSC-113	Fundamentals of Genetics and Cytogenetics	2+1=3
NRS-112	Fundamentals of Soil Science	1+1=2
ENG-001	Communication Skills and Personality Development	1+1=2
BSB-001	Introductory Botany (deficiency course for PCM students)	2+1=3*
BSM-001	Basic Mathematics (deficiency course for PCB students)	3+0=3*
NCC-001	NCC	0+1=1*
NSS-001	NSS	0+1=1*
ORI-001	Orientation	1+0=1*
PED-001	Physical and Health Education	0+1=1*
	Total	19+(6)* =25

\*NC (non-credit course)

Semester-II		
Course No.	Title of the Course	Cr. Hrs.
ENS-121	Environmental Studies and Disaster Management	2+1=3
FSC-121	Temperate Fruit Crops	2+1=3
FSC-122	Tropical and Subtropical Fruits	2+1=3
FSC-123	Fundamentals of Plant Breeding	2+1=3
FSC-124	Dryland Horticulture	1+1=2
NRS-121	Soil Fertility and Nutrient Management	1+1=2
NRS-122	Water Management in Horticultural Crops	1+1=2
PHT-121	Fundamentals of Food and Nutrition	1+1=2
VSC-121	Tropical and Subtropical Vegetable Crops	1+1=2
	NCC/NSS	0+1=1*
	Total	24+(1)*=24

\*NC (non-credit course)

Semester-III		
Course No.	Title of the Course	Cr. Hrs.
BSC-211	Elementary Plant Biochemistry	1+1=2
FLA-211	Ornamental Horticulture	1+1=2
FSC-211	Growth and Development of Horticultural Crops	1+1=2
NRS-212	Farm Power and Machinery	1+1=2
PPE-211	Fundamentals of Entomology	2+1=3
PPE-212	Nematode Pests of Horticultural Crops and their Management	1+1=2

PPP-211	Fundamentals of Plant Pathology	2+1=3
SST-211	Introduction to Major Field Crops	1+1=2
VSC-211	Temperate Vegetable Crops	1+1=2
VSC-212	Spices and Condiments	1+1=2
NF-211	Principal and Practices on Natural Farming	1+1=2
	NCC/NSS	(0+1=1)*
	Total	24+(1)* =24

\*NC (non-credit course)

Semester-IV		
Course No.	Title of the Course	Cr. Hrs.
ENS-221	Agro- Meteorology and Climatic Science	1+1=2
FLA-221	Fundamentals of Landscape Architecture	1+1=2
FSC-221	Breeding of Fruit and Plantation Crops	2+1=3
FSC-222	Orchard and Estate Management	1+1=2
FSC-223	Plantation Crops	1+1=2
NRE-221	Introductory Economics and Marketing	2+1=3
NRS-222	Soil, Water and Plant Analysis	1+1=2
PPE-221	Insect Pests of Fruit, Plantation, Medicinal & Aromatic Crops	2+1=3
PPP-221	Diseases of Fruit, Plantation and Medicinal aromatic Crops	2+1=3
VSC-222	Potato and Tuber Crops	1+1=2
	NCC/NSS	(0+1=1) *
	Total	24+(1)*=25

\*NC (non-credit course)

Semester-V		
Course No.	Title of the Course	Cr. Hrs.
AGF-311	Introductory Agro-Forestry	1+1=2
BSS-311	Elementary Statistics	2+1=3
BTC-311	Elementary Plant Biotechnology	1+1=2
EXT-311	Fundamentals of Extension Education	1+1=2
NRS-312	Organic Farming	1+1=2
PHT-311	Postharvest Management of Horticultural Crops	2+1=3
PPP-311	Diseases of Vegetable, Ornamentals and Spice Crops	2+1=3
VSC-311	Breeding of Vegetable, Tuber and Spice Crops	2+1=3
VSC-312	Precision Farming and Protected Cultivation	2+1=3
	NCC	(0+1=1)*
	Total	23 +(1)*

Semester-VI		
Course No.	Title of the Course	Cr. Hrs.
BMH-321	Horti-Business Management	2+0=2
BMH-322	Entrepreneurship Development and Business Management	1+1=2
FLA-321	Breeding and Seed Production of Flower and Ornamental Crops	2+1=3
FPR-321	Medicinal and Aromatic Crops	2+1=3
ICT-321	Information and Communication Technology	1+1=2
PHT-321	Processing of Horticultural Crops	1+2=3
PPE-321	Apiculture, Sericulture and Lac Culture	1+1=2
PPE-322	Insect Pests of Vegetable, Ornamental and Spice Crops	2+1=3
PPP-321	Mushroom Culture	0+1=1
VSC-321	Seed Production of Vegetable, Tuber and Spice Crops	2+1=3
	NCC	(0+1=1)*
	Total	24+(1)*

\*NC (non-credit course)

### (Semester- VII)

#### EXPERIENTIAL LEARNING PROGRAMME 20 (0+20)

ELH-411 Commercial Horticulture (Fruits)	0+10
ELH-412 Protective Cultivation of High Value Horticultural Crops(Vegetables)	0+10
ELH-413 Processing of Fruits and Vegetables for Value Addition	0+10
ELH-414 Floriculture and Landscape Architecture	0+10
ELH-415 Mushroom Cultivation	0+10
ELH-416 Bee Keeping	0+10

*NOTE : Depending upon the facilities available in the College a batch of students can select two modules under STUDENT READY programme.*

### (Semester-VIII)

#### RURAL HORTICULTURAL WORKS EXPERIENCE 20 (0+20)

RHW-421 Rural Horticultural Works Experience	0+10
RHW-422 Attachment with Research stations / KVK's	0+10

**B. Tech. (Food Technology) degree Programme**  
[6<sup>th</sup> Dean's Committee -Course Curriculum]

<b>First year</b>			
<b>SEMESTER – I</b>			
<b>Course code</b>	<b>Course title</b>	<b>Credit hours</b>	<b>Total credit hours</b>
<b>IFC 111</b>	<b>Deeksharambh (Induction- cum- Foundation Course of 2 weeks)</b>	<b>2 (0+2) (NG)</b>	22 (10+12) + 2 (Non- Gradial)
BTF 111	Basic Electrical Engineering	3 (2+1)	
BTF 112	Workshop Technology	3 (1+2)	
BTF 113	Fundamentals of Food Processing	3 (2+1)	
BSM 112	General Microbiology	3 (2+1)	
AGR 111	Farming-Based Livelihood System	3 (2+1)	
BSE 111	Communication Skills	2 (1+1)	
NCC-111/NSS-111	NCC-I/ NSS- I	1 (0+1)	
S-FBT 111	Introduction to Drying Technology and Dryers	2 (0+2)	
S-FBT 114	Introduction to Good Laboratory Practices	2 (0+2)	
<b>SEMESTER – II</b>			
BTF 121	Food Thermodynamics	3 (2+1)	23 (11+12)
BTF 122	Engineering Drawing and Graphics	3 (1+2)	
BTF 123	Post Harvest Engineering	3 (2+1)	
BTF 124	Unit Operations in Food Processing	3 (2+1)	
BSC 121	Food Chemistry I	3 (2+1)	
ENS 121	Environmental Studies and Disaster Management	3 (2+1)	
NCC-121/NSS-121	NCC- II/ NSS- II	1 (0+1)	
S-FBT 121	Maintenance of Food Processing Equipment	2 (0+2)	
S-FBT 122	Introduction to Bottling and Canning Line	2 (0+2)	
FT-INT 121	Internship (award of Certificate))	0+10	

Student taking various skill enhancement courses will be eligible to get a certificate with nomenclature as follows provided the student has selected courses as mentioned against the nomenclature of the UG- certificate. In case a student wishes to exit at this point.

Nomenclature of certificate	Skill Enhancement Courses to be selected from the respective disciplines	
	Semester- I	Semester- II
UG- Certificate in Food Technology (Food Plant Operations)	Food Engineering	Food Plant Operations
UG- Certificate in Food Technology (Food Manufacturing)	Food Technology	Food Plant Operations
UG- Certificate in Food Technology (Food Quality Testing)	Food Quality Assurance	Food Plant Operations

## SEMESTER-WISE SCHEDULE OF COURSES

### {B Sc (Hons) Horticulture 4-Year Programme}

<b>Semester I</b>		
Course Code	Course Title	Credit Hours
IFC-111	Deeksharambh (Induction cum Foundation Course)	2 (0+2) NG
FSC-111	Fundamentals of Horticulture	3 (2+1)
FSC-112	Plant Propagation and Nursery Management of Fruit and Plantation crops	3 (1+2)
FLA-111	Commercial production of Flower crops	3 (1+2)
AGR-111	Farming Based Livelihood Systems	3 (2+1)
NRS-111	Sprinkler and Micro irrigation systems	2 (1+1)
BSE-111	Communication Skills	2 (1+1)
	<b>Skill Enhancement Courses (SEC-I)*</b>	<b>4(0+4)</b>
S-PPE-111	Apiculture	2 (0+2)
S-FSC-111	Orchard Management	2 (0+2)
S-PHM-111	Post Harvest Management and Packaging of Horticultural Crops	2 (0+2)
NCC-111 /NSS-111	NCC-I/NSS-I	1 (0+1)
	<b>Total</b>	<b>21 (8+13) + 2 NG</b>
<b>Semester II</b>		
Course Code	Course Title	Credit Hours
AGR-121	Introduction to Major Field crops	3 (2+1)
VSC- 121	Commercial Production of Spices and Plantation crops	3 (2+1)
VSC-122	Plant Propagation and Nursery Management in Vegetables, Flowers and Medicinal crops	3 (1+2)
PDM-121	Personality Development	2 (1+1)
EBM-121	Entrepreneurship Development and Business Management	3 (2+1)
ENS-121	Environmental Studies and Disaster Management	3 (2+1)
<b>SEC-II</b>	<b>Skill Enhancement Courses (SEC-II)*</b>	<b>4 (0+4)</b>
S-PPP-121	i) Mushroom Cultivation	2 (0+2)
S-BTC-121	ii) Plant Tissue Culture	2 (0+2)
NCC-121/ NSS-121	<b>NCC-II/NSS-II</b>	<b>1 (0+1)</b>
	<b>Total</b>	<b>22(10+12)</b>
<b>Post-II Semester</b>		
<b>H-INT-121</b>	<b>Internship (for 10 weeks-only for exit option for award of UG-Certificate)</b>	<b>10 (0+10)</b>
<b>Semester III</b>		
Course Code	Course Title	Credit Hours
NRS-211	Fundamentals of Soil Science	
VSC-211	Commercial Vegetable Production	4 (3+1)
VSC-212	Precision Farming and Protected Cultivation	3 (2+1)
ICT-211	Agricultural Informatics and Artificial Intelligence	3 (2+1)
PPP-211	Disease Management of Horticulture crops	3 (2+1)
PED-211	Physical Education, First Aid, Yoga Practices and Meditation	2 (0+2)
FSC-211	Urban and Peri Urban Horticulture	2 (1+1)
SEC-III	Skill Enhancement Courses (SEC-III)*	2 (0+2)
S-COM-211	Computer programming and Data Structures	
	<b>Total Credits</b>	<b>22 (12+10)</b>

**Semester IV**

Course Code	Course Title	Credit Hours
VSC-221	Seed Production of Vegetable, Tuber and Spice crops	3 (2+1)
NRS-221	Farm Power and Machinery for Horticulture	3 (2+1)
FSC-221	Commercial Fruit Production	4 (3+1)
ABM-221	Agriculture Marketing and Trade	3 (2+1)
PPE-221	Pest Management of Horticulture crops	3 (2+1)
ENS-221	Introductory Agrometeorology and Climate Change	2 (1+1)
SEC-IV	Skill Enhancement Courses (SEC-IV) *	2 (0+2)
S-FSC-222	Nursery Production in Horticulture Crops	
S-SST-221	Seed Production Techniques in Vegetable Crops	
	<b>Total Credit</b>	<b>20 (12+8)</b>
H-INT-221	Internship (for 10 weeks-only for exit option for award of UG- Diploma)	10 (0+10)

**Semester V**

Course Code	Course Title	Credit Hours
FSC-311	Dryland Horticulture	3 (2+1)
FSC-312	Horticulture Based Integrated Farming System	3 (2+1)
NRS-311	Soil Fertility and Nutrient Management	3 (2+1)
BSM-311	General Microbiology	3 (2+1)
ICT-311	Information and Communication Technology in Horticulture	3 (1+2)
BSP-311	Introductory Crop Physiology	2 (1+1)
BSS-311	Basic Statistics and Experimental Designs	3 (2+1)
STH-311	Education Tour	2 (0+2) NG
	online/MOOC courses	
	<b>Total Credits</b>	<b>20 (12+8) + 2 (NG)</b>

**Semester VI**

Course Code	Course Title	Credit Hours
AGF-321	Introductory Agroforestry	3 (2+1)
FSC-321	Laboratory Techniques for Horticultural crops	2 (0+2)
BSB-321	Principles of Biochemistry	3 (2+1)
FSC-322	Fundamentals of Plant Breeding	3 (2+1)
NRE-321	Economics and Marketing	3 (2+1)
NF-321	Principles and Practices of Natural Farming	2 (1+1)
FSC-323	Growth and Development of Horticultural crops	3 (2+1)
PHM-321	Processing and Value Addition of Horticulture crops	3 (2+1)
	online/MOOC courses	
	<b>Total Credits</b>	<b>22 (13+9)</b>

**Semester VII**

Course Code	Course Title	Credit Hours
	Elective Courses- Students will opt one of the elective discipline and accordingly the courses offered by University may be taken	
	Fruit Science	20
	Vegetable Science	20
	Floriculture and Landscaping	20
	online/MOOC courses	
	<b>Total Credits</b>	<b>20</b>

**ELECTIVE COURSES**

Course Code	Course Title	Credit Hours
<b>I. Fruit Science</b>		
FSC-411	Production Technology of Tropical Fruit crops	3 (2+1)
FSC-412	Production Technology of Sub tropical and Temperate Fruit crops	3 (2+1)
FSC-413	Breeding of Fruit Crops	3 (2+1)
FSC-414	Canopy Management in Fruit Crops	3 (2+1)
FSC-415	Biotechnological Approaches and Micro-propagation in Fruit Crops	3 (2+1)
FSC-416	Production Technology of Arid Fruit Crops	3 (2+1)
FSC-417	Postharvest Management of Fruit Crops	2 (1+1)
<b>II. Vegetable Science</b>		
VSC-411	Production Technology of Warm Season Vegetable Crops	3 (2+1)
VSC-412	Production Technology of Cool Season Vegetable Crops	3 (2+1)
VSC-413	Production Technology of Tuber Crops	3 (2+1)
VSC-414	Breeding of Vegetable Crops	3 (2+1)
VSC-415	Biotechnological approaches and Micropropagation in Vegetable Crops	3 (2+1)
VSC-416	Postharvest Management of Vegetable Crops	3 (2+1)
VSC-417	Protected cultivation of Vegetable Crops	2 (1+1)
<b>III. Floriculture and Landscaping</b>		
FLA-411	Turf management	2 (1+1)
FLA-412	Protected Cultivation of Flower Crops	3 (2+1)
FLA-413	Value Addition in Floriculture	3 (2+1)
FLA-414	Breeding of Ornamental Crops	3 (2+1)
FLA-415	Principles of Landscape Architecture	3 (2+1)
FLA-416	Commercial Floriculture and Landscaping	3 (2+1)
FLA-417	Postharvest handling of Floricultural Crops	3 (2+1)

**Semester VIII**

Course Code	Course Title	Credit Hours
RAWE-421	Student Ready (RAWE/industrial Attachment/Project work/Internship)	20 (0+20)
	Online/MOOC courses	
	Total	80+87+4 <sup>#</sup>
	<b>Grand Total</b>	<b>167+4<sup>#</sup></b>

- 10 credits of MOOC /online courses are compulsorily during the degree programme

## SUMMARY OF CREDIT DISTRIBUTION

Type of courses	Credits
Core courses (major and minor/s)	112
Common courses (MDC+VAC+AEC)	23
Skill Enhancement Courses (SEC)	12
Internship / Student READY	20
Non-Gradial Courses [ <i>Deeksharambh</i> and Educational Tour]	4*
Online Courses / MOOCs	10**
Total	167 + 10**

\*Non-Gradial \*\*Online courses

### Multidisciplinary Courses (MDC)

Farming Based Livelihood Systems	3 (2+1)
Entrepreneurship Development and Business Management	3 (2+1)
Agriculture Marketing and Trade	3 (2+1)

### Value Added Courses (VAC)

Environmental Studies and Disaster Management	3 (2+1)
Agriculture Informatics	3 (2+1)

### Ability Enhancement Courses (AEC)

Communication Skills	2 (1+1)
Personality Development	2 (1+1)
Physical Education, First Aid and Yoga	2 (0+2)
NCC/NSS	2 (0+2)

Core Courses	Credit Hours
Fundamentals of Horticulture	3 (2+1)
Plant Propagation and Nursery Management of Fruit and Plantation crops	3 (1+2)
Plant Propagation and Nursery Management in Flowers and Medicinal and crops	3 (1+2)
Growth and Development of Horticulture crops	3 (2+1)
Commercial Fruit Production	4 (3+1)
Commercial Vegetable Production	4 (3+1)
Commercial Production of Flower crops	3 (1+2)
Dry land Horticulture	3 (2+1)
Urban and Peri Urban Horticulture	2(1+1)
Sprinkler and Micro Irrigation systems	2(1+1)
Laboratory Techniques for Horticulture crops	2 (0+2)
Processing and Value Addition of Horticulture crops	3 (2+1)
Farm Power and Machinery for Horticulture	3 (2+1)
Pest management of Horticulture crops	3 (2+1)
Disease Management of Horticulture crops	3 (2+1)
Information and Communication Technology in Horticulture	3 (2+1)
Commercial production of spices and plantation crops	3 (2+1)
Precision farming and protected cultivation	3 (2+1)
Horticulture based integrated farming system	3 (2+1)
Seed production of vegetables, tuber and spice crops	3 (2+1)

Soil Fertility and Nutrient Management	3 (2+1)
Fundamentals of Soil Science	3 (2+1)
Introduction to Major Field crops	3 (2+1)
Fundamentals of Plant Breeding	3 (2+1)
Introductory Agroforestry	3 (2+1)
Introductory Agrometeorology and Climate Change	2 (1+1)
Economics and Marketing	3 (2+1)
Introductory Crop Physiology	3 (2+1)
Principles of Biochemistry	3 (2+1)
General Microbiology	3 (2+1)
Basic Statistics and Experimental Designs	3 (2+1)
Principles and Practices of Natural Farming	2(1+1)

## SEMESTER-WISE SCHEDULE OF COURSES

{B Sc Ag. (Hons) Natural Farming 4-Year Programme}

### Semester II

Course Code	Course Title	Credit Hours
IFC-111	<b>Deeksharambh (Induction cum Foundation Course)</b>	2(0+2)NG
NF-111	Indian Heritage of Natural Farming	3(2+1)
NF-112	Principles and Practices of Natural Farming	4(2+2)
NF-113	Bhumi Suposhan (Soil Nutrition)	3(2+1)
AGR-111	Farming based Livelihood System	3(2+1)
BSE-111	Communication Skills	2(1+1)
S-NF-111	Natural Farming for different Crops	2(0+2)
S-NF-112	Production Technology of Bio-inputs and Bio-control Agents	2(0+2)
NCC-111	NCC-I/NSS-I	1(0+1)
NSS-111		
	<b>Total Credits</b>	<b>20 (9+11)+ 2</b> (NG-Non-gradual)
<b>Semester II</b>		
Course Code	Course Title	Credit Hours
NF-121	Cow- based Natural Farming	3(1+2)
NF-122	Soil Biology in Natural Farming	3(2+1)
NF-123	Integration of Horticulture Crops under Natural Farming	2(1+1)
NF-124	Insect Ecology, Nematodes and Pest Management	3(2+1)
EBM-121	Entrepreneurship Development and Business Management	3(2+1)
PDM-121	Personality Development	2(1+1)
S-NF-121	Seed Production and Certification under Natural Farming	2(0+2)
S-NF-122	Analytical Techniques and Instrumentation for Soil Health Card	2(0+2)
NCC-121	NCC-II/NSS-II	1(0+1)
NSS-121		
	<b>Total Credits</b>	<b>21(9+12)</b>
<b>NF-INT-121</b>	<b>Internship (for 10 weeks-only for exit option for award of UG-Certificate)</b>	<b>10 (0+10)</b>

<b>Semester III</b>		
Course Code	Course Title	Credit Hours
NF-211	Crop Management in Natural farming	3(2+1)
NF-212	Production of Bio-inputs	2(1+1)
NF-213	Farm Power and Machinery	3(1+2)
NF-214	Livestock and Poultry Production	3(2+1)
NF-215	Management of Plant Diseases	2(1+1)
NF-216	Biodiversity Conservation	2(1+1)
PED-211	Physical Education, First Aid and Yoga Practice	2(0+2)
S-NF-211	Commercial Beekeeping	2(0+2)
ENS-211	Environmental Studies and Disaster Management	3(2+1)
	<b>Total Credits</b>	<b>22(10+12)</b>
<b>Semester IV</b>		
Course Code	Course Title	Credit Hours
NF-221	Elements, Characteristics and Design of Natural Farming Systems	3(2+1)
NF-222	Improvement of Traditional and Under-utilized Crops	3(2+1)
NF-223	Agro-Ecosystem Analysis for Natural Farming	2(1+1)
NF-224	Beneficial Insects	3(2+1)
NF-225	Quantification and Valuation of Ecosystem Services	3(2+1)
ABM-221	Agricultural Marketing and Trade	3(2+1)
ICT-221	Agricultural Informatics and Artificial Intelligence	3(2+1)
S-NF-221	Post Harvest Processing Technology	2(0+2)
	<b>Total Credits</b>	<b>22(11+11)</b>
<b>Post-IV Semester</b>		
NF-INT-221	Internship (for 10 weeks-only for exit option for award of UG- Diploma)	<b>10 (0+10)</b>
<b>Semester V</b>		
Course Code	Course Title	Credit Hours
NF-311	Post-Harvest Management –I	3(2+1)
NF-312	Bio- resources and Agricultural Waste Management	3(2+1)
NF-313	Medicinal and Aromatic Plants	2(1+1)
NF-314	Seed Production Technology	3(2+1)
NF-315	Value Chain Management in Natural Farming	2(1+1)
NF-316	Renewable Energy Sources	2(1+1)
NF-317	Natural Farming and Human Health	2(1+1)
PPE-311	Fundamentals of Entomology	3(2+1)
STNF-311	Study Tour	2 (0+2)NG
	Online/MOOC Courses	
	<b>Total Credits</b>	<b>20(12+8)</b>
<b>Semester VI</b>		
Course Code	Course Title	Credit Hours
NF-321	Indian Traditional Knowledge	3(2+1)
NF-322	Post-harvest Management-II	3(2+1)
NF-323	Standards and Certification for Natural Farming	3(2+1)
NF-324	Aqua-based Natural Farming	3(2+1)

NF-325	Marketing of Natural Farming Produce	3(2+1)
NF-326	Agronomic Practices	2(1+1)
NF-327/Ag IPR-210	Intellectual Property Rights	1(1+0)
NF-328/Ag. ECON 212	Principles of Agricultural Economics and Farm Management	2(2+0)
	Online/MOOC Courses	
	<b>Total Credits</b>	<b>20(14+6)</b>
<b>Semester VII</b>		
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>
NF-411	Community Mobilization for Natural Farming	2(1+1)
NF-412	Water Management	2(1+1)
NF-413	Research Methodology and Ethics	2(1+1)
NF-414	Weather Forecasting	3(2+1)
BSS-411	Basic and Applied Agricultural Statistics	3(2+1)
	Elective Course-I	3(2+1)
	Elective Course-II	3(2+1)
	Elective Course-II	3(2+1)
	Online/MOOC Courses	
	<b>Total Credits</b>	<b>21(13+8)</b>
<b>Semester VIII</b>		
<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>
	For Student opting for 4 Year B.Sc. Ag.(Hons.) Natural Farmer Degree Student READY (RAWE/Industrial Attachment/Experiential Learning/Hands on Training/Project Work)/ Internship	20 credits
	Online/MOOC Courses	
	<b>Total Credits</b>	<b>20(0+20)</b>

# Deekshaaramh: At the start of 1<sup>st</sup> Semester, there will be a three weeks Foundation Course (FC) with 0+4 credits (Non-gradual), common to all the students

\* Educational (Study) Tour: It will be compulsory non-gradual of 2 credit for 10-12 days during after 5<sup>th</sup> semester.

CNC – Compulsory Non-Credit Course.

## SEMESTER-WISE SCHEDULE OF COURSES

### B. Tech. (Food Technology) 4 year Programme

#### Semester I

Course Code	Course Title	Credit Hours
<b>SEMESTER – I</b>		
IFC 111	Deeksharambh (Induction- cum- Foundation Course of 2 weeks)	2 (0+2) (NG)
BTF 111	Basic Electrical Engineering	3 (2+1)
BTF 112	Workshop Technology	3 (1+2)
BTF 113	Fundamentals of Food Processing	3 (2+1)
BSM 112	General Microbiology	3 (2+1)
AGR 111	Farming-Based Livelihood System	3 (2+1)
BSE 111	Communication Skills	2 (1+1)
NCC-111/ NSS-111	NCC-I/ NSS- I	1 (0+1)
S-FBT 111	Introduction to Drying Technology and Dryers	2 (0+2)
S-FBT 114	Introduction to Good Laboratory Practices	2 (0+2)
	<b>Total Credits</b>	22 (10+12) + 2 (Non- Gradial)

Course Code	Course Title	Credit Hours
<b>SEMESTER – II</b>		
BTF 121	Food Thermodynamics	3 (2+1)
BTF 122	Engineering Drawing and Graphics	3 (1+2)
BTF 123	Post Harvest Engineering	3 (2+1)
BTF 124	Unit Operations in Food Processing	3 (2+1)
BSC 121	Food Chemistry I	3 (2+1)
ENS 121	Environmental Studies and Disaster Management	3 (2+1)
NCC- 121/NSS-121	NCC- II/ NSS- II	1 (0+1)
S-FBT 121	Maintenance of Food Processing Equipment	2 (0+2)
S-FBT 122	Introduction to Bottling and Canning Line	2 (0+2)
<b>FT-INT 121</b>	<b>Internship</b>	<b>0+10</b>
	<b>Total Credits</b>	23 (11+12)

Student taking various skill enhancement courses will be eligible to get a certificate with nomenclature as follows provided the student has selected courses as mentioned against the nomenclature of the UG-certificate. In case a student wishes to exit at this point.

Nomenclature of certificate	Skill Enhancement Courses to be selected from the respective disciplines	
	Semester- I	Semester- II
UG- Certificate in Food Technology (Food Plant Operations)	Food Engineering	Food Plant Operations
UG- Certificate in Food Technology (Food Manufacturing)	Food Technology	Food Plant Operations

UG- Certificate in Food Technology (Food Quality Testing)	Food Quality Assurance	Food Plant Operations
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Course Code	Course Title	Credit Hours
<b>SEMESTER – III</b>		
BSC 212	Food Chemistry	3 (2+1)
BTF 211	Fluid Mechanics	3 (2+1)
BTF 212	Heat and Mass Transfer in Food Processing	3 (2+1)
BTF 213	Basic Electronic Engineering	2 (1+1)
BSM 212	Food Microbiology	3 (2+1)
BSS 211	Engineering Mathematics -I	2 (2+0)
ICT 211	Agricultural Informatics and Artificial Intelligence	3 (2+1)
PED 002	Physical Education, First Aid, Yoga Practices and Meditation	2 (0+2)
S-FBT 212	Basic Food Analysis Laboratory Techniques	2 (0+2)
	<b>Total Credits</b>	<b>23 (13+10)</b>

Course Code	Course Title	Credit Hours
<b>SEMESTER IV</b>		
BTF 221	Food Plant Sanitation	3 (2+1)
BTF 222	Food Plant Utilities and Services	3 (2+1)
BTF 223	Fundamentals of Food Engineering	3 (2+1)
BTF 224	Food Quality, Safety Standards and Certification	2 (2+0)
BSS 222	Engineering Mathematics- II	2 (2+0)
ABM 221	Personality Development	3 (2+1)
ABM 222	Entrepreneurship Development and Business Management	2 (1+1)
S-FBT 221	Introduction to Manufacturing of Bakery Products	2 (0+2)
FT-INT 221	Internship	0+10
	<b>Total Credits</b>	<b>20 (13+7)</b>

Course Code	Course Title	Credit Hours
<b>SEMESTER-V</b>		
BSC 312	Food Biochemistry and Nutrition	3 (2+1)
BTF 311	Processing Technology of Fruits and Vegetables	3 (2+1)
BTF 312	Food Packaging Technology and Equipment	2 (1+1)
BTF 313	Processing Technology of cereals	3 (2+1)
BTF 314	Processing of Spices and Plantation Crops	3 (2+1)
BTF 315	Food Storage Engineering	3 (2+1)
BTF 316	Project Preparation and Management	2 (1+1)
NRE/ENS 312	Agricultural Marketing and Trade	3 (2+1)
BTF 317	Study tour (15 days during the semester)	2 (0+2) NG
	Online/MOOC courses	
	<b>Total Credits</b>	<b>22 (14+8) + 2 Non Gradial</b>

Course Code	Course Title	Credit Hours
<b>SEMESTER-VI</b>		
BTF 321	Processing Technology of Beverages	3 (2+1)
BTF 322	Processing Technology of Legumes and Oilseed	3 (2+1)
BTF 323	Processing of Meat, Fish and Poultry Products	3 (2+1)
BTF 324	Food Refrigeration and Cold Chain	3 (2+1)
BTF 325	Sensory Evaluation of Food Products	2 (1+1)
BTF 326	Food Additives and Preservatives	2 (1+1)
BTF 327	Bakery, Confectionary and Snack Products	3 (2+1)
BTF 328	Processing Technology of Liquid Milk	2 (1+1)
	Online/MOOC courses	
	<b>Total Credits</b>	21 (13+8)

Course Code	Course Title	Credit Hours
<b>SEMESTER-VII</b>		
BTF 411	Processing Technology of Dairy Products	3 (2+1)
BTF 412	Food Process Equipment Design	3 (2+1)
ICT 412	ICT Applications in Food Industry	3 (1+2)
BTF 413	Seminar	1 (0+1)
	<b>Elective courses</b>	10
	<b>Online/MOOC courses</b>	
	<b>Total Credits</b>	20

<b>SEMESTER-VIII</b>		
Course Code	Course Title	Credit Hours
BTF 422	Student Ready/ internship (at industry/ research institutes, etc.) (20 weeks)	20 (0+20)
	Online/MOOC courses	10
	<b>Total Credits</b>	20 (0+20)

\*10 credits of online/ MOOC courses is compulsory during the degree Programme

**Department wise split with course codes:**

**Department**

Department of Food Science and Technology  
 Department of Basic Sciences  
 Department of Fruit Science/Vegetable  
 Science/Floriculture& Landscape  
 architecture/Biotechnology/Social Sciences/Silviculture &  
 Agroforestry etc.

**Course Codes**

: BTF, BTE, SFT, SFQ, SFE, SFP  
 : BSM, BSC, BSE, BSS  
 : ENS, NRE, AGF, ICT