

Semester –DIPLOMA VITH SEM

Semester -VI			
S.No	Subject Title	Subject Title	Credits
1	Farm Management, Production & Resource Economics	DAG-604	2 (1+1)
2	INTELLECTUAL PROPERTY RIGHT	DAG-605	1 (1+0)
3	Crop Improvement-II (Rabi crops)	DAG-606	2 (1+1)
4	ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT	DAG-607	3(2+1)
5	Principles of Food Science and Nutrition	DAG-608	2 (2+0)
6	ENTERPRENEURSHIP DEV. AND BUSSI. COMMUNICATION	DAG-609	2(2+1)
7	PROBLEMATICS SOILS AND THEIR MANAGEMENT	DAG-610	2(2+0)
Total			14=(10 + 04)

SEMESTER-VITH SEM

Third Year DIPLOMA

Semester VI

Subject Title	Subject Code	Credit
Farm Management, Production & Resource Economics	BAG-5609	2(1+1)

Theory

Unity- I Meaning and concept of farm management, objectives and relationship with other sciences. Meaning and definition of farms, its types and characteristics, factor determining types and size of farms.

Unity-II Principles of farm management: concept of production function and its type, use of production function in decision- making on a farm, factor-product, factor-factor and product relationship, law of equi-marginal/or principles of opportunity cost and law of comparative advantage.

Unity-III Meaning and concept of cost, types of costs and their interrelationship, importance of cost in managing farm business and estimation of gross farm income, net farm income, family labour income and farm business income.

Unity-IV Farm business analysis: meaning and concept of farm income and profitability, technical and economic efficiency measures in crop and livestock enterprises. Importance of farm records and accounts in managing a farm, various types of farm records needed to maintain on farm, farm inventory, balance sheet, profit and loss accounts.

Unity-V Meaning and importance of farm planning and budgeting, partial and complete budgeting, steps in farm planning and budgeting-linear programming, appraisal of farm resources, selection of crops and livestock's enterprises.

Unity –VI Concept of risk and uncertainty occurs in agriculture production, nature and sources of risks and its management strategies, Crop/livestock/machinery insurance – weather based crop insurance, features, determinants of compensation. Concepts of resource economics, differences between NRE and agricultural economics, unique properties of

natural resources. Positive and negative externalities in agriculture, Inefficiency and welfare loss, solutions, Important issues in economics and management of common property resources of land, water, pasture and forest resources etc.

Practical

Preparation of farm layout. Determination of cost of fencing of a farm. Computation of depreciation cost of farm assets. Application of equi-marginal returns/opportunity cost principle in allocation of farm resources. Determination of most profitable level of inputs use in a farm production process. Determination of least cost combination of inputs. Selection of most profitable enterprise combination. Application of cost principles including CACP concepts in the estimation of cost of crop and livestock enterprises. Preparation of farm plan and budget, farm records and accounts and profit & loss accounts. Collection and analysis of data on various resources in India.

References

- Agribusiness management W,David Downey and Steven P.Erickson
- Introduction of Agril. Business Mgmt. Davis, J. and Gold Berg
- Project management and Control P.C.K. Rao
- Project Management S.Choudhary, Hill Publication Company, Delhi
- Project Management Nagaraja
- Agri. Business Management Broadway, Himalaya Publication Company,Delhi
- Project Planning, Analysis, Selection,
Prasanna Chandra financing, Implementation
and Review
- Element of Farm Management I.J.Singh and V.K.Puri
- Economics of Farm Management A.S.Kahlon and Karam Singh
- Farm Business Management S.S.Johl and T.R. Kapoor
- Farm Management S,P.Dondyal

Third Year

Semester VI

Subject Title	Subject Code	Credit
Intellectual Property Rights	BAG-5509	1(1+0)

Theory

Unit-I Introduction and meaning of intellectual property, brief introduction to GATT, WTO, TRIPs and WIPO, Treaties for IPR protection: Madrid protocol, Berne Convention, Budapest treaty, etc.

Unit-II Types of Intellectual Property and legislations covering IPR in India:-Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets. Patents Act 1970 and Patent system in India, patentability, process and product patent, filing of patent, patent specification, patent claims, Patent opposition and revocation, infringement, Compulsory licensing, Patent Cooperation Treaty, Patent search and patent database.

Unit-III Origin and history including a brief introduction to UPOV for protection of plant varieties, Protection of plant varieties under UPOV and PPV&FR Act of India, Plant breeders rights, Registration of plant varieties under PPV&FR Act 2001, breeders, researcher and farmers rights. Traditional knowledge- meaning and rights of TK holders.

Unit-IV Convention on Biological Diversity, International treaty on plant genetic resources for food and agriculture (ITPGRFA). Indian Biological Diversity Act, 2002 and its salient features, access and benefit sharing.

References

- IPR Bulletin, Vol. 9, No. 10, October
Information India,
Council
Department of Science and Technology, 2011, Technology
Government of India, New Delhi Forecasting and Assessment
- Intellectual Property and its
Agriculture
(A manual for e-course PGS-503, DRS/ Management in
JnKVV/technical manual 2016/11
- Hand Book On Intellectual property
Rajkumar S. Adukia Page No. 1-22 Right in India
- Intellectual Property Rights
Neeraj Pnadey, Khushdeep Dharni (2008) ,PHI Publication,

- Science and Technology policy 2003
- IPR Bulletin, Vol,9,No. 10, October 2011

New Delhi
 Department of Science and Technology, Government of India,
 New Delhi
 Technology Information, Forecasting and
 Assessment Council, Department of Science And Technology,
 Government of India, New Delhi

Third Year

Semester VI

Subject Title	Subject Code	Credit
Crop Improvement – II (<i>Rabi</i>)	BAG-5606	2(1+1)

Theory

Unity-I Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fodder crops and cash crops; vegetable and horticultural crops; Plant genetic resources, its utilization and conservation.

Unity-II Study of genetics of qualitative and quantitative characters; Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional); Hybrid seed production technology of *rabi* crops. Ideotype concept and climate resilient crop varieties for future.

Practical

Floral biology, emasculation and hybridization techniques in different crop species namely Wheat, Oat, Barley, Chickpea, Lentil, Field pea, Rajma, Horse gram, Rapeseed Mustard, Sunflower, Safflower, Potato, Berseems. Sugarcane, Tomato, Chilli, Onion; Handling of germplasm and segregating populations by different methods like pedigree, bulk and single seed decent methods; Study of field techniques for seed production and hybrid seeds production in *Rabi* crops; Estimation of heterosis, inbreeding depression and heritability; Layout of field experiments; Study of quality characters, study of donor parents for different characters; Visit to seed production plots; Visit to AICRP plots of different field crops

References

- Breeding Field Crops

John M.Poehlman

- Crops Breeding and biotechnology Hari Har Ram
- Crop Breeding (Methods in Molecular Biology) DelphinFleury and Ryan Whitford

Third Year

Semester VI

Subject Title	Subject Code	Credit
Environmental Studies and Disaster Management	BAG-5307	3(2+1)

Theory

Unit-I Multidisciplinary nature of environmental studies Definition, scope and importance. Natural Resources: Renewable and non-renewable resources, Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, waterlogging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.

Unit-II Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem. Ecological succession, Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit-III Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hotspots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit -IV Environmental Pollution: definition, cause, effects and control measures of: a. Air pollution. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution. Nuclear hazards. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.

Social Issues and the Environment: From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.

Unit-V Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

Disaster Management

Natural Disasters- Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level

rise, ozone depletion. Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents. Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community –based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

Practical

Pollution case studies. Case Studies- Field work: Visit to a local area to document environmental assets river/ forest/ grassland/ hill/ mountain, visit to a local polluted site- Urban/Rural/Industrial/Agricultural, study of common plants, insects, birds and study of simple ecosystems- pond, river, hill slopes, etc.

References

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|--|----------------------------------|
| <input type="checkbox"/> Principles of agricultural Ecology | G.S. Dhaliwal & G.S. Klear |
| <input type="checkbox"/> Fundamentals Of Environmental Environment | K.C.Agrawal Biology Ecology and |
| <input type="checkbox"/> Ecology and Environment | P.D.Sharma |
| <input type="checkbox"/> A text book Environment | V. Subramaniam |
| <input type="checkbox"/> Ecology and Environmental Science | Purohit, S.S. and agrawal, A.K. |
| <input type="checkbox"/> Environmental Studies | S.Singhal and N.Sigal |
| <input type="checkbox"/> Essentials Of Environmental Science | Dhaliwal, G.S. and Kukal, S.S. |
| <input type="checkbox"/> Environmental Biology | P.D.Sharma |
| <input type="checkbox"/> Environmental Studies | Rajesh Dharkar |
| <input type="checkbox"/> Environmental Biology | K.C.Agrawal |
| <input type="checkbox"/> A text book Environment Science | G.S.Bhaliwal, G.S.Sanjha |
| <input type="checkbox"/> Perspectives in Environmental Studies | Kaushik, A. and Kausshik, O.P. |
| <input type="checkbox"/> Ecology | Subramanyam, N.S. and Sambaurthy |

- Environmental Studies
- Environmental Studies

H.Kaur
S.V.S. Rana

Third Year Semester VI

Subject Title	Subject Code	Credit
Principles of Food Science and Nutrition	BAG-5610	2 (2+0)

Theory

Unity-I Concepts of Food Science (definitions, measurements, density, phase change, pH, osmosis, surface tension, colloidal systems etc.); Food composition and chemistry (water, carbohydrates, proteins, fats, vitamins, minerals, flavours, colours, miscellaneous bio actives, important reactions).

Unity- II Food microbiology (bacteria, yeast, moulds, spoilage of fresh & processed foods, Production of fermented foods); Principles and methods of food processing and preservation (use of heat, low temperature, chemicals, radiation, drying etc.); Food and nutrition, Malnutrition (over and under nutrition), nutritional disorders; Energy metabolism (carbohydrate, fat, proteins); Balanced/modified diets, Menu planning, New trends in food science and nutrition

References

- Sidappa, G.L. Tondan Preservation of Fruit and Vegetables Girdhari lal, G.S.
- and G.L. Toadan Fruit and vegetable Preservation G.S.Giriharilal, Sidhappa
- Desrosier & J.N.Desrosies, CBS Publication and Distributer, New Delhi The Technology of Food Preservation Norman w.
- Food Science Nariman Porter and Hotchkiss1997. 5thEd. CBS
- Food chemisty Meyer LH.1987.CBS
- Food Microbiology Frazier J and Westhoff

- DC. 1988. 4thEd.McGrew Hill.
- Publication
- Basic Food Micobilogy Banawant GJ.1989. 2nd Ed.AVI
- Fruit and Vegetable Preservation-Principles and Practics
Shivastva R.P. and Kumar S.2003.
International Book Distributors
- Food proccessing Principles and Application
Ramaswamy H and Marcotte M.2006. Taylor and
Francis
- Essentials of Food and Nutrition
Swaminathan M. 1974.Vol.II. Ganesh and Co.

Semester VI
Third Year

Subject Title	Subject Code	Credit
Entrepreneurship Development and Business Communication	BAG-5506	2(1+1)

Theory

Unit-I Concept of Entrepreneur, Entrepreneurship Development, Characteristics of entrepreneurs; SWOT Analysis & achievement motivation, Government policy and programs and institutions for entrepreneurship development, Impact of economic reforms on Agribusiness/ Agrienterprises, Entrepreneurial Development Process; Business Leadership Skills; Developing organizational skill (controlling, supervising, problem solving, monitoring & evaluation), Developing Managerial skills, Business Leadership Skills (Communication, direction and motivation

Skills), Problem solving skill, Supply chain management and Total quality management, Project Planning Formulation and report preparation; Financing of enterprise, Opportunities for agripreneurship and rural enterprise.

Practical

Assessing entrepreneurial traits, problem solving skills, managerial skills and achievement motivation, exercise in creativity, time audit through planning, monitoring and supervision, identification and selection of business idea, preparation of business plan and proposal writing, visit to entrepreneurship development institute and entrepreneurs.

References

- Textbook on Rural Development and Communication Skills Mondal, S. and Ray, G.L.-Kalyani Entrepreneurship
- Trainer's Manual on Developing Entrepreneurial Development Akhori, M.M.P., Mishra, S.P. and Sengupta Roth (1989), NIESBUD
- Entrepreneurial Development Khanka, S.S.S.Chand Co.Ltd.Ramnagar
- Fundamental of Entrepreneurial Agrawal R.C., Laxmi Narayan Agrawal, Agra (U.P.)
- Dynamics of Entrepreneurial Desai, Vasant, Himalayan Publication House, New Delhi
- Farm Communication through Mass in the New Millennium Samant, A.G. Associated Media Publishing Company, Karol Bag, New Delhi
- Entrepreneurship Development Programme in Patel, V.G. India and its relevance

Third Year

Semester VI

Subject Title	Subject Code	Credit
Problematic Soils and their Management	BAG-5404	2(2+0)

Theory

Unit-I Soil quality and health, Distribution of Waste land and problem soils in India. Their categorization based on properties. Reclamation and management of Saline and sodic soils, Acid soils, Acid Sulphate soils, Eroded and Compacted soils, Flooded soils, Polluted soils.

Unit-II Irrigation water – quality and standards, utilization of saline water in agriculture. Remote sensing and GIS in diagnosis and management of problem soils.

Unit-III Multipurpose tree species, bio remediation through MPTs of soils, land capability and classification, land suitability classification. Problematic soils under different Agro-ecosystems.

References

- Salt affected Soil: Reclamation and management
- Soil salinity Assessment
- Remote sensing & GIS

S.K. Gupta & I.C.Gupta

FAO

Kail Charan Sahu

Fundamentals of soil science