

Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224229



Value Added Courses Syllabus





**Acharya Narendra Deva University
of Agriculture and Technology,
Kumarganj, Ayodhya-224229**



INDEX

| Sr. No. | Value Added Courses of University | Page No. |
|----------------|--|-----------------|
| 1. | Fish cum duck production and management | 1 |
| 2. | Life skills advancement bootcamp | 4 |
| 3. | Carp fish seed production | 9 |
| 4. | Pet care advice | 10 |
| 5. | Basic nutrition | 11 |
| 6. | Animal welfare and compassionate handling | 12 |
| 7. | Flower arrangement | 14 |
| 8. | Physical education and yoga practices | 15 |
| 9. | Soft skill and language development | 16 |
| 10. | Personality development | 17 |
| 11. | Agripreneurship development | 18 |
| 12. | Processing of aonla fruits for value addition | 19 |
| 13. | Integrated aquaculture | 20 |
| 14. | Fish processing and value addition | 21 |
| 15. | Taxonomic identification of commercially important finfishes and shellfishes | 22 |
| 16. | Basic soil and water chemistry for aqua-farming | 23 |
| 17. | Fish feed formulation and feeding practices | 24 |
| 18. | Re-circulatory aquaculture system (RAS) | 25 |
| 19. | Basic cookery | 26 |
| 20. | Early childhood education and care | 27 |
| 21. | Biofertilizer technology | 28 |
| 22. | Beekeeping | 29 |
| 23. | Mushroom cultivation and post harvest management | 30 |
| 24. | Production and marketing management of farm products | 33 |
| 25. | Natural farming | 34 |
| 26. | Soft skills for entrepreneurship development | 35 |
| 27. | Quality assurance of milk and milk products | 36 |
| 28. | Nursery production and management | 37 |
| 29. | Bonsai and flower arrangement | 38 |
| 30. | Protected cultivation of horticultural crops | 39 |
| 31. | Broiler poultry production | 40 |
| 32. | Packaging and storage of horticultural crops | 41 |
| 33. | Processing and value addition of spice crops | 42 |
| 34. | Dairy and food process and products technology | 44 |
| 35. | Micro irrigation engineering | 45 |

| | | |
|-----|--|----|
| 36. | Field operation & maintenance of tractor & farm machinery | 46 |
| 37. | Post harvest engineering of cereals, pulses and oil seeds | 47 |
| 38. | Biosafety in microbiology lab | 49 |
| 39. | Basic concepts of applied toxicology | 50 |
| 40. | First aid in pet and domestic animals | 51 |
| 41. | Conventional techniques for diagnosis of infectious diseases in animals and their products | 52 |
| 42. | Fundamentals of blood physiology and basic laboratory technique | 53 |
| 43. | Management of parasitic diseases | 55 |
| 44. | Biomaterials of fish origin | 56 |
| 45. | Fundamentals of food and feed analysis | 57 |
| 46. | Goat farming | 58 |
| 47. | Medicinal and aromatic plants | 59 |
| 48. | Forest product | 60 |
| 49. | Soil testing | 61 |
| 50. | Infant stimulation | 62 |
| 51. | Plant tissue culture | 63 |



COLLEGE OF FISHERIES
ACHARYA NARENDRA DEVA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY, KUMARGANJ,
AYODHYA-224229



VALUE ADDED COURSE

FISH CUM DUCK PRODUCTION AND MANAGEMENT

Objective:

To understand concept of integrated fish farming system and its management.

Outcomes:

Cost minimization for input use, increased employment, recycling of waste material, continuous income round the year, energy saving

| Lecture No. | <u>Lecture/practical content</u> | Hrs |
|--------------------|--|------------|
| 1. | Present scenario and problems: Trends in global and Indian aquaculture; different farming systems; Semi and intensive systems. | 1 |
| 2. | Different type of integration systems and its concept. Introduction of fish cum duck farming system. Site selection, basic requirement for duck cum fish farming system. | 1 |
| 3. | Major species cultured production trends and prospect, Preparation and | 1 |

| | | |
|-----|---|-----------|
| 4. | management-control of aquatic weeds and algal blooms, predatory and weed fishes. | |
| | Design and construction of pond and duck house: on dike and off dike. | 1 |
| 5. | Use of bio-fertilizers and water quality management. | 1 |
| 6. | Seed selection, transportation and acclimatization of seed. | 1 |
| 7. | Stocking rate and supplementary feeding | 1 |
| 8. | Post stocking pond management practices: manuring, liming, feeding, preventive measures and disease control. | 1 |
| 9. | Physico-chemical characteristics of water and its management. | 1 |
| 10. | Estimation of DO, pH, alkalinity, hardness, ammonia etc. | 1 |
| 11. | Stocking of duck, rearing and management. | 1 |
| 12. | Disease and preventive measurement for disease control. | 1 |
| 13. | Introduction to fish food organism and its importance in fish cum duck fish farming. | 1 |
| 14. | Estimation of primary productivity and its management. | 1 |
| 15. | Artificial feed, its ingredients and preparation of artificial feed. | 1 |
| 16. | Harvesting and post harvesting management and Economic viability | 1 |
| 17. | Practicals | 14 |
| | Identification of different culturable fish species. Identification of different variety of duck, identification of different type of aquatic weed, | |

insects. Estimation of DO, pH, Alkalinity, hardness, CO₂ and NH₃, estimation of primary productivity. Visit of demonstration unit.

| | |
|------------------|-----------|
| Total Hrs | 30 |
|------------------|-----------|

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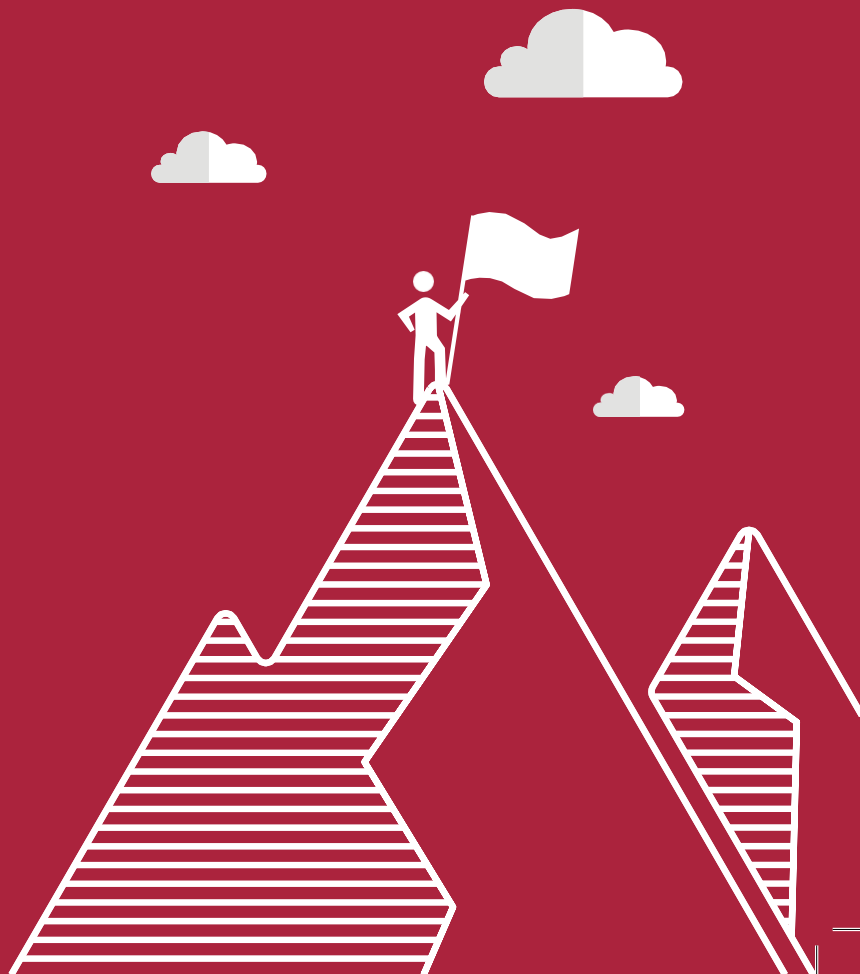


College of Fisheries
AMUL - T. L. Chaudhary Institute of Fisheries



medha

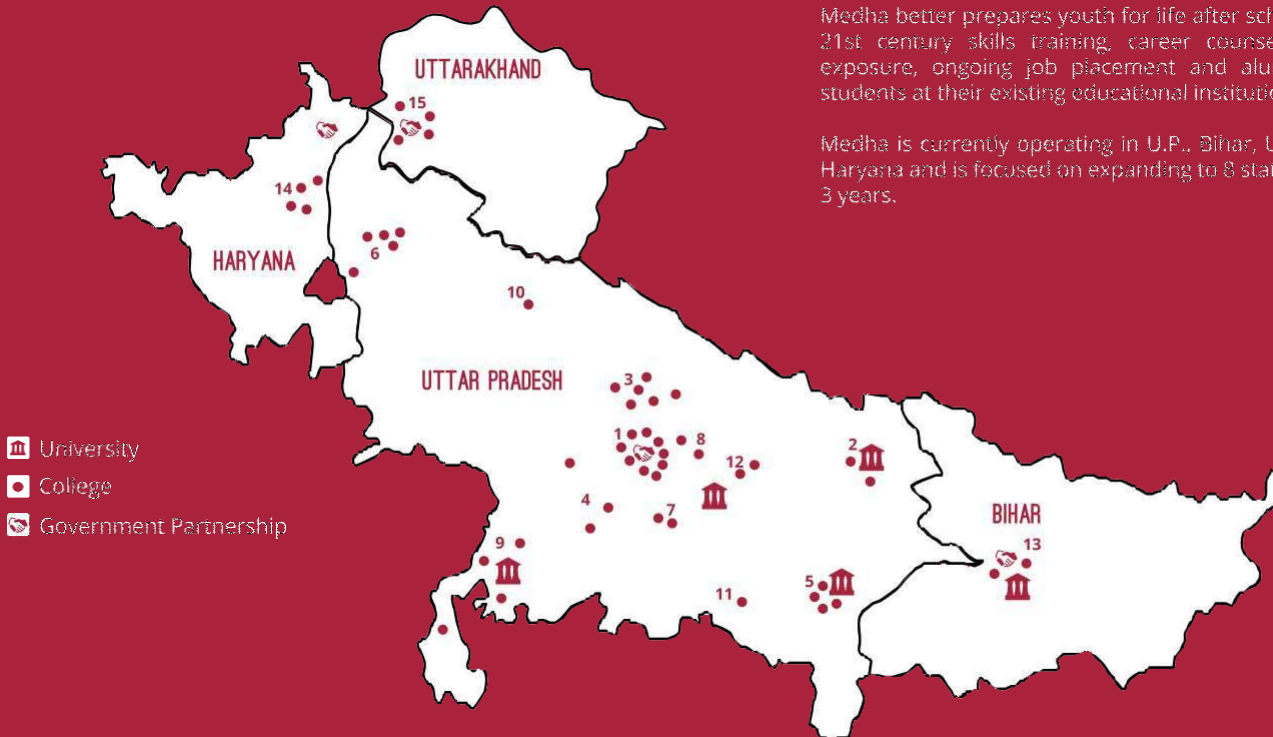
CURRICULUM OVERVIEW



About

Medha better prepares youth for life after school. We provide 21st century skills training, career counseling, workplace exposure, ongoing job placement and alumni support to students at their existing educational institutions.

Medha is currently operating in U.P., Bihar, Uttarakhand and Haryana and is focused on expanding to 8 states over the next 3 years.



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407 Dr. Baljnath Road, New Hyderabad, Lucknow,
Uttar Pradesh 226007. 0522 4044932 | medha.org.in

BOOTCAMP



LIFE SKILLS ADVANCEMENT



| | Topic | Learning Objectives |
|-------------------------------|--------------------|--|
| Computer Basics (15 Hours) | Operating System | <ul style="list-style-type: none"> Navigate the operating system Input using the mouse and keyboard |
| | Files and Folders | <ul style="list-style-type: none"> Copy, paste, save, move files and folders |
| | Internet | <ul style="list-style-type: none"> Search online for career information Create an email and social networking account |
| MS Word (15 Hours) | Word Intro | <ul style="list-style-type: none"> Understand the usefulness of MS Word |
| | Team Collaboration | <ul style="list-style-type: none"> Solve complex problems as a team Manage typing speed and accuracy Resolve conflict and communication gaps |
| | Formatting | <ul style="list-style-type: none"> Format documents for effective communication |
| MS Excel (15 Hours) | Stress Management | <ul style="list-style-type: none"> Identify sources of stress in daily life Develop stress management techniques |
| | Excel Intro | <ul style="list-style-type: none"> Understand the usefulness of MS Excel |
| | Data Entry | <ul style="list-style-type: none"> Enter data correctly into Excel worksheets |
| | Formulae | <ul style="list-style-type: none"> Use formulae to reduce errors and save time |
| MS PPT (15 Hours) | Formatting | <ul style="list-style-type: none"> Format spreadsheets for effective communication |
| | PPT Intro | <ul style="list-style-type: none"> Assess strengths and weaknesses in public speaking Understand the usefulness of MS PPT |
| | Storyline | <ul style="list-style-type: none"> Create an effective story line for a presentation Form a cohesive story as a team |
| Group Presentation | Visual Elements | <ul style="list-style-type: none"> Leverage individual strengths/weaknesses Develop effective graphs, charts, and other visuals Manage Q&A from an audience |
| | Charts | <ul style="list-style-type: none"> Build visual elements for communication |
| Assessment | Adv. Functions | <ul style="list-style-type: none"> Understand VLOOKUP and Pivot Tables |
| | Assessment | <ul style="list-style-type: none"> Test your MS Excel capabilities |
| Assessment | Tips and Tricks | <ul style="list-style-type: none"> Reduce common mistakes in PPT presentation |
| | Assessment | <ul style="list-style-type: none"> Test your MS PPT capabilities |



TECHNOLOGY MANAGEMENT

BOOTCAMP BOOTCAMP



| | | |
|---|--|---|
| Professional Communication (15 hrs.) | <p>Orientation</p> <ul style="list-style-type: none"> • Map your CAB journey • Set expectationst and learning goals <p>Public Speaking</p> <ul style="list-style-type: none"> • Increase confidence to speak in public • Generate ideas/information/topics for speaking • Improve tone, volume, and pacing <p>Group Presentation</p> <ul style="list-style-type: none"> • Craft a cohesive story as a team • Leverage individual strengths/weaknesses • Manage Q&A from an audience | <p>Group Discussion</p> <ul style="list-style-type: none"> • Show initiative and leadership • Listen intently and respond with meaning • Master useful GD techniques for generating ideas <p>CV Writing</p> <ul style="list-style-type: none"> • Understand various CV formats and uses • Create a unique resume to stand out <p>Interview Preparation</p> <ul style="list-style-type: none"> • Develop and deliver your personal story • Listen and respond correctly to questions • Communicate your passion and fit |
| Team Work (4 hrs.) | <p>Leadership</p> <ul style="list-style-type: none"> • Recognize different leadership styles • Work effectively/efficiently in a team • Resolve conflict and problem solve | <p>Workplace Etiquette</p> <ul style="list-style-type: none"> • Contribute to a gender-equal workplace • Manage conflict in a constructive way • Cultivate a professional behavior/appearance |
| Career Preparation (11 hrs.) | <p>Future Planning</p> <ul style="list-style-type: none"> • Understand and set SMART goals • Complete a 5-year plan w/associated steps <p>Industry Project</p> <ul style="list-style-type: none"> • Gain knowledge on various industries • Understand career paths and requirements | <p>Reflection</p> <ul style="list-style-type: none"> • Identify your achievements during CAB • Articulate next steps |



**Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229**

COLLEGE OF FISHERIES

Value Added Course

Course Title: Carp Fish Seed Production

Objective: To develop the skill of pond preparation and breeding techniques of commercially important fishes.

Outcomes: It will help to develop the skilled person in the field of fisheries to operate the commercial seed production unit of different important fish species.

| Unit | Topic | Hours (43) |
|------|---|------------|
| 1. | Identification of Indian Major Carps (<i>Catla catla</i> , <i>Labeo rohita</i> and <i>Cirrhinus mrigala</i>). Identification of Exotic Major Carps (<i>Hypophthalmichthys molitrix</i> , <i>Ctenopharyngodon idella</i> , and <i>Cyprinus carpio</i>). | 02 |
| 2. | Preparation, rearing and management of carp brood pond. Identification of male and female broods. | 02 |
| 3. | Synthetic hormones used for induced breeding of carps. Preparation of pituitary gland extract for induced breeding. Calculation of pituitary dose for induced breeding. | 03 |
| 4. | Different types of fish hatcheries-traditional, glass jar and other hatcheries. | 02 |
| 5. | Chinese eco-carp hatchery its component and other specifications. | 02 |
| 6. | Calculation of fish seed production and brood stock requirement. | 01 |
| 7. | Concepts of multiple breeding of carps fish. | 01 |
| 8. | Pre-stocking, and post stocking management of pond Insect/Weed fishes/predatory fish control, application of farm manure and fertilizers and plankton measurement | 03 |
| 9. | Water quality measurement- pH, Alkalinity, hardness, Ammonia, Dissolved Oxygen, CO ₂ etc. | 04 |
| 10. | Farm made feed formulation and feeding methods | 02 |
| 11. | Use and application of fish feed additives. | 02 |
| 12. | Assessment of survival and growth of fish seed | 01 |
| 13. | Fish seed packaging and their transportation | 02 |
| 14. | Fish seed and brood stock treatment | 01 |
| | Practical: | |
| 1. | Estimation of water quality parameters dissolved oxygen, pH, Alkalinity, Hardness, Ammonia, CO ₂ , Dissolved solids and suspended solids. Dose calculation of commonly applied chemicals. Calculation of water volume and stocking density. | 03 |
| 2. | Eradication of insects, weed fishes and predatory fishes from nursery pond. | 02 |
| 3. | Pituitary extract gland preparation | 02 |
| 4. | Introduction to carp hatchery and practical visits to fish seed production units | 02 |
| 5. | Operational procedures of eco-carp hatchery | 02 |
| 6. | Fish seed packaging and transportation | 02 |

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DEAN
College of Fisheries
Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229

Veterinary Science & AH
Acharya Narendra Deva University of Agriculture and Technology
Ayodhya, U.P.

Course Title: PET CARE ADVICE

Credit hours: 32 hours

Course content

- Basic health and care of dogs, cats and birds.
- Dealing with illness and injury
- First aid practices
- Common surgeries and care
- Dental care
- Reproduction and breeding
- Deworming
- Vaccinations
- Pet safety- common problems and dangers
- Brrred Profiles
- Feeding of pets
- Feeding of orphan pets

Learning Outcome

- Best package of practices for pets
- Proper health care of new born pets
- Feeding and management of new born puppies and adults
- Reproductive health management of pets
- First aid management in medical in medical emergencies



(S.V. Singh)
Associate Professor
Veterinary Medicine

Department of Food Science and Nutrition
College of Community Science
Value added Course: Basic Nutrition

| S.No. | Topic | Hour |
|-------|--|--------------------|
| 1. | Relationship of nutrition to health, growth & human welfare. | 1 |
| 2. | Definition of terms used in nutrition: Food, Health, Balanced diet, functional food, RDA, photochemical, nutraceuticals, dietary supplements | 1 |
| 3. | Food groups and its importance | 1 |
| 4. | Importance of carbohydrates in human nutrition | 1 |
| 5. | Functions, sources and requirement of proteins | 1 |
| 6. | Role of lipids and oils in diet | 1 |
| 7. | Significance of vitamins in maintenance of human health | 1 |
| 8. | Macro and micro minerals and effects of their deficiencies | 1 |
| 9. | Importance of Fiber in diet | 1 |
| 10. | Recommended dietary allowances | 1 |
| 11. | Basics of diet planning | 1 |
| 12. | Diet planning for pregnant women | 1 |
| 13. | Diet planning for lactating women | 1 |
| 14. | Diet planning for adults | 1 |
| 15. | Nutritional needs of infants | 1 |
| 16. | Nutritional needs of geriatrics | 1 |
| 17. | Diet during fever | 1 |
| 18. | Dietary tips for diabetics | 1 |
| 19. | Dietary recommendations for hypertension | 1 |
| 20. | Measurement and management of obesity | 1 |
| 21. | Assessment of nutritional status through anthropometry | 2 |
| 22. | Management of Nutrition Garden | 2 |
| 23. | Planning and preparation of diets for normal condition | 2 |
| 24. | Planning and preparation of diets for students | 2 |
| 25. | Preparation of nutrition information material | 2 |
| | Total | 30 hours |

Course Outcome: This course will improve the knowledge of students regarding food groups, balanced diet during different stages of life cycle and dietary guidelines to the different diseases.

Sadhna Singh
 9.6.2020
 (Sadhna Singh)

Animal Welfare and Compassionate Handling at ANDUAT, Ayodhya

INTRODUCTION:

Veterinary Universities are responding to the needs of veterinary profession to equip vet students with the skill and knowledge to work as a veterinary practitioner in the large-animal settings. Veterinary practitioners must competently, confidently and compassionately handle a range of large animals for the proper diagnosis and treatment of ailments. Training in animal handling begins in the first year of the course with highly structured small-group practical classes involving cattle, horses, sheep, dogs, cats, pigs, poultry, and laboratory animals (rats and mice). Brooke hospital for Animals (India) as an equine welfare organization aims to enhance skills and knowledge of vet students about handling of equine prior to extramural placements on farms and in veterinary practices. Handling of equine always present unique challenges that difficult to anticipate. Compassionate handling describes any interaction between humans and animals that avoids or minimises animal suffering and promotes animal wellbeing. Brooke has long championed positive human-animal interactions through compassionate handling techniques because good handling contributes to good welfare by creating positive experiences leading to emotional and physical changes that benefit animals by improving welfare. It also enables the effectiveness of veterinary interventions and husbandry practices. Animal welfare is the core subject of Brooke, about which vet students must have basic knowledge and skill to translate these learning for field implementation to improve status of welfare of animals. The knowledge and skills imparted in vet universities in compassionate handling will be reflected in the practice of future practicing vets and para veterinary professionals. It will provide them an opportunity to set a good example to all people who will observe them during their work in the field (animal owners/users, community members, local service providers, colleagues etc.) Since Vet Students are unable to assemble at one place for workshop as usual due to COVID-19 restrictions. Therefore, Brooke India has planned to use alternative and safe training methods i.e. virtual sessions to strengthen the skills & knowledge of vet students in Universities. Once the COVID-19 restrictions are eased then practical demonstrations will be conducted.

AIM: To develop the understanding on Animal welfare, equine behavior and compassionate handling among students of vet Universities to create positive experiences leading to improved animal welfare

OBJECTIVES:

By the end of the training, participants will be able to:-

1. Describe what is meant by animal welfare, and explain its different components.
2. Recognize a variety of equine behaviours associated with different emotional states, including fear, aggression, and relaxation/happiness.
3. Describe the danger zones of equine animals and how to minimize safety risks during handling.
4. Show awareness of the animal's emotional state during handling by responding appropriately to its behavior to ensure safety and good welfare.

5. Recognize the different welfare issues of working equines
6. Estimate age and BCS (Body Condition Score) of equines

Training Evaluation: Feedback of students will be collected on an evaluation form before and after the training to evaluate the training.

Value Added Course Syllabus

Flower Arrangement

Department of Family Resource Management and Consumer Science

| | | |
|-------------------------|---|----------------------------|
| Period | : | 15 Days (30 contact hours) |
| Credit | : | 2 (0+2) |
| Training Period Per day | : | 2 hours |

Objectives -

The objective of this **Course Syllabus (Value addition of flowers)** is for students to establish and run their own enterprise at zero budget which will again later on take the form of big income generating activity for the student.

Course Syllabus -

- Basic elements of art and principles in flower arrangement and combination of principles with elements.
- Flowers and foliage suitable for flower arrangement.
- Mechanics/Equipments and tools required. Conditioning cut flower and foliage.
- Arrangement of different types of fresh flowers for decoration for different areas and occasions.
- Introduction to different models of flower arrangement -- Triangular model, Round bowl model Oval bowl model L-shape model, S- shape model, crescent shape model.
- Introduction to different models of containers.
- Preparation of floating flower arrangements for different occasions and its combination with flower rangoli.
- Selection of cloths and waste material for making flowers, Preparation of different types of flowers artificially, its combination with dry arrangements, combination of ornamental leaves with dry arrangement.
- Application of rangoli with flowers and other items. Preparation of bouquets.

References -

1. <http://encyclopedia.thefreedictionary.com/Flower+bouquet>
2. http://en.wikipedia.org/wiki/Flower_bouquet
3. <http://encyclopedia.thefreedictionary.com/Wreath>

Charles Griner, 2005, Floriculture- Designing and Merchandising, Delmar Publishers, An International Thomson Publishing Company.




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VALUE ADDED COURSE

Physical Education and Yoga Practices 2(0+2)

50 Contact Hrs.

1. Teaching – Meaning, Scope and importance of Physical Education
2. Teaching – Definition, Type of Tournaments
3. Teaching – Physical Fitness and Health Education
4. Teaching of skills of Football – demonstration, practice of the skills, correction, involvement in game situation (For girls teaching of Tennikoit)
5. Teaching of different skills of Football – demonstration, practice of the skills, correction, involvement in game situation (For girls teaching of Tennikoit)
6. Teaching of advance skills of Football – involvement of all the skills in game situation with teaching of rules of the game
7. Teaching of skills of Basketball – demonstration, practice of the skills, correction of skills, involvement in game situation
8. Teaching of skills of Basketball – demonstration, practice of the skills, involvement in game situation
9. Teaching of skills of Basketball – involvement of all the skills in game situation with teaching of rule of the game
10. Teaching of skills of Kabaddi – demonstration, practice of the skills, correction of skills, involvement in game situation
11. Teaching of skills of Kabaddi – demonstration, practice of the skills, correction of skills, involvement in game situation
12. Teaching of advance skills of Kabaddi – involvement of all the skills in game situation with teaching of rule of the game
13. Teaching of skills of Badminton – demonstration, practice of the skills, correction of skills, involvement in game situation
14. Teaching of skills of Badminton – involvement of all the skills in game situation with teaching of rule of the game
15. Teaching of some of Asanas – demonstration, practice, correction and practice
16. Teaching of some more of Asanas – demonstration, practice, correction and practice
17. Teaching of skills of Table Tennis – demonstration, practice of skills, correction and practice and involvement in game situation
18. Teaching of skills of Table Tennis – demonstration, practice of skills, correction and practice and involvement in game situation
19. Teaching of skills of Table Tennis – involvement of all the skills in game situation with teaching of rule of the game
20. Teaching of skills of Kho-Kho – demonstration practice of the skills and correction.
21. Teaching of skills of Kho-Kho – demonstration practice of the skills and correction. Involvement of the skills in games situation
22. Teaching of advance skills of Kho-Kho – demonstration practice of the skills and correction. Involvement of all the skills in games situation with teaching of rules of the game
23. Construction and laying out of the track and field.
24. Teaching of different track events – demonstration practice of the skills and correction.
25. Teaching of different track events – demonstration practice of the skills and correction.
26. Teaching of different track events – demonstration practice of the skills and correction with competition among them.
27. Teaching of different field events – demonstration practice of the skills and correction.
28. Teaching of different field events – demonstration practice of the skills and correction.
29. Teaching of different field events – demonstration practice of the skills and correction.
30. Teaching of different field events – demonstration practice of the skills and correction.


In-charge (Games & Sports)
A.N.D.U.A.&T. Kumargani
Allahabad (U.P.)

Value Added Course: Soft Skill and Language Development
2021-22
Smart Series
Course Details-35 days

| S.no. | Content |
|--------------|---|
| 1. | Personality traits of different categories of ppl |
| 2. | Why some people don't set goals? |
| 3. | Benefits to goal setting |
| 4. | Difference between Goals and Objectives |
| 5. | Why write goals? |
| 6. | 7 key areas of life |
| 7. | Are you a major in minor things? |
| 8. | Locus of Control |
| 9. | Mental Representations |
| 10. | Do goals have to be positively stated? |
| 11. | Smart Goals |
| 12. | If "why" is clear, then How is easy |
| 13. | Well-formed outcome |
| 14. | Set Personal Goals |
| 15. | Set Education/ Professional Qualification Goals |
| 16. | Set Professional Goals |
| 17. | Set Financial goal |
| 18. | Set Family goal |
| 19. | Set Health Goals, Social Goals |
| 20. | Select Top 10 Goals |
| 21. | Apply 80/20 rule |
| 22. | Time line technique & KRAs |
| 23. | Identify short term goals |
| 24. | Begin with End in mind |
| 25. | Step 1- Decide what exactly you want |
| 26. | Step 2- Write it down |
| 27. | Step 3- Set a deadline |
| 28. | Step 4- Identify obstacles |
| 29. | Step 5- Identify knowledge, info, skills |
| 30. | Step 6- Identify skills |
| 31. | Step 7- Make a list of everything |
| 32. | Step 8- Organize your list into a plan |
| 33. | Step 9- Develop a habit of self discipline |
| 34. | Step 10- Practice visualizing your goals |
| 35. | Take your progress and celebrate success |

PR

Acharya Narendra Deva University of Agriculture and Technology Value Added Course: Personality Development

Total Credit Hours:30 hours

Course Outcome:

- Develop skills to embrace change, handle setbacks, and thrive in dynamic work environments.
- Build self-confidence, overcome self-doubt, and be able to assert oneself in professional settings.
- Improve both verbal and non-verbal communication abilities, active listening, and expressing ideas effectively.
- to provide the participant with all the tools, techniques, skill set and training required to get good grips over English language and improve his Communication Skills that keeps him in a good stead as he embarks on new vistas of professional expertise.

Syllabus

| Sr. No. | Topic | Hours |
|---------|---|-------|
| 1 | Introduction To Significance of Personality Development | 2 |
| 2 | Baseline - Self Assessment of Participants | 2 |
| 3 | Module on Communication | 2 |
| 4 | Creating Personal Image | 2 |
| 5 | IQ Vs EQ | 2 |
| 6 | Emotional Intelligence - Self assessment | 2 |
| 7 | New tips to implement – Confidence | |
| 8 | Emotional Intelligence - Review of self assessment | 2 |
| 9 | How to Win any conversation – interview | 2 |
| 10 | Powerful profile - How to make impactful Profile- CV , LinkedIn | 2 |
| 11 | Delivering High Impact interviews | 2 |
| 12 | Listening and Hearing | 2 |
| 13 | Brand Image building module and post work task | 2 |
| 14 | Discussion on the challenges to be overcome / pitfalls | 2 |
| 15 | Time management | 2 |

Acharya Narendra Deva University of Agriculture and Technology, Kumarganj,
Ayodhya
College of Agriculture
Value Added Course
Course Title: Agripreneurship Development

Objective: To develop agripreneurship skills among youth to contribute in developing paradigm shift.

| Units | Contents | Hours (32) |
|-----------|--|------------|
| 01 | Farm Management: agriculture production economy in relation to farm resources, capital, managerial factors, land resources and entrepreneurial resources. | 02 |
| 02 | Agricultural Projects: Preparation of Feasibility Report after considering different functional areas of farm management | 02 |
| 03 | Institutional Aids for Agriculture and rural development: Role of different government and non-government organization, finance, technical, marketing and advisory support provided by different organization | 02 |
| 04 | Farm Model: Contract farming, co-operative farming, collective farming, organic farming, export oriented farming | 02 |
| 05 | Contemporary issues related to agriculture: Change in government policies, marketing conditions, financial aspect, technology and production related aspect, local factors affecting agriculture and international changes relating to agriculture. | 02 |
| 06 | Meaning of Entrepreneurship and Agripreneurship: Meaning of entrepreneurship and agripreneurship, meaning of entrepreneurs, role of entrepreneurship in agricultural development, traits of an agricultural entrepreneur and scope of entrepreneurship development in agriculture. | 02 |
| 07 | Psychological, Sociological, Managerial and Economical aspect of Entrepreneurship Development | 02 |
| 08 | Role of Agripreneurship in National Economy: Areas of entrepreneurship development in agriculture, areas of agro produce processing production units, areas of agro produce manufacturing units, areas of agro input manufacturing units, area of agro Services Centre, and miscellaneous area | 02 |
| 09 | Stages of Agripreneurship Development: Establishment, survival, early growth, rapid growth and maturity stage | 02 |
| 10 | Challenges Facing Agripreneurs and Remedies: Lack of fund, lack of infrastructure, risk, marketing problem/competition. Management Problem | 02 |
| Practical | Strategies for Promoting Successful Agripreneurship Development of polices that will be fully supported by policy changes, agripreneurship education at school level with proper focus on the curriculum and training teachers, policy makers should look at agripreneurship as wealth creating mechanism, breeding of local agripreneurs, policy makers should assist farmers in becoming agripreneurs, improve capacity building of farmers by training and re-training. | 12 |

Learning Outcome: Students will be able to identify the various on-farm and off-farm opportunities that exist, and that with adequate skills and knowledge, they might become owners and managers of agri businesses.



College of Horticulture and Forestry
Value added course

Processing of Aonla Fruits for Value Addition

Credit hours: 30

Course Instructor: Dr. Bhagwan Deen

| S. No. | Topics |
|--------|---|
| 1 | Introduction |
| 2 | Objectives of Training |
| 3 | Selection of students and training method |
| 4 | Training curriculum and day to day programme |
| 5 | List of Resource Persons |
| 6 | List of Participant students |
| 7 | Materials Distributed Among Trainees |
| 8 | Trainees Pre v/s Post Evaluation Results |
| 9 | Images from training |
| 10 | Resource Materials |
| 12 | Processing of aonla fruits for value addition |
| 13 | Hygiene, Sanitation and safety in food processing units |
| 14 | Entrepreneurship development through value addition and processing of aonla |
| 15 | Preservatives for fruits and vegetables processing |
| 16 | Aonla products- Sauce, Chutney and Pickle |
| 17 | Preparation Technology of aonla based blend beverages |
| 18 | The Uttar Pradesh food processing industry policy-2017 |

Objectives of Training

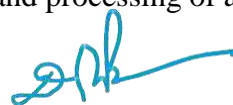
The training is conducted to fulfil the following objectives-

- To develop knowledge, skills, attitude and professional qualities in the students required for value addition to aonla fruits.
- To give hands on training on aonla processing and value addition.
- To build capacity and confidence in participant students on value addition of aonla fruits.

Training curriculum

The topics covered under training are –

- Processing of aonla fruits for value addition
- Hygiene, sanitation and safety in food processing units
- Entrepreneurship development through value addition and processing of aonla
- Preservatives for fruits and vegetables processing



(Bhagwan Deen)
Co-Organising Secretary



**Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229**

COLLEGE OF FISHERIES

Value Added Course

Course Title: Integrated Aquaculture

Objective: To enhance productivity per unit area, profitability, proper waste management, soil health management, livelihood empowerment and overall environment safety.

Outcomes: Increased input efficiency, cost minimization for input use, increased employment, recycling, continuous income round the year, energy saving.

| Units | Topics | Credit hours (40) |
|------------------|--|----------------------|
| 1. | Introduction to integrated farming system, Global scenario, fish and prawn farming in global and Indian perspective, Major cultivable fish species for IFS in India. | 4 |
| 2. | Aquaculture with agriculture-IFS Design, farming practices, cultivable species and economics of fish with vegetables, fodder, paddy | 3 |
| 3. | Aquaculture with animal husbandry- Design, Cultivated species, Farming practices, nutrient flow and cost benefit ratio of poultry, duck, cattle, pig and goat. | 4 |
| 4. | Rice cum fish culture: farm design, types of system, cultivated species of paddy and fish and case study with cost benefit ratio | 2 |
| 5. | Nutrient pathway in carp farming, nutrient value in different excreta, Productivity vs. nutrient quality and quantity of soil and water; Aquatic microorganisms and their role in carbon, Nitrogen, Phosphorus and sulphur cycles and impact on aquatic habitats and species | 4 |
| 6. | Effective recycling of wastes, nutrient budgeting in different integrated farming systems. Production levels and economics. | 2 |
| 7. | Vermicompost, farmyard manure/ compost, biogas slurry, etc. Advantages of biomanures, Control of microbial interactions, Fermentation of manures. | 2 |
| 8. | Integrated multitrophic aquaculture systems and design of an IMTA unit, Resource utilization and conversion of waste to wealth, Aqua tourism. | 4 |
| Practical | Identification of commercially important cultivable finfish and shellfish species, Estimation of water physicochemical parameters, Calculating carrying capacity of pond and stocking density; Check tray assessment and feed ration calculation; Sampling process and species wise growth estimation; Farm feed production and feeding; Lime and fertilizer requirement calculations; Farm visits and observation; Records keeping and data analysis; Modelling of different culture systems. | 15 |

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**Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229**

COLLEGE OF FISHERIES

Value Added Course

Course Title: Fish Processing and Value Addition

Objective: Value addition and conversion of low cost raw materials into different types of products.

Outcomes: Increased input efficiency, cost minimization for input use, increased employment, recycling, continuous income round the year, energy saving.

| UNIT | Topic | Credit hours (45) |
|------------------|---|-------------------|
| Theory | | 39 |
| 01. | Overview of value-added products: Present market trends, scope of value addition, types of value addition, important value-added products | 2 |
| 02. | Composition of muscle proteins in fish and their role in emulsification and elasticity formation | 3 |
| 03. | Protein structure and function: Protein folding and non-covalent forces stabilizing protein structure with special reference to hydrophobic interactions | 3 |
| 04. | Factors influencing denaturation of muscle proteins and their theories. Methods to testing protein denaturation | 2 |
| 05. | Gelation: Definition of gel, mechanism of formation of gel, factors affecting the gel formation. Evaluation of gelling capacity | 3 |
| 06. | Minced fish meat: equipment for mince preparation, effect of mincing on physical and chemical properties; Different types of mince-based products | 3 |
| 07. | Freeze drying, principles, application of phase rule, triple point of water, sublimation of ice, accelerated freeze drying (AFD), shelf life and specialties of AFD products, process flowchart | 3 |
| 08. | Surimi: basic concepts, different unit operations. Cryoprotectants in surimi-hypothesis and mechanisms, packaging, freezing and storage. Unit operations in analogue product preparation- Crab stick analogues, moulded lobsters and crabs. | 3 |
| 09. | Battered and breaded products: different types and their preparation, nutritional and economic significance of products | 2 |
| 10. | Ready-to-eat and ready-to-cook products- Extruded fish products: Mechanism of extrusion, types of extruders, mechanical and chemical changes during extrusion, parameters affecting quality of extruded product, cook-chill process | 3 |
| 11. | Seaweeds: Resources, global and Indian scenario. Biochemical components in Seaweeds. Edible seaweeds – Nutritive value of seaweeds | 3 |
| Practical | | 15 |
| 1. | Preparation of surimi gel, development of fish and shellfish pickles, preparation of dried, marinades, smoke products, fish cutlet, fish ball, fish finger, fish sausage, fish momo and fish soup | |
| Total | | 45 |

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Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229

COLLEGE OF FISHERIES

Value Added Course

Course Title: Taxonomic identification of commercially
Important finfishes and shellfishes

Objective: To identify locally available fishes by different taxonomical tools.

Outcomes: It will help to develop the fish identification skill and operating procedure of different taxonomical tools to the students.

| Units | Contents | Hours |
|-----------|--|-----------|
| 1. | Basics of fish taxonomy. | 2 |
| 2. | Morphological, morphometric and meristic characteristics of taxonomic significance of Indian Majors carps | 2 |
| 3. | Study of external morphology and meristic characteristics of crustacea | 3 |
| 4. | Study of external morphology and meristic characteristics of mollusca | 3 |
| 5. | Morphological, morphometric and meristic characteristics of taxonomic significance of major Indian marine fishes. | 3 |
| 6. | Classification of crustacea up to the level of species with examples of commercially important species | 3 |
| 7. | Classification of mollusca up to the level of species with examples of commercially important species | 3 |
| 8. | Morphological, morphometric and meristic characteristics of taxonomic significance of commercially important catfishes in Uttar Pradesh. | 3 |
| 9. | Morphological, morphometric and meristic characteristics of taxonomic significance of commercially important small indigenous fishes in Uttar Pradesh. | 3 |
| 10. | Introduction to modern taxonomic tools; karyotaxonomy, DNA barcoding, protein analysis and DNA polymorphism. | 3 |
| Practical | Visit to Inland fish landing centers to study commercially important fishes and catch composition. Study of external morphology and diagnostic features, preservation and identification of commercially important inland and marine fishes. Study of external morphology. Collection, preservation and identification of commercially important prawns, shrimps, crabs, lobsters, bivalves, gastropods, cephalopods from natural habitats | |
| | Total contact Hrs | 41 |

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Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229

COLLEGE OF FISHERIES

Value Added Course

Course Title: Basic Soil and Water Chemistry for Aqua-Farming

Objective: To develop the awareness of important soil and water quality parameters in aquaculture practices.

Outcomes: It will help to develop the skill to measure the soil and water quality parameters by using different equipments.

| Units | Contents | Hours |
|------------------|--|-----------|
| 1. | Soil and water interaction; Physical and chemical properties of soil and water (Temperature, pH, TDS, Turbidity, DO, Hardness, Alkalinity, Phosphorus, Ammonia, Nitrite, Nitrate and chlorophyll). | 6 |
| 2. | Productivity v/s nutrient quality and quantity of soil and water, aquatic microorganisms and their role in carbon, nitrogen, phosphorus and sulphur cycles and impact on aquatic habitats and species. | 5 |
| 3. | Soil and water quality standards; soil and water quality monitoring and management. | 3 |
| 4. | Fertilizers and manures: Different kinds of fertilizers and manures, fertilizer grade, source and frequency of application, Bio-fertilizers, Ecological changes taking place after fertilizing, Primary production, utilization of bioactive compounds by microorganisms. | 6 |
| 5. | Soil and water quality management, seepage, water treatment, water filtration devices, aeration, chlorination, algal bloom control, eutrophication, Aquatic weed management, Waste water treatment practices, Water quality management in hatcheries. | 8 |
| Practical | Equipment used in soil and water analysis; Soil sampling, determination of soil moisture and bulk density; pond filling, analyses of mud acidity and soil texture, Measurements of temperature, pH, transparency, turbidity TDS; Analyses of dissolved oxygen, alkalinity and hardness, phosphorus, Ammonia, Nitrite, Nitrate; Estimation of primary productivity and chlorophyll; Application of fertilizers and pond liming; Analysis of toxic elements; Microbial techniques; Visit to effluent treatment plant | 18 |
| | Total contact Hrs. | 46 |

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**Acharya Narendra Deva University of Agriculture and
Technology, Kumarganj, Ayodhya-224229**

COLLEGE OF FISHERIES

Value Added Course

Course Title: Fish Feed Formulation and Feeding Practices

Objective: To make cost effective fish feed by utilization of locally available ingredients and application methods of feed for proper utilization.

Outcomes: Skill development for fish feed formulation and feeding practices to minimize production cost.

| Units | Contents | Hours |
|--------------------------|--|-----------|
| UNIT I | Significance of ingredients and feed nutrients: Protein, Lipid, carbohydrates, vitamin and minerals | 3 |
| UNIT II | Feed formulation: General principles, methods of feed formulation and different steps of feed formulation | 3 |
| UNIT III | Feed processing technology: Common processes in feed manufacture; Grinding, Dosing, Homogenization; Extrusion cooking; Complimentary processes: Drying, crumbling, coating; Use of binders | 3 |
| UNIT IV | Feed manufacture productions with high energy diets vacuum coating with lipid. Equipments used in feed manufacture; Pulverizer, grinder, mixer, pelletizer, crumbler, drier, Extruder/ Expander, Vacuum coater, fat sprayer | 3 |
| UNIT V | Types of feed: Dry (pellets, flakes, powdered, micro-encapsulated, micro-bound and micro-coated diets) and non-dry, Farm made feeds- Experimental diets: Reference diet, purified and semi-purified diet). Compact pellet feed, floating and slow sinking pellet feeds | 4 |
| UNIT VI | Feed storage: Hydro-stability of feed and their storage; Prevention of spoilage from rancidity, fungus and associated toxins; Fish disease vectors in feed and quality control; Feed value in relation to processing; Use of natural and synthetic carotenoids; Feed additives, Safety of farm fish products-harmful residues (pesticides, antibiotics, pollutants), | 4 |
| UNIT VII | Effects of processing on the nutritional value of feeds, effect of processing on the availability and nutritional value of vitamins and trace minerals | 2 |
| UNIT VIII | Digestion and absorption physiology of fish: Digestive organs and their role, Absorption and transportation of energy nutrients, minerals and vitamins. Transport: types-active, passive and facilitated. | 3 |
| UNIT IX | Evaluation criteria of fish feed: FCR, SGR, PER, NPU. | 1 |
| Practical | Selection of fish feed ingredients for feed preparation. Estimation of proximate composition of feed and ingredients. Fish feed preparation, Preparation of high energy diet, Estimation of water stability of feed, Particle size determination of feed, Evaluation of growth parameters and feed responses. | 14 |
| Total contact Hrs | | 40 |

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Acharya Narendra Deva University of Agriculture and
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COLLEGE OF FISHERIES

Value Added Course

Course Title: Re-circulatory aquaculture system(RAS)

Objective: To develop the operational skill of recirculating aquaculture systems (RAS)

Outcomes: It will provide a platform for the students to operate the commercial RAS unit to increase the production per unit area.

| Units | Contents | Hours (40) |
|------------------|--|---------------|
| 1. | Overview of recirculating aquaculture systems (RAS) engineering | 2 |
| 2. | Water quality objectives, monitoring and measurement Soil and water interaction; Physical and chemical properties of soil and water (Temperature, pH, TDS, Turbidity, DO, Hardness, Alkalinity, Phosphorus, Ammonia, Nitrite, Nitrate and chlorophyll). | 4 |
| 3. | Engineering design of individual unit processes | 5 |
| 4. | Re-circulatory aquaculture system management | 4 |
| 5. | Fish health management | 4 |
| 6. | Economic and risk evaluation | 1 |
| Practical | Equipment used in soil and water analysis; Soil sampling, determination of soil moisture and bulk density; pond filling, analyses of mud acidity and soil texture; Measurements of temperature, pH, transparency, turbidity TDS; Analyses of dissolved oxygen, alkalinity and hardness, phosphorus, Ammonia, Nitrite, Nitrate; | 18 |

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Department of Food Science and Nutrition
College of Community Science
Value Added Course: Basic Cookery

| S. No. | Topic | Hour |
|--------|---|---------------------------|
| 1. | Objectives of cooking and terms used in cooking | 2 |
| 2. | Introduction to equipments in laboratory | 2 |
| 3. | Weights and measures | 2 |
| 4. | Cooking methods | 2 |
| 5. | Cereal cookery | 2 |
| 6. | Millets cookery | 2 |
| 7. | Pulse cookery | 2 |
| 8. | Fermented cereals and pulse cookery | 2 |
| 9. | Vegetable cookery | 2 |
| 10. | Milk and milk products | 2 |
| 11. | Fruits cookery | 2 |
| 12. | Soups | 2 |
| 13. | Beverages | 2 |
| 14. | Packed lunch | 2 |
| 15. | Snacks | 2 |
| | Total | 30 hours |

Sadhna Singh

Sadhna Singh

Dept. of Food Science & Nutrition
 College of Community Science
 N.D.U.A.S. Lucknow-224228

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अधिष्ठाता
 समुदायिक विज्ञान महाविद्यालय
 आर्य समाज, कुमायवाड़ी एवं प्रीतिपुरी
 कुमायवाड़ी-अयोध्या

College of Community Science

Department of Human Development and Family Studies

Value added course - Early Childhood Education and Care

Period - 20 days (40 contact hours)

Credit - 2 (0+2)

Course content:

Introduction of early childhood and its characteristics, Importance of early childhood education and care, Role of parents and community in the development of early childhood, Developmental norms of early childhood care, Introduction Of Developmental Assessment Of Young Children With Different Tools and Techniques, Use And Handling Of Assessment Tools For Physical Development, Use And Handling Of Assessment Tools For Language Development, Use And Handling Of Assessment Tools For Cognitive Development, Use And Handling Of Assessment Tools For Academic Development, Planning activities for language development, Planning activities for socio-emotional development, Preparation of material for motor development of young children , Preparation of material for language development of young Children . Preparation of material for concept (number, size, shape etc) development of young children, Introduction of types ECE centers and ECE programs, Visit to different types of ECE center, Designing the activity corners in ECE Center, Introduction of behavioral problems, Identification of pre-primary children with mild behavioral problems , Planning and execution of strategies of children with mild behavioral problems, Evaluation of strategies planned for children with mild behavioral problems, Summary of the course, Report writing , Presentation of reports and action plan .

Outcome :

- Gain knowledge of characteristics of early childhood period
- Different area of development- process and factors
- Concept in early childhood education
- Learn to develop different material suitable for different area of development
- Different play activities in ECE centers- indoor and outdoor
- Identification of children with mild behavioral problem

Adarsh

Dr. Adarsh

सामुदायिक विज्ञान विभाग
आर्य समाज विश्वविद्यालय
मुंबई-४०००७५

He

HOD (HDS)

Value Added Course

Title: Biofertilizer Technology

Course Instructors: Dr. Alok Kumar Pandey and Dr. Adesh Kumar

Course Content

| S. No. | Topic | No. of Lectures / Practical Sessions |
|--------|--|---|
| 1 | Introduction to Biofertilizers & Advantages of biofertilizers over chemical fertilizers | 2 + 0 |
| 2 | Types of Plant growth promoting Microorganisms and their mechanisms of plant growth promotion | 2 + 2 |
| 3 | Media preparation and isolation of Plant growth Promoting Microorganisms from soil | 2 + 4 |
| 4 | Microbial staining techniques; Microscopic Techniques for visualization, enumeration and identification of Biofertilizer strains | 2 + 4 |
| 5 | Fertilizer Control Order of Govt. of India & Regulatory guidelines for different Commercial Biofertilizer Formulations | 3 + 0 |
| 6 | Mass scale production of Biofertilizers and Methods of Quality Control | 2 + 4 |
| 7 | Preparation of carrier based biofertilizers formulations | 2 + 3 |
| 8 | Field application techniques | 1 + 3 |

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Dean, College of Agriculture
A. N. D. Univ. of Agric. &
Kumarganj - Ayodhya

DEPARTMENT OF ENTOMOLOGY

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE & TECHNOLOGY,
KUMARGANJ, AYODHYA

Value added Course

Title –Beekeeping

Course Instructor- Dr. Umesh Chandra and Dr. Sameer Kumar Singh

Course Content-

| S. No | Topic | No. of Lecture |
|-------|---|----------------|
| 1. | History of Beekeeping in India | 01 |
| 2. | Importance of Beekeeping | 01 |
| 3. | Bee biology (Anatomical and physiological adaptations) | 03 |
| 4. | Commercial methods of honey bee rearing | 03 |
| 5. | Equipment used in Beekeeping | 03 |
| 6. | Bee pasturage, bee foraging and communication | 03 |
| 7. | Seasonal Management of Honey bees | 04 |
| 8. | Good apicultural practices for enhancing honey productivity | 02 |
| 9. | Minimizing pesticidal hazards to honey bees | 02 |
| 10. | Insect pests and diseases of honey bee | 04 |
| 11. | Enhancing crop productivity through managed bee pollination | 03 |
| 12. | Honey Extraction, processing and packaging techniques | 02 |
| 13. | Production and Processing of Other Bee Products | 04 |
| 14. | Marketing of hive products | 02 |
| 15. | Organic honey production guidelines | 02 |

Head

DEPARTMENT OF PLANT PATHOLOGY

Acharya Narendra Deva University of Agriculture & Technology, Kumarganj, Ayodhya
Value Added course

(Mushroom Cultivation and Post Harvest Management) 35 Hrs Program

| S. No | Theory | | Hours (13 Hrs) | Practical | | Hours (22 Hrs) | Instructions to the teacher | Learning Outcomes (After going through the particular PCP learner will be able to...) |
|-------|--------|---|-------------------|--|-------|---|---|--|
| | Day | Topic | | Topic | Topic | | | |
| 1. | Day 1 | Introduction to mushroom | 2 | <ul style="list-style-type: none">• Orientation to a mushroom farm• Identification of different types of mushrooms | 3 | <ul style="list-style-type: none">• Use relevant ppt/ videos showing the importance of mushroom from agricultural, health and industrial point of view and scope of income.• Show relevant success stories in nearby locality.• Arrange visit to nearby mushroom farm in advance. | <ul style="list-style-type: none">• Display intellectual competence on the knowledge about the importance of mushroom production and its economic value• Identify various types of mushroom grown economically | |
| 2. | Day 2 | Mushroom Spawn (seed) production/ procurement | 2 | <ul style="list-style-type: none">• Preparation of pure culture• Preparation of mother spawn• Production of planting spawn• Storage | 3 | <ul style="list-style-type: none">• Explain quality spawn production for different mushroom using models/charts/ specimen.• Explain cautions to be taken for procurement of mushroom spawn | <ul style="list-style-type: none">• Demonstrate technologies for spawn production.• Follow recommended procedure for quality spawn production | |


| | | | | | | | |
|----|-------|--------------------------------|---|---|---|---|--|
| | | | | <ul style="list-style-type: none"> • Transportation of spawn | | <p>from authentic source using relevant audio video Aids.</p> <ul style="list-style-type: none"> • Demonstrate procedures for production of quality product. | |
| 3. | Day 3 | Making and spawning of compost | 2 | <ul style="list-style-type: none"> • Wetting and mixing of ingredients in mixture • Outdoor fermentation in stacks/ turning schedule by long method | 4 | <ul style="list-style-type: none"> • Demonstrate procedures using appropriate tools and equipments. Explain precautions to be followed. | <ul style="list-style-type: none"> • Perform wetting & mixing of ingredients • Perform the turning of mixture by long method at proper time |
| 4. | Day 4 | Cultivation of button mushroom | 3 | <ul style="list-style-type: none"> • Short method of composting done in two phases: phase-1 (Outdoor/ bunker) and phase-2 bulk pasteurisation chambers) • Spawning of compost/ spawn run • Casing and casing run • Cropping and harvesting of mushrooms | 6 | <ul style="list-style-type: none"> • Demonstrate procedures using appropriate tools and equipments. • Explain quality control methods. | <ul style="list-style-type: none"> • Describe various phases of short methods of composting • Perform the spawning of compost, casing & casing run |

| | | | | | | | |
|----|-------------|--------------------------------|---|---|---|---|--|
| 5. | Day 5 and 6 | Cultivation of Oyster mushroom | 2 | <ul style="list-style-type: none"> • Substrate formulation, Substrate wetting and treatments: Hot water/ steam • Spawning of substrate and filling in container/ bag, spawn run • Exposing of bags for cropping • Cropping and harvesting of mushroom | 3 | <ul style="list-style-type: none"> • Demonstrate procedures using appropriate tools and equipments. • Explain precautions and quality control methods to be taken | <ul style="list-style-type: none"> • Summarize the Oyster mushroom production procedure • Perform the spawning of compost • Harvest mushroom at appropriate stage and post harvest handling |
| 6. | Day 7 | | 2 | <ul style="list-style-type: none"> • Post harvest handling • Packaging of mushroom • Long and Short term storage technique • Other value added products like; canning and powder making | 3 | <ul style="list-style-type: none"> • Demonstration of different techniques related to post harvest • Explain techniques of storing and preservation • Explain of various dishes and product making process | <ul style="list-style-type: none"> • Harvest mushroom at appropriate stage and post harvest handling • Learning of storage techniques and other product preparation and marketing |

Training Instructor: Dr. S. N. Rahul and Dr. Sushil Kumar Singh

Department of Agril. Economics
College of Agriculture
Value Added Course: Production and Marketing Management of Farm Products

| S.No. | Topics | Hour |
|-------|--|---------------------|
| 1. | Management: definition, characteristics, importance | 2 |
| 2. | Functions and levels. Skill and process. | 2 |
| 3. | Production management: its meaning, definition, functions, importance and scope. | 2 |
| 4. | Production, marketing decision and optimal use of resources and funds | 2 |
| 5. | Supply chain, total quality management and value chain analysis | 2 |
| 6. | Marketing planning process. Product-mix, product line and product life cycle | 2 |
| 7. | New product development process. Product brand, packaging. | 2 |
| 8. | Service decisions, marketing channels decision, pricing decision | 2 |
| 9. | Promotion mix decision. Price discrimination and determinates of farm products | 2 |
| 10. | Market measurement: market forecasting, price discovery. | 2 |
| 11. | Market research and intelligence. | 2 |
| 12. | Market segmentation, targeting and positioning | 2 |
| 13. | Constraints incurred during production and marketing of farm products | 2 |
| 14. | Determine the global and regional | 2 |
| 15. | Food consumption patterns and trends | 2 |
| | Total | 30 hours |

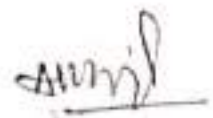

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 Kumarganj - Ayodhya

Department of Agronomy

A.N.D. University of Agriculture and Technology, Kumarganj, Ayodhya, U.P.-224229

Course Name: Natural Farming

| S.No. | Contents | No. of lectures |
|-------|---|-----------------|
| 1. | Definition, concept and scope, aims and objectives, uses and benefits, | 2 |
| 2. | Difference between natural and organic farming, difference between natural and chemical farming | 2 |
| 3. | Hurdles in natural farming, importance of desi cow (Indian breed), composition of urine and dung (cow, buffalo, goat and poultry) | 3 |
| 4. | Components of natural farming | 2 |
| 5. | Bijamrit, Jivamrit, Ghanjivamrit (ingredients, composition, method of preparations, application methods in crops, advantages) | 4 |
| 6. | Mulching, concept, types and benefits | 4 |
| 7. | Importance of soil aeration (waaphasa) in natural farming | 2 |
| 8. | Importance of cropping systems, crop rotation, trap crops in natural farming | 2 |
| 9. | Seed selection for natural farming, role of sour desi cow whey in natural farming as fungicide | 2 |
| 10. | Plant protection through Agniyastra, Bramhastra, Neemastra, Sonthastra and Dasparni ark | 4 |
| 11. | Role of microbes and earthworms | 2 |
| 12. | Impact of natural farming on soil and environment health, productivity, biodiversity and underground water strata | 2 |



Dr. Anuj
A.N.D. University of Agriculture and Technology
Kumarganj, Ayodhya, U.P.-224229

Department of Agril. Economics
College of Agriculture
Value Added Course: Soft Skills for Entrepreneurship Development

| S.No. | Topics | Hour |
|-------|---|---------------------|
| 1. | Effective Communication: Modes of communication, Barriers to effective communication | 2 |
| 2. | Body language, posture, gestures, facial expressions, eye contact, voice tone, modulation, etc. | 2 |
| 3. | Preparing and organizing a presentation, Effective use of visual aids | 2 |
| 4. | Effective integration of communication and presentation techniques in delivery of professional presentations. | 2 |
| 5. | Pronunciation, fluency, Presentation to heterogenic group. | 2 |
| 6. | Reception, attention, interpretation, openness, clarification, understanding non-verbal cues | 2 |
| 7. | Self awareness reflection and introspection, tools of self awareness | 2 |
| 8. | Self motivation and self regulation Emotional intelligence | 2 |
| 9. | Resilience Anger management, Conflict management, Interpersonal behavior | 2 |
| 10. | Etiquettes and social norms in interpersonal relationships | 2 |
| 11. | Effective Team worker, Promote cooperation, Clarifying goals | 2 |
| 12. | roles and responsibilities of team members | 2 |
| 13. | Eliciting commitment, constructive criticism, feedback, team problem solving, managing conflicts in team | 2 |
| 14. | Goal setting, planning, setting deadlines, prioritizing and scheduling of the activities, overcoming procrastination, self determination, | 2 |
| 15. | Coping with stress and anxiety, enthusiasm, achievement orientation, | 2 |
| | Total | 30 hours |

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 Kumarganj - Ayodhya

**Department of Veterinary Public Health and Epidemiology College of
Veterinary Science & Animal Husbandry**

Value Added Course- Quality Assurance of Milk and Milk Products

Objective: To impart knowledge of microbial and chemical quality of milk.

| Sl. No. | Topic | Hours |
|---------|---|--------|
| 1. | Introduction to Quality Assurance in milk and milk products | 2 |
| 2. | Measurement of titrable acidity of milk | 2 |
| 3. | Grading of milk by dye reduction test | 2 |
| 4. | Microbiological examination of raw milk by DMC | 2 |
| 5. | Microbiological examination of raw milk by SPC | 2 |
| 6. | Detection of fecal contamination of milk and milk products | 2 |
| 7. | Adulteration in milk and milk products | 2 |
| 8. | Detection of neutralizer in milk | 2 |
| 9. | Detection of urea in milk | 2 |
| 10. | Detection of thickening agent in milk | 2 |
| 11. | Detection of preservative in milk | 2 |
| 12. | Detection of neutralizer in milk | 2 |
| 13. | Detection of adulterants in milk products | 2 |
| 14. | Determination of efficiency of pasteurization | 2 |
| 15. | Tests for detection of mastitic milk | 2 |
| | Total | 30 hrs |

Course Outcome:

The course will help the students to identify microbial quality of milk and types of adulteration in milk.



(Dr. Namita Joshi)

Department of Fruit Science
College of Horticulture and Forestry
Value Added Course: Nursery Production and Management

| Sr. No. | Topics | Hours |
|--------------------|---|-----------|
| 1. | Introduction and importance of plant propagation and nursery management | 3 |
| 2. | Use of tools and implements for nursery production | 3 |
| 3. | Sexual and asexual methods of plant propagation | 3 |
| 4. | How to break seed dormancy | 3 |
| 5. | Asexual methods: cutting | 3 |
| 6. | Asexual methods: budding | 3 |
| 7. | Asexual methods: grafting | 3 |
| 8. | Selection and maintain of mother tree, collection of scion wood sticks | 3 |
| 9. | Visit to tissue cultured laboratory | 3 |
| 10. | Weeding, Irrigation and nutrients managements | 3 |
| Total Hours | | 30 |



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 College of Horticulture & Forestry
 A.N.D.U.A.T. Kumarganj
 Ayodhya (U.P.)

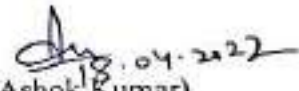


(Sanjay Pathak)
 Professor and Head
 Department of Fruit Science
 Ayodhya (U.P.)

Department of Floriculture and Landscaping
College of Horticulture and Forestry
Value Added Course: Bonsai and Flower Arrangement

| Sr. No. | Topics | Hours |
|--------------------|--|-----------|
| 1. | Bonsai and its importance and scope | 3 |
| 2. | Selection of plants suitable for bonsai making | 3 |
| 3. | Nutrients management in bonsai plants | 3 |
| 4. | Water management of bonsai plants | 3 |
| 5. | Display methods of bonsai plants | 3 |
| 6. | Types of flowers arrangement | 3 |
| 7. | Techniques of flower arrangement | 3 |
| 8. | Techniques in floral decoration | 3 |
| 9. | Identification of plants for dry flower making | 3 |
| 10. | Preparation of dry flower baskets and bouquets | 3 |
| Total Hours | | 30 |


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(Ashok Kumar)
Head
Deptt. of Floriculture and Landscaping

Department of Vegetable Science
College of Horticulture & Forestry
Course of Value Addition: Protected Cultivation of Horticultural Crops

| Sr. No. | Topic | Hour(s) |
|--------------|---|-----------|
| 1. | Protected cultivation- importance and scope | 2 |
| 2. | Designs and fabrication of Protected Structures | 2 |
| 3. | Design and development of low cost greenhouse structures | 2 |
| 4. | Types of greenhouse/polyhouse/nethouse, hot beds, cold frames | 2 |
| 5. | Effect of environmental factors, viz. temperature, light, CO ₂ and humidity on growth of different crops, manipulation of CO ₂ , light and temperature for horticultural production | 2 |
| 6. | Production systems and media for Protected Cultivation | 2 |
| 7. | Propagation and production of quality planting material of horticultural crops | 2 |
| 8. | Plug-Tray Nursery Raising Technology for Vegetables | 2 |
| 9. | Greenhouse cultivation of Tomatoes, Sweet Peppers, Cucumbers, Muskmelon, Strawberry | 2 |
| 10. | Greenhouse cultivation of Rose, Carnation, Chrysanthemum, Gerbera, Orchid, Anthurium | 2 |
| 11. | Cultivation of economically important medicinal and aromatic plants | 2 |
| 12. | Off-season cultivation of cucurbits under plastic low tunnels | 2 |
| 13. | Vegetable Grafting for growing under protection | 2 |
| 14. | Drip irrigation and Fertigation in Protected Cultivation | 2 |
| 15. | Integrated Disease/Pest Management in Greenhouse | 2 |
| Total | | 30 |



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 Ayazhya (U.P.)



 (GC Yadav)
 - Head
 Department of Vegetable Science
 Dept. Vegetable Science
 ANO U.A.T. Kumarganj

Department of Livestock Production Management
College of Veterinary Science and Animal Husbandry
Value Added Course – “Broiler Poultry Production”

Objective: To impart knowledge of broiler management

| S. No. | Topic | Hours |
|--------|---|---------------|
| 1. | Visit of poultry farm | 1 |
| 2. | Handling of broiler birds and Identification of external body parts | 2 |
| 3. | Breeds and varieties of broiler birds | 2 |
| 4. | Digestive system of broiler chicken | 1 |
| 5. | Reproductive system of broiler chicken | 1 |
| 6. | Establishment of commercial broiler farm | 1 |
| 7. | Selection of site for commercial broiler farm | 1 |
| 8. | Housing system of broiler birds | 2 |
| 9. | Cleaning and Sanitation of broiler farm | 1 |
| 10. | Introduction of poultry farming equipments | 1 |
| 11. | Preparation of shed before brooding | 1 |
| 12. | Feeding Management of broiler birds | 1 |
| 13. | Common feed ingredients used in broiler feed | 1 |
| 14. | Brooding management of broiler chicks | 1 |
| 15. | Health care and management | 2 |
| 16. | Common diseases in broilers | 2 |
| 17. | Vices of broilers, their prevention and control measures | 1 |
| 18. | Care and management of broilers during summer | 1 |
| 19. | Care and management of broilers during winter | 1 |
| 20. | Care and management of broilers during rainy season | 1 |
| 21. | Slaughtering and dressing of broiler chicken | 2 |
| 22. | Preservation of broiler meat | 2 |
| 23. | Record keeping in broiler farm | 1 |
| | Total | 30 hrs |

Course Outcome- The course will help the students to develop their own poultry farm and entrepreneurship skill development.


 5.7.2022
 (S.S. CHAUHAN)
 Asso. Prof.
 Dept. of LPM

Department of Post-Harvest Management
College of Horticulture and Forestry
Value Added Course: Packaging and Storage of Horticultural Crops

| Sr. No. | Topics | Hours | |
|-------------------------------|--|-----------|-----------|
| | | Theory | Practical |
| 1. | Importance of packaging of fresh and processed horticultural produce, present status and future scope | 1 | 2 |
| 2. | Packaging requirements of fresh horticultural produce | 1 | 2 |
| 3. | Packaging patterns and methods. | 1 | 2 |
| 4. | Food packaging systems: Traditional, improved and specialized packages | 1 | 2 |
| 5. | Paper based packages: Flexible packaging materials | 1 | 2 |
| 6. | Barrier properties of packaging materials | 1 | 2 |
| 7. | New technology in packaging – stretch wrapping system, vacuum packaging, gas packaging, controlled atmosphere. | 1 | 2 |
| 8. | Quality control and safety aspects of packaging materials. | 1 | 2 |
| 9. | Controlled or modified atmosphere (CA/MA) storage – principles, uses, structures and equipments, methods and requirements. | 1 | 2 |
| 10. | Environmental and cost consideration in selecting packaging materials. | 1 | 2 |
| Total Hours (20+10=30) | | 10 | 20 |

Course outcome:

This course will help to the students, to identify of different types of packaging materials and storage for keeping of different commodities for longer shelf life of commodities.


 (Hitesh Kumar)
 Assistant Professor
 Department of Post Harvest Management
 College of Horticulture and Forestry
 University of Agricultural Sciences, Raipur
 C.G. P.O., Raipur, Chhattisgarh, India

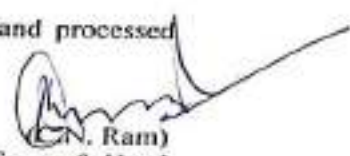
Course Programme for processing and value addition of spice crops

| S.N. | Course title: processing and value addition of spice crops | Time duration (36 Hours) |
|------|--|--------------------------|
| 1. | Introduction, importance of value addition, present status in India, problems, prospects and scope of value addition in different spice crops. | 2 Hrs |
| 2. | Nutrient management and quality of spices | 2 Hrs |
| 3. | Maturity indices and harvesting methods of different spice crops grown under Uttar Pradesh condition | 2Hrs |
| 4. | Importance of post-harvest management of spice crops | 2 Hrs |
| 5. | International quality standards for different spices | 2Hrs |
| 6. | Postharvest handling and processing of spice crops | 2 Hrs |
| 7. | Status of spices processing in India | 1 Hrs |
| 8. | Pack-house operations for harvested spice crops. | 1 Hrs |
| 9. | Processing unit for different spices and value added products | 1 Hrs |
| 10. | Processing technology of different spice crops | 1 Hrs |
| 11. | Processing technology of coriander | 1 Hrs |
| 12. | Processing technology of fennel | 1 Hrs |
| 13. | Processing technology of black cumin | 1 Hrs |
| 14. | Processing technology of fenugreek, | 1 Hrs |
| 15. | Processing technology of turmeric | 1 Hrs |
| 16. | Processing technology of ginger | 1 Hrs |
| 17. | Value added products of different spice crops | 1 Hrs |
| 18. | Value added products of turmeric | 1 Hrs |
| 19. | Value added products of ginger | 1 Hrs |
| 20. | Value added products of coriander | 1 Hrs |
| 21. | Value added products of fenugreek | 1 Hrs |
| 22. | Value added products of black cumin | 1 Hrs |
| 23. | Value added products of Nigella | 1 Hrs |
| 24. | Storage methods of different spice crops | 1 Hrs |

| | | |
|-----|---|-------|
| 25. | Packaging and labelling of different spice crops | 2 Hrs |
| 26. | Packaging and labelling of different processed products of spice crops Use of standard containers for proper storage of products. | 2 Hrs |
| 27. | GAP(Good Agricultural Practices) and GHP(Good Hygiene Practices)GMP(Good Manufacturing Practices) | 1 Hrs |
| 28. | Marketing of value added products of different spices | 1 Hrs |

Course Outcome:

The course will be helpful for the students to identify various machineries and processed products from spices.



(N. Ram)
Professor & Head
Department of Vegetable Science

**Acharya Narendra Deva University of Agriculture and Technology, Kumarganj,
Ayodhya**
Mahamaya College of Agricultural Engineering & Technology, Ambedkar Nagar
Value Added Course

Course Title: Dairy and Food Process and Products Technology

Objective: To enhance the understanding of dairy and food process and products technology

| Units | Contents | Hours(37) |
|-------|---|-----------|
| 1 | Basic principles and methods of food processing and preservation. | 1 |
| 2 | Emerging Technologies in food processing. Food additives and preservatives. | 2 |
| 3 | Food laws and standards. Effect of processing on acceptability and nutritive value of food. | 2 |
| 4 | Physico-chemical properties and structure of milk and milk constituents. | 2 |
| 5 | Chemical and microbial spoilage of milk and milk products | 2 |
| 6 | Fluid milk Processing, packaging and distribution. | 2 |
| 7 | Common dairy processes – cream separation (standardization), pasteurization, sterilization and Homogenization. | 1 |
| 8 | Process technology for manufacture of evaporated milk, condensed milk, dried milk, malted milk, infant and baby foods, ice-cream. | 4 |
| 9 | Methods and procedures for sampling and testing of milk and milk products. | 2 |
| 10 | Laws and standards for milk and milk products. | 1 |
| 11 | Technological processes for industrially manufactured foods of commercial importance, from plant and animal origin. | 2 |
| 12 | Cereals, vegetables, fruits, meats, poultry and egg products; | 2 |
| 13 | Bakery, pasta and confectionary products, ready to eat foods, fermented foods. | 2 |
| 14 | Alcoholic and non- alcoholic Beverages, tea, coffee and cocoa, fabricated foods. | 1 |
| 15 | Packaging materials; Characteristics, properties and their design. | 1 |
| 16 | Packaging requirement for different processed and unprocessed foods. | 2 |
| 17 | Working Principles of various type of fillers: form-fill- seal machine. | 1 |
| 18 | Shelf life prediction of foods in packages. | 2 |
| 19 | Quality control in Food packaging. | 2 |
| 20 | Gas packaging and modified atmosphere Package design. | 1 |
| 21 | Product safety and packaging regulations. | 2 |

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Learning Outcome: On the completion of the course students will be able to understand the course and will provide an elaborate analysis of food processing, food production, and preservation techniques that are usually not included in agricultural engineering courses. Through the course, learners will develop a comprehensive understanding of various food processing and preservation techniques that contributes to their future work in the field. The Dairy and Food Process and products technology course is suitable for learners who wish to establish their career in the field of agricultural and food engineering.

Course Title: Micro Irrigation Engineering

Objective: To impart knowledge of water-efficient micro irrigation systems.

| Units | Contents | Hours(40) |
|-------|--|-----------|
| 1. | Micro-Irrigation: Introduction and Scope, Fundamentals of Fluid Mechanics and its Application in Micro Irrigation, Soil Water Concept, Soil Water Constants and Infiltration | 2 |
| 2. | Tutorial 1-Numerical Examples on Fluid Mechanics and Soil Water | 1 |
| 3. | Evapotranspiration, Determination of Evapotranspiration, Crop Coefficients and Crop Water Requirement. | 1 |
| 4. | Demonstration of Agro-Meteorological Instruments, Demonstration of Lysimeter. | 1 |
| 5. | Tutorial 2 - Numerical Examples on Crop Water Requirement | 1 |
| 6. | Irrigation Scheduling, Soil and Plant Water Monitoring Instruments, Measurement of Irrigation Water, Irrigation Efficiency | 1 |
| 7. | Tutorial 3 - Numerical Examples on Irrigation, Water Management | 1 |
| 8. | Introduction of Water Lifts and Pumps, Variable Displacement Pumps, Irrigation Water Quality | 1 |
| 9. | Tutorial 4 - Numerical Examples on Water, Measurements and Pumps | 1 |
| 10. | Irrigation Methods , Micro Irrigation System: Concept and Types, | 1 |
| 11. | Drip Irrigation: Introduction and Types, Drip Irrigation: Design Considerations & System Layout, Types and Selection of Emission Devices, Hydraulics of Drip Irrigation System Pipe Network. | 2 |
| 12. | Tutorial 5 - Numerical Example on Design of Drip Irrigation System | 1 |
| 13. | Fertigation, Fertigation Application Methods, Drip Irrigation: Filtration System | 1 |
| 14. | Tutorial 6 - Numerical Examples on Emission Devices and Fertigation. | 1 |
| 15. | Installation and Operation of Drip Irrigation System, Maintenance of Drip Irrigation System, Demonstration of Drip Irrigation Components. | 2 |
| 16. | Evaluation of Drip Emitters, Soil Water Movement under a Drip Emitter, Design and Development of Drip Emitters. | 2 |
| 17. | Tutorial 7- Numerical Examples on Drip Irrigation System. | 2 |
| 18. | Micro Sprinkler Irrigation System, Bubbler Irrigation System, Sprinkler Irrigation System, Sprinkler Irrigation System Design, | 3 |

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| Performance Evaluation of Sprinkler Irrigation System. | | |
|--|---|---|
| 19. | Tutorial 8 - Numerical Examples on Sprinkler Irrigation System. | 2 |
| 20. | Tutorial 9 - Numerical Examples on Design of Sprinkler Irrigation System | 1 |
| 21. | Sprinkler Irrigation System: Layout, Installation, Operation and Maintenance | 1 |
| 22. | Standards and Quality Assurance of Drip Irrigation System Components, Standards and Quality Assurance of Sprinkler Irrigation System Components, | 2 |
| 23. | Solar PV System for Irrigation (Part 1), Solar PV System for Irrigation (Part 2) | 2 |
| 24. | Tutorial 10 - Numerical Examples on Solar PV Irrigation System | 1 |
| 25. | Automation of Micro Irrigation System (Part 1), Automation of Micro Irrigation System (Part 2), Automation of Micro Irrigation System (Part 3), Automation of Micro Irrigation System (Part 4). | 2 |
| 26. | Economic Analysis of MIS (Part 1), Economic Analysis of MIS (Part 2), Economic Analysis of MIS (Part 3). | 2 |
| 27. | Tutorial 11- Numerical Examples on Economics of MIS, | 1 |
| 28. | Precision Agriculture, Micro Irrigation Engineering: Epilogue | 1 |

Learning Outcome: On the completion of the course students will be able to understand the concepts of water efficient irrigation techniques, Basic concept of micro irrigation system, various type of micro irrigation system, Installation, operation and maintenance of micro irrigation system.

Course Title: Field Operation & Maintenance of Tractor & Farm Machinery

Objective: To enhance skill and practical experience in field operation & maintenance of tractor & farm machinery.

| Units | Contents | Hours(40) |
|-------|--|-----------|
| 1. | Introduction to various systems of a tractor viz. fuel, lubrication, cooling, electrical, transmission, hydraulic & final drive system. | 2 |
| 2. | Familiarisation with tractor controls & learning procedure of tractor starting and stopping. | 2 |
| 3. | Driving in forward and reverse gears, Driving safety rules. | 1 |
| 4. | Hitching, adjustments, settings and field operation of farm machinery | 1 |
| 5. | Familiarisation with different makes & models of 4-wheeled tractors, Familiarisation with instrumentation panel & controls | 2 |
| 6. | Starting & stopping practice of the tractor. Road signs, traffic rules, road safety, driving & parking of tractor | 2 |
| 7. | Tractor driving practice forward & reverse driving practice; Tractor driving practice with two wheeled tractor trailer forward & reverse | 2 |
| 8. | Study and practicing the hitching and dehitching of implements | 1 |
| 9. | Study operation and field adjustments of M. B. Plough & disk plough | 1 |



| | | |
|-----|--|---|
| 10. | Field operation of trailing & mounted disk harrow | 1 |
| 11. | Field operation and adjustments of seed drill/ planter/sprayer. | 1 |
| 12. | Introduction to tractor maintenance procedure and trouble shooting. | 1 |
| 13. | Scheduled maintenance after 10.50, 100, 250, 500 and 1000 hrs. of operation. | 3 |
| 14. | Safety hints. Top end overhauling. Fuel saving tips. Preparing the tractor for storage | 1 |
| 15. | Care and maintenance procedure of agricultural machinery during operation and off-season. | 1 |
| 16. | Repair and maintenance and workshop requirements. | 1 |
| 17. | Familiarisation with tools and equipment used for maintaining & servicing of tractors & farm machines | 2 |
| 18. | Doing the 10-hours service jobs & Maintenance after 50-hours of operation | 2 |
| 19. | Maintenance after 100 hours of operation, Maintenance after 250 hours operation, Maintenance after 500 hours and 1000 hours of operation | 4 |
| 20. | Adjustment of tractor track; Dismantling and assembling of major engine parts | 2 |
| 21. | Visit Doing minor repair of electric, mechanical and hydraulic system | 1 |
| 22. | Adjustment and maintenance of seeding & planting and transplanting machines | 1 |
| 23. | Adjustment and maintenance of plant protection equipment, Adjustment and maintenance of reapers & threshers. | 2 |
| 24. | Adjustment & maintenance of combine harvesters, straw combines, balers. | 2 |
| 25. | Visit to small scale farm machinery manufacturers and their repair shops | 1 |
| 26. | Seasonal repair of farm machinery. | 1 |

Learning Outcome: Students will gain practical skills and hands on experience of tractor driving, maintenance and troubleshooting as well as operation and maintenance of agriculture machineries.

Course Title: Post-Harvest Engineering of Cereals, Pulses and Oil Seeds

Objective: To impart the knowledge about post-harvest engineering of cereals, pulses and oil seeds.

| Units | Contents | Hours(41) |
|-------|--|-----------|
| 1. | Introduction of post-harvest engineering | 1 |
| 2. | Use of cleaning and grading, aspiration, scalping; size separators, screens, sieve analysis, capacity and effectiveness of screens in post-harvest engineering | 2 |
| 3. | Various types of separators: specific gravity, magnetic, disc, spiral, pneumatic, inclined draper, velvet roll, colour sorters, cyclone, shape graders. | 2 |

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| | | |
|-----|--|---|
| 4. | Principle of Size reduction: Bond's law, Kick's law, Rittinger's law, procedure (crushing, impact, cutting and shearing), | 2 |
| 5. | Size reduction machinery: Jaw crusher, Hammer mill, Plate mill, Ball mill. Material handling equipment | 2 |
| 6. | Types of conveyors: Belt, roller, chain and screw. Elevators: bucket, Cranes & hoists. Trucks (refrigerated/ unrefrigerated), Pneumatic conveying | 2 |
| 7. | Drying: moisture content and water activity; Free, bound and equilibrium moisture content, isotherm, hysteresis effect. | 3 |
| 8. | Different methods of drying batch-continuous; mixing-non-mixing, Sun- mechanical, conduction, convection, radiation, superheated steam, tempering during drying | 2 |
| 9. | Drying principles and theory, Thin layer and deep bed drying analysis, Falling rate and constant rate drying periods, EMC determination. | 3 |
| 10. | Psychrometric chart and its use in drying. | 1 |
| 11. | Maximum and decreasing drying rate period, drying equations, Mass and energy balance, Shedd's equation | 2 |
| 12. | Performance evaluation of dryer, Different types of grain dryers: bin, flat bed, LSU, columnar, RPEC, fluidized, rotary and tray | 3 |
| 13. | Mixing: Theory of mixing of solids and pastes, Mixing index, types of mixers for solids, liquid foods and pastes. | 2 |
| 14. | Milling technique of rice: conditioning and parboiling, advantages and disadvantages, traditional methods, CFTRI and Jadavpur methods, Pressure parboiling method | 3 |
| 15. | Types of rice mills, Modern rice milling, different unit operations and equipment. Milling of wheat, unit operations and equipment | 2 |
| 16. | Milling of pulses: traditional milling methods, commercial methods, pre-conditioning, dry milling and wet milling methods: CFTRI and Pantnagar methods. Pulse milling machines, Milling of corn and its products, Dry and wet milling. | 4 |
| 17. | Milling of oilseeds: mechanical expression, screw press, hydraulic press, solvent extraction methods, preconditioning of oilseeds, refining of oil, stabilization of rice bran. | 2 |
| 18. | Extrusion cooking: principle, factors affecting, single and twin screw extruders. By-products utilization. | 3 |

Learning Outcome: To acquaint and equip the students with the post-harvest engineering of cereals, pulses and oilseeds with special emphasis on their equipments. This will also provide processes involved in harvested crops like cleaning and grading; Size reduction and machinery; drying systems, dryers, mixing of food products, milling of various crops. It also includes the working principles and designs of various machinery and tools used to deal with harvested crops.

Shruti

**DEPARTMENT OF VETERINARY MICROBIOLOGY
COLLEGE OF VETERINARY SCIENCE & ANIMAL HUSBANDRY
A.N.D.U.A.T., KUMARGANJ, AYODHYA (U.P.)-224229**

VALUE-ADDED COURSES

Course Title: Biosafety in Microbiology laboratories

Instructors: Dr. R. K. Joshi/Dr. Vibha Yadav/Dr. R. P. Diwakar **Duration:** 32 Hrs.

| S. No. | Lectures covered | Duration of lecture (hrs) |
|----------------------------------|--|---------------------------|
| Unit-1: Theory classes | | |
| 1. | Bio-safety: Definition, purpose and scope, regulatory requirements, role and responsibilities | 01+01=02 |
| 2. | Biohazards: Hazardous characteristics of an agents | 01 |
| 3. | Hazardous characteristics of laboratory procedures, potential hazards associated with work practices, safety equipment and facility safeguards | 01 |
| 4. | Principles of Biosafety: Laboratory practices and technique, safety equipment, facility design and construction, risk assessment, risk groups: risk group-1, 2, 3 & 4 | 01 |
| 5. | Biosafety levels: BSL-1, BSL-2, BSL-3 and BSL-4, animal facilities and clinical laboratories | 01 |
| 6. | Principles of laboratory Biosecurity | 01 |
| 7. | Animal and animal Biosafety levels: Biosafety practices, Hazard control measures, standard microbiological practices, decontamination methods of hazardous waste & sharp precautions | 01+01=02 |
| 8. | Transport of biohazards, Biohazardious waste management, injury and incident reporting | 01 |
| 9. | Disposal of biomedical waste: Disinfection, storage, treatment and transport | 01+01=02 |
| Total | | 12 |
| Unit-2: Practical classes | | |
| 1. | General Introduction to microbiology laboratory and equipments | 02 |
| 2. | Biosafety programs: Explaining the proper use of safety equipment, explaining personal protective equipments | 02 |
| 3. | Precautions when working with biomedical waste | 02 |
| 4. | Demonstration of physical methods of sterilization | 02 |
| 5. | Collection, transportation and processing of pathogenic samples | 02 |
| 6. | Introduction to mandated requirements and supplemental information in specific safety areas | 02 |
| 7. | Introduction to Biohazardious pathogenic microorganisms | 02 |
| 8. | Introduction to Hazard control measures | 02 |
| 9. | Demonstration of methods of disinfection | 02 |
| 10. | Handling and disposal of biomedical waste | 02 |
| Total | | 20 |

1/2
**Department of Veterinary Pharmacology & Toxicology, College of Veterinary
Science & Animal Husbandry, A.N.D.U.A.T. Kumarganj, Ayodhya,
224229(UP)**

VALUE ADDED COURSE

THEORY Title: *Basic Concepts of applied toxicology*

Identification, characteristics and toxic properties of common toxic plants: Cyanogenetic plants, abrus, ipomoea, datura, nux vomica, castor, oxalate producing plants, plants causing thiamine deficiency, plants causing photosensitization and lathyrism, oleander, and cotton.

Introduction to precautions, uses and clinical manifestations of poisoning by Agrochemicals:

Chlorinated hydrocarbons, organophosphates, carbamates, pyrethroids, newer insecticides.

Herbicides, fungicides and rodenticides.

Fungal toxins- prevention of mycotoxicosis in animals by aflatoxins, ochratoxin, sporidesmin,

F-2 toxin, trichothecenes, ergot, fescue etc.

Toxicity caused by food additives and preservatives

Common Zootoxins; Snake, scorpion, bees and wasp.

Introduction to Environmental pollutants: Heavy Metals; fluoride, nitrates or nitrites, chlorate, common salt and urea. Air and water pollutants

PRACTICAL

Demonstration of various dosage forms. Identification of common toxic plants in local area.

Dr. Chandrashekhar
[Signature]

[Signature]
(RISHI KANT)

Department of Veterinary Clinical Complex
C. V. Sc. & A. H., ANDUAT, Kumarganj, Ayodhya (U. P.)

Name of Course: First Aid in Pet and Domestic Animals (पालतू पशुओं में प्राथमिक चिकित्सा)

Course Duration: 30 credit Hours (0+2=2 in one Semester)

Instructors: Dr. Sonu Jaiswal, Dr Naveen Kumar Singh and Dr. Rajesh Kumar Verma

| Sr. | Topic wise contents | क्रम सं० | अध्यायवार विषय वस्तु |
|-----|--|----------|--|
| 1. | Criteria of health and various signs of disease in animals and measurement of common body parameters. | 1. | स्वस्थ पशु के विभिन्न लक्षण एवं पशुओं में बीमारी के विभिन्न लक्षण एवं सामान्य स्वास्थ्य मापदंडों का परीक्षण। |
| 2. | Aims of first aid in animals. | 2. | पशुओं में प्राथमिक चिकित्सा के उद्देश्य। |
| 3. | First aid kit or basic materials required for first aid. | 3. | प्राथमिक चिकित्सा किट या प्राथमिक चिकित्सा हेतु आवश्यक सामग्री। |
| 4. | First aid for wounds, animal bites, hemorrhage, rib fracture, horn injury and hernia. | 4. | पशुओं के घावों, दूसरे पशुओं के काटने, रक्तस्राव, जलने, पसलियों के टूटने, सीमा टूटने, एवं हर्निया की प्राथमिक चिकित्सा। |
| 5. | Bandaging technique. | 5. | पट्टी बांधना/ मरहम पट्टी करना। |
| 6. | First aid for fracture in animals. | 6. | अस्थिभंग में (हड्डी टूटने पर) प्राथमिक चिकित्सा। |
| 7. | First aid for digestion related diseases (Constipation, diarrhea, bloat, esophageal obstruction etc.) | 7. | पाचन संबंधी रोगों (कब्ज, दस्त, अफारा, ग्रासनली का अवरुद्ध होना आदि) में प्राथमिक चिकित्सा। |
| 8. | First aid for eye diseases (Swelling, excessive lacrimation, wound and corneal opacity etc.) | 8. | आँखों के रोगों (सूजन, पानी बहना, घाव एवं सफेदी या माड़ा आदि) में प्राथमिक चिकित्सा। |
| 9. | First aid for fever, hyperthermia, cold exposure and epistaxis etc.) | 9. | ज्वर, लू लगने, ठंड लगने, नकसीर फूटने आदि में प्राथमिक चिकित्सा। |
| 10. | First aid for gynaecological diseases (Vaginal, cervical and Uterine Prolapse, Retention of Placenta etc.) | 10. | प्रजनन संबंधी रोगों (बेला फेंकना/ फूल दिखाना, ऑवर न गिरना आदि) में प्राथमिक चिकित्सा। |
| 11. | First aid for common poisoning in animals. | 11. | पशुओं के जहरीले पदार्थ खा लेने पर प्राथमिक चिकित्सा। |
| 12. | First aid for otorrhoea and other ear diseases. | 12. | कान बहने तथा कान की अन्य बीमारियों में प्राथमिक चिकित्सा। |
| 13. | First aid in anuria and urinary stone condition in animals. | 13. | पशुओं में पेशाब के रुकने या पथरी होने पर प्राथमिक चिकित्सा। |
| 14. | First aid for various parasitological diseases. | 14. | पशु परजीवी रोगों में प्राथमिक चिकित्सा। |
| 15. | Primary evaluation of heamoglobin level, rumen pH, mastitis and other diseases. | 15. | पशुओं में हीमोग्लोबिन की, रयूमेन पी० एच०, शनेला आदि रोगों की प्राथमिक जाँच। |

Sonu Jaiswal
15/5/22

VALUE ADDED COURSE (PARA-CLINICAL)

Course title : *Conventional Techniques for diagnosis of infectious diseases in animals and their products*

Credit hrs.: 0+35

Name of Instructors: *Dr. Namita Joshi, Dr.R.K.Joshi, Dr. D.Niyogi, Dr.Chandra Sekhar, Dr.Amit Singh, Dr. V.K.Pal, Dr.K.K.Tripathi, , Dr.R.P.Diwakar, Dr.Vibha Yadav*

| S.No. | Lecture topic | Number of practical hrs |
|-------|--|-------------------------|
| 1. | Study of gross pathological specimens and recognition of pathological lesions. | 2 |
| 2 | Histopathological techniques- Collection,fixation,processing of tissue for paraffin embedding technique, section cutting, staining and identification of microscopic lesions | 6 |
| 3 | Examination of histopathological slides showing general pathological alterations. | 2 |
| 4 | Post mortem examination and its interpretations, | 2 |
| 5 | Collection of samples for chemical and bacteriological examination. | 2 |
| 6 | Microbiological examination of raw milk, pasteurized milk, milk products, meat, meat products | 2 |
| 7 | Ante-mortem and post-mortem inspection of food animals. | 2 |
| 8 | Detection of organisms of public health significance from food products by techniques. | 2 |
| 9 | Detection of antimicrobial residues in milk and meat by microbiological and analytical techniques. | 2 |
| 10 | Faecal examination techniques, for parasitic cysts,oocysts,eggs,larvae | 2 |
| 11 | Blood examination techniques for blood protozoans and microfilariae | 2 |
| 12 | Collection and examination of skin scrapings for mites.. | 1 |
| 13 | Examination of urine samples | 1 |
| 14 | Examination of nasal washings for parasitic findings. | 1 |
| 15 | Collection, transportation and processing of samples for bacterial,viral and fungal disease diagnosis. | 2 |
| 16 | Differential staining procedures of bacteria: Gram's staining, Acid fast staining; Special staining procedures: Capsule and Spore staining; | 3 |
| 17 | Culture sensitivity test | 1 |
| | Total practical hrs. | 35 |

Amit
28.09.2022

Value Added course in
FUNDAMENTAL OF BLOOD PHYSIOLOGY
& BASIC LABORATORY TECHNIQUE

Department of Veterinary Physiology, C.V.Sc. & A.H., ANDUAT,
Kumarganj-224229, Ayodhya, UP



The classes shall be conducted by the faculty of Department of Physiology.

Faculty are **Dr. P. K. Choudhary** and **Dr. Pramod Kumar**


Duration- 3 months (45 hrs.).


Requirement: B. Sc. (Ag.) III, B. Sc. (Fisheries) III, B. Sc. (Hort.) III,

Syllabus

Introduction to Blood; Properties of blood as a body fluid, Collection of blood samples. Separation of serum and plasma. Preservation of de-fibrinated blood. Enumeration of erythrocytes, leucocytes. Differential leucocytic count - platelet count. Hemoglobinchemical structure, synthesis, physiological functions, derivatives of hemoglobin; estimation of hemoglobin - haematocrit. Erythrocyte sedimentation rate. Packed cell volume - coagulation time/bleeding time. Erythrocyte fragility and viscosity. Blood grouping. Measurement of arterial blood pressure (Sphygmomanometry).

| | | |
|-----|--|---------------|
| | CLOTTING TIME | 2+1 |
| 5. | ESTIMATION OF ERYTHROCYTE SEDIMENTATION RATE (ESR) | 2+1 |
| 6. | DETERMINATION OF HEMOGLOBIN CONCENTRATION OF BLOOD | 2+1 |
| 7. | DETERMINATION OF PACKED CELL VOLUME OR HAEMATOCRIT VALUE | 2+1 |
| 8. | ERYTHROCYTE FRAGILITY TEST | 2+1 |
| 9. | TO STUDY HAEMOCYTOMETER | 2+1 |
| 10. | ENUMERATION OF ERYTHROCYTES | 2+1 |
| 11. | ENUMERATION OF LEUKOOCYTES | 2+1 |
| 12. | DIFFERENTIAL LEUKOOCYTIC COUNT | 2+1 |
| 13. | PLATELETS COUNT | 2+1 |
| 14. | DETERMINATION OF BLOOD GROUPS | 2+1 |
| 15. | MEASUREMENT OF ARTERIAL BLOOD PRESSURE (SPHYGMOMANOMETRY). | 2+1 |
| | Total courses = 15 | 2+1 |
| | | Total hrs.=45 |


 (PRAYOD KUMAR)
 Asst. Professor


 C.P.K. CHOE
 ASST.


 Head
 Animal Nutrition
 College of Vets. Sci. & A. H.
 N.D.U.A.T., Faizabad

VALUE- ADDED COURSE

Course Title: Management of Parasitic Diseases

Instructors: Dr. Amit Singh & Dr. V. K. Pal

Duration: 30 Hrs.

Syllabus:

UNIT-I: Theory Classes (Duration of each topic is ONE hour)

1. Types of Parasites and their classification.
2. Common Flukes infection in animals and their control.
3. Common Tape worm infection in animals and their control.
4. Common Round worm infection in animals and their control.
5. Common Ectoparasites of animals and their importance.
6. Control of Ticks and Mites infestations in animals.
7. control and prevention of Flies, Fleas and Lice in animal production.
8. Integrated Pest Management (IPM) and its importance.
9. Common Haemo-protozoal diseases in animals and their control.
10. Common Enteric protozoal diseases in animals and their control.

UNIT-II: Practical Classes (Duration of each topic is TWO hours)

1. Specimen Collection and Transportation for parasitic infection.
2. Methods of collection, fixation, preservation and mounting of helminth parasites.
3. Faecal examination for Helminths- Qualitative and Quantitative analysis.
4. Detection of Microfilaria by Wet blood smear and Knott's method.
5. Collection, Preservation, Processing and Identification of Arthropods.
6. Examination of Skin scraping and Lymph Gland Biopsy technique.
7. Diagnosis of Enteric and Tissue dwelling protozoan infection.
8. Diagnosis of Haemo-protozoan infections by Conventional methods.
9. Common Anthelmintic drugs their formulation, methods of administration.
10. Common Insecticides, Acaricides and Anti- protozoan drugs and their application.

Amit
20.08.2022
C. Mand., Vety. Parasitology,
C.V.Sc & AH, ANDUAT

VALUE ADDED COURSE

Course name: Biomaterials of fish origin

No. of hours: 30hrs (Theory: 1hr; Practical: 2hr)

Course structure

Theory:

1. Introduction about biomaterials of animal origin
2. Chemicals used for decellularization
3. Preperation of collagen scaffolds from fish skin
4. Preperation of collagen scaffolds from fish swim bladder
5. Histological characterization of scaffolds
6. Physical characterization of the scaffolds
7. Biochemical characterization of the scaffolds
8. Biomaterial immunology
9. In vitro immunological tests of scaffold
10. In vivo immunological tests of scaffold
11. Preservation of decellularized scaffolds of fish origin
12. Use of scaffolds of fish origin

Practicals:

1. Preperation of collagen scaffolds from fish skin using herbal detergents
2. Preperation of collagen scaffolds from fish swim bladder using herbal detergents
3. Preperation of collagen scaffolds from ionic and non-ionic detergents
4. Histological characterization of the scaffolds: H&E staining
5. Histological characterization of the scaffolds: Massons trichrome staining
6. Characterization of scaffolds using fluorescent stain
7. In vitro immunological tests of scaffold: hemocompatibility
8. In vitro immunological tests of scaffold: seeding of cells over scaffolds
9. Preservation of decellularized scaffolds of fish origin


13.06.2022
JAE, RD
Veterinary Surgery & Radiology
CVSc & AH NDUAT
Kumarganj, Faizabad, U.P.

Value Added Course

Title: Fundamentals of Food and Feed Analysis

Course Hours: 35

| S.No. | Topic | Theory(T)/ Practical(P) | Hours |
|-------|-------------------------------------|----------------------------|-------|
| 1. | General safety rules in laboratory | T | 1 |
| 2. | Cleaning of glasswares | T | 1 |
| | | P | 2 |
| 3. | Sampling of food and feed | T | 1 |
| | | P | 2 |
| 4. | Proximate analysis of feed and food | T | 2 |
| 5. | Estimation of dry matter | T | 1 |
| | | P | 4 |
| 6. | Estimation of total ash | T | 1 |
| | | P | 4 |
| 7. | Estimation of ether extract | T | 1 |
| | | P | 4 |
| 8. | Estimation of crude protein | T | 1 |
| | | P | 4 |
| 9. | Estimation of crude fibre | T | 1 |
| | | P | 4 |
| 10. | Estimation of nitrogen free extract | T | 1 |

[Signature] 6/8/22 35
Head

Animal Nutrition
College of Vety. Sci. & A. H.
N.D.U.A.T., Faizabad

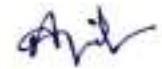
Department of Livestock Farm Complex
C.V.Sc & AH, ANDUAT, Ayodhya

Goat Farming

| S.No. | Topic | Duration(Hrs.) |
|-------|--|----------------|
| 1. | Introduction and importance of goat farming | 1 |
| 2. | Visit of university goat farm | 2 |
| 3. | Breeds of goat reared for milk purpose | 2 |
| 4. | Breeds of goat reared for meat purpose | 2 |
| 5. | Exotic breeds of goat | 2 |
| 6. | Selection of site to establish a goat farm | 1 |
| 7. | Design and housing of goat shed | 2 |
| 8. | Formulation of balanced diet for goat | 2 |
| 9. | Feeding of different stages of goat | 2 |
| 10. | Care and management of kids | 1 |
| 11. | Care and management of goat during pregnancy | 2 |
| 12. | Care and management of breeding buck | 1 |
| 13. | General health care and vaccination of goats | 2 |
| 14. | Common diseases and their management | 2 |
| 15. | Conventional fodder for goat | 2 |
| 16. | Non-conventional fodder for goat | 2 |
| 17. | Identification methods of goat | 1 |
| 18. | Parasitic management of goat | 1 |
| 19. | Breeding management of goat | 1 |
| 20. | Economics and marketing of goat | 1 |


10/08/22
HEAD
I.L.F.C., CV Sc. & AH
NDUAT, Kumarganj-Fzd.

32



(Ajit Kumar)

Department of Medicinal & Aromatic Plants
College of Horticulture & Forestry
Course of Value Addition: Medicinal & Aromatic Plants

| S.No. | Topics | Hour(s) Theory and practical |
|-------|---|------------------------------|
| | Medicinal plants | |
| 1. | Importance and Scope of value addition of medicinal and aromatic plants | 2 |
| 2. | Post-harvest handling of wild and plantation crops of MAPs. | 2 |
| 3. | Method of oil extraction from Medicinal and Aromatic Plants | 2 |
| 4. | Processing of Aloe vera | 2 |
| 5. | Processing of Ashwagandha | 2 |
| 6. | Processing of Sarpagandha | 2 |
| 7. | Processing of Safed musali | 2 |
| 8. | Processing of Periwinkle | 2 |
| 9. | Processing Asparagus | 2 |
| 10. | Processing of Lemon grass | 2 |
| 11. | Processing of Basil | 2 |
| 12. | Processing of Mint | 2 |
| 13. | Processing of Rose | 2 |
| 14. | Processing of Palmarosa and Patchouli | 2 |
| 15. | Processing of Periwinkle | 2 |
| | Total | 30 |

Course outcome: This course will help to students, to identification of medicinal and aromatic plant and processing tools. We taught about oil extraction from aromatic plants and how will prepare value added products from oil of plants.



(Bhanu Pratap)
Course Coordinator

Department of Silviculture & Forestry
College of Horticulture & Forestry
Course of Value Addition: Forest Product

| S.No. | Topics | Hour(s) Theory and practical |
|-----------------------|---|------------------------------|
| Forest Product | | |
| 1. | Introduction to tropical NTFPs | 2 |
| 2. | Importance of NTFPs in tribal livelihood and Indian economy | 2 |
| 3. | History of gathering of NTFPs | 2 |
| 4. | Fodder (grass and tree leaves) classification | 2 |
| 5. | Plywood industries | 2 |
| 6. | Canes and bamboo- sources, collection, processing | 2 |
| 7. | Bedi leaves- sources, collection, processing | 2 |
| 8. | Paper and pulp making- sources, collection, processing | 2 |
| 9. | Broom grass- sources, collection, processing | 2 |
| 10. | Mahua- sources, collection, processing | 2 |
| 11. | Amla- sources, collection, processing | 2 |
| 12. | Drugs and wild fruits- sources, collection, processing | 2 |
| 13. | Spices- sources, collection, processing | 2 |
| 14. | Sal leaves- sources, collection, processing | 2 |
| 15. | Policies for NTFPs | 2 |
| | Total | 30 |

Course outcome: This course will help the students to identify the different forest plants yielding non-timber forest products. It will help in understanding the process of collection, processing and marketing mediums of the different non-timber forest products. This will help the students in initiating new start-ups and help the farmers in increasing their income.



(SK Verma)
Course Coordinator

**Department of Soil Science and Agricultural Chemistry,
Acharya Narendra Deva University of Agriculture and Technology, Kumarganj,
Ayodhya**

Value Added Course

Title: Soil Testing

Course Instructors: Dr. Suresh Kumar and Dr. Alok Kumar Pandey

Course Content

| S. No. | Topic | No. of Lectures / Practical Sessions |
|--------|---|--------------------------------------|
| 1 | Introduction to Soil Formation, Types of Soils & Basic Concepts about Physical, chemical, and biological properties of different soil types; Identification of nutrient deficiency Symptoms in Crops & Fertilizer recommendations | 4 + 0 |
| 2 | Introductory remarks about various soil testing methods and Importance of Soil Testing and Analyses | 2 + 0 |
| 3 | Criteria for selection of field, Method of Soil Sample collection, Methods of soil sample processing, Precautions during soil collection & processing, Preservation, labeling and Storage of soil samples. | 3 + 2 |
| 4 | Study of Laboratory Setup, Laboratory Layout, Built up area, Laboratory requirements and working pattern of a soil testing Lab. | 2 + 0 |
| 5 | Study of Instruments: Brief study of instruments: pH Meter, Conductivity meter, spectrometer, UV-Spectrophotometer, (Calibration, Instrumentation, applications only) use of soil testing kits etc.; Kjeldahl's Assembly for determination of nitrogen. | 2 + 2 |
| 6 | Determination of pH & Electrical Conductivity of Soil Samples using pH/ Electrical Conductivity meter; Determination of Organic Carbon; Total & available Nitrogen, Phosphorus, Potassium & micronutrients from soil samples. | 3 + 4 |
| 7 | Determination of lime requirement of soil; Determination of Gypsum requirement of Soil | 0 + 2 |
| 8 | Use of Various soil testing kits | 0 + 2 |
| 9. | Preparation of Soil analysis and test report; Preparation of soil test summaries and fertility maps. | 0 + 2 |
| 10. | Preparation of Soil Health Card. | 0 + 1 |

Expected Course Outcome: This Hands-on-training course will give a complete knowhow and encouragement to aspiring entrepreneurs for setting up their new soil testing enterprise.

College of Community Science
Department of Human Development and Family Studies

Value added course - Infant Stimulation Programmes
Period – 10 days (40 contact hours)
Credit – 2 (0+2)

Course content:

Infancy: physical, physiological, cognitive and social capabilities. Development during infancy (physical and motor, social and emotional, cognitive and language development). Early environment (critical periods) and its importance, need for desirable child rearing practices: growth monitoring, effects of environmental deprivation. Visits to different child care centers, visit to toy center, observation and recording the development of infants in different child care centers: observation of motor and oral motor abilities, observation of cognitive abilities, observation of social skills, observation of language development, observation of socio- emotional development. Study of existing stimulation practices at different homes, planning, implementing and evaluation of stimulation programme for infants.

Outcome :

- Gain knowledge of characteristics of infancy period
- Understand the Different area of development
- Learn to observe and record the developmental mile stone of infant
- Develop stimulation material suitable for different areas of development
- Gain hand on experience in providing stimulation activities to infant

Department of Plant Molecular Biology & Genetic Engineering
Acharya Narendra Deva University of Agriculture and Technology, Kumarganj,
Ayodhya

Value Added Course

Title: Plant Tissue Culture

Credit Hours: 36

Course Instructors: Dr. D. K. Diwedi and Dr. N. A. Khan

Course Content

| S. No. | Topic | No. of Lectures / Practical Sessions |
|--------|--|--------------------------------------|
| 1 | History and development of plant tissue culture. Introduction, scope and importance of plant tissue culture. | 2 + 0 |
| 2 | Concept of totipotency. Concept of aseptic culture practices. Advantages and disadvantages of in vitro propagation. | 2 + 0 |
| 3 | Components of in vitro culture media and role of different macro and micro nutrients, vitamins, plant growth regulators and growth supplements. Nutritional requirements of in vitro cultures. | 2 + 0 |
| 4 | Sterilization techniques. Various plant cell, tissue and organ culture techniques and uses. | 2 + 0 |
| 5 | Mother plant selection, and collection, preparation, surface sterilization and inoculation of explants. | 2 + 0 |
| 6 | In-vitro propagation via enhanced release of axillary buds. Micropropagation - in vitro grafting, meristem culture. Anther, pollen, embryo, ovule, ovary culture. | 2 + 0 |
| 7 | Somatic cell cultures. Morphogenesis - organogenesis and somatic embryogenesis. | 2 + 0 |
| 8 | Economics and commercial potential of invitro propagation. | 2 + 0 |
| 9 | Progress in the in-vitro propagation of field, forestry and horticultural Plants | 2 + 0 |
| 10 | Good laboratory practices. Lay out of in-vitro propagation units. | 0+2 |
| 11 | Working inside in-vitro propagation unit. | 0+2 |
| 12 | Laboratory organization, equipment, tools and techniques. | 0+2 |
| 13 | Laboratory contaminants - its control measures. | 0+2 |

| | | |
|----|---|-----|
| 14 | Culture media preparation: major nutrients, minor nutrients, organics and other ingredients. Sterilization and surface sterilization of explants. | 0+2 |
| 15 | Plant growth regulators. Solidifying agents, methods of sterilization, inoculation and incubation of cultures. | 0+2 |
| 16 | Establishment of callus/ cell suspension cultures. Micropropagation. Embryo culture. | 0+2 |
| 17 | Anther and pollen culture. Induction of plant regeneration. Hardening and transfer to soil. | 0+2 |
| 18 | Ex-vitro establishment of plantlets, their field testing, field planting and management of tissue culture plants. | 0+2 |

Expected Course Outcome: This Hands-on-training course will give a complete knowhow and encouragement to aspiring entrepreneurs for setting up their new plant tissue culture enterprise.