

**CURRICULUM**  
**OF**  
**AGRICULTURE EXTENSION**

**B.Sc (Hons)**  
**M.Sc (Hons)**

(Revised 2010)



**HIGHER EDUCATION COMMISSION**  
**ISLAMABAD**

## **CURRICULUM DIVISION, HEC**

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## PREFACE

Curriculum of a subject is said to be the throbbing pulse of a nation. By looking at the curriculum one can judge the state of intellectual development and the state of progress of the nation. The world has turned into a global village; new ideas and information are pouring in like a stream. It is, therefore, imperative to update our curricula regularly by introducing the recent developments in the relevant fields of knowledge.

In exercise of the powers conferred by sub-section (1) of section 3 of the Federal Supervision of Curricula Textbooks and Maintenance of Standards of Education Act 1976, the Federal Government vide notification No. D773/76-JEA (cur.), dated December 4<sup>th</sup> 1976, appointed the University Grants Commission as the competent authority to look after the curriculum revision work beyond class XII at the bachelor level and onwards to all degrees, certificates and diplomas awarded by degree colleges, universities and other institutions of higher education.

In pursuance of the above decisions and directives, the Higher Education Commission (HEC) is continually performing curriculum revision in collaboration with universities. According to the decision of the special meeting of Vice-Chancellor's Committee, the curriculum of a subject must be reviewed after every 3 years.

A committee of experts comprising of conveners from the National Curriculum Revision of HEC in Agriculture met in 2009 and developed a unified template to standardize degree programs in the country to bring the national curriculum at par with international standards, and to fulfill the needs of the local industries. It also aimed to give a basic, broad based knowledge to the students to ensure the quality of education. The Bachelor (BS) degree shall be of 4 years duration, and will require the completion of 130-140 credit hours. For Agriculture degree programme 77% of the curriculum will consist of discipline specific and supporting Agriculture courses, and 23% will consist of compulsory and general courses.

For the purpose of curriculum revision various committees are constituted at the National level, comprising of senior teachers nominated by universities, degree awarding institutions, R&D organizations, respective accreditation councils and stake holders. The National Curriculum Revision Committee for Agriculture Extension in a meeting held on May 24-26, 2010 at HEC Regional Centre, Karachi in continuation of preliminary meeting held on December 2009 at HEC

Regional Center, Karachi, revised the curriculum in light of the unified template. The revised curriculum is being circulated for implementation in the concerned institutions.

**PROF. DR. ALTAF ALI G. SHAIKH**  
Member Academics

**March 2010**

## **CURRICULUM DEVELOPMENT**

## INTRODUCTION

The final meeting of National Curriculum Revision Committee (NCRC) was held at HEC Regional Center Karachi from May 24-26, 2010 to review and finalize the revised draft curriculum. The following experts attended the meeting.

Prof. Dr. Tanvir Ali Director, Division of Education & Extension, University of Agriculture, Faisalabad	Convener
Dr. M. Umar Mallah Professor & Chairman Department of Agricultural Education Extension & Short Courses, Sindh Agriculture University, Tandojam	Member
Prof. Dr. Nowshad Khan Chairman Department of Agricultural Sciences, Allama Iqbal Open University, Islamabad	Member
Prof. Dr. Muhammad Akram Professor Department of Agricultural Extension Education & Communication, Agricultural University, Peshawar	Member
Dr. Waqar H. Malik National Agricultural Education Accreditation Council (NAEC), House No. 103, St.81, E-11/2, Islamabad	Member
Prof. Fazal Karim Rajput Ex-Convener (NCRC Agri.Extension) House No. 1386, St No.89, I-10/1, Islamabad.	Member
Dr. Ejaz Ashraf Assistant Professor University College of Agriculture, University of Sargodah, Sargodah	Member

Mr. Amjad Ali  
Associate Professor/Director Advanced Studies &  
Research Board,  
Baluchistan Agriculture college,  
Balali, Chaman Road, Quetta. Member

Mr. Muhammad Ali  
Lecturer of Agricultural Extension,  
Faculty of Crop Products & Food Sciences,  
University of Arid Agriculture,  
Rawalpindi. Member

Dr. Zaheeruddin Mirani  
Assistant Professor  
Department of Agricultural Education Extension & Short Courses,  
Sindh Agriculture University,  
Tandojam Secretary

The meeting started with recitation from the Holy Quran by Prof (R) Fazal Karim Rajput. After the recitation, Muhammad Javed Khan, Advisor Academics, HEC, welcomed the participants and highlighted the importance of curriculum development process at national level. Dr. Khan gave a quick rundown of efforts made by HEC to promote Higher Education in Pakistan with special reference to the development of curriculum and its accreditation and uniformity. Dr. Tahir Shah, Deputy Director (Curriculum) HEC, briefed the participants about the outcomes of the Meeting of Deans/Convener of NCRC held at Islamabad on 17.10.2009. The technical proceedings of the meeting began with Prof. Dr. Tanvir Ali as Convener and Dr. Zaheeruddin Mirani as Secretary who were unanimously elected in NCRC preliminary meeting held on December 2009.

The participants reviewed each course keeping in view the comments of their colleagues at their respective universities/colleges. Accordingly, some courses were modified and some new courses were added to the curriculum in Agricultural Extension Education. The participants overwhelmingly emphasized the early registration of the national professional association of Agricultural Extension Education professionals proposed by the NCRC during 2005 and reinforced in NCRC meeting held on December 2009.

The house recommended that Dr. Nowshad Khan, Mr. Fazal Karim, Dr. Tahir Ali Shah, and Mr. Muhammad Ali will pursue the registration



process of the society. The participants hope that paper work for the registration of the Association will be completed by 7<sup>th</sup> of June, 2010. It was proposed that the office of the Association will initially be housed at AIOU, Islamabad and it will be shifted turn-wise to other universities of the country.

The Committee finalized the draft curriculum for Under-graduate and Post-graduate level for Agricultural Extension Education, assigned chapters among NCRC members to be written and published in textbooks, and suggested some recommendations to HEC. Finally, the meeting was concluded with the vote of thanks by the Chair.

## **Rationale**

In order to spur agriculture growth, Agricultural Extension Education plays an important role. Development of agriculture requires promising technologies and innovations that result in farm productivity. The Research Wing of the Provincial Department of Agriculture, Pakistan Agricultural Research Council, and Agricultural Universities through their post-graduate programs and faculty research are involved in performing this function. The research findings are of no avail unless these are disseminated to the end users/farmers. The Agricultural Extension Wings of the Provincial Department of Agriculture in the country are dealing with the endeavor of educating farmers regarding the adoption of latest agricultural technologies and research recommendations. For this purpose, we require efficient and skilful extension workers who should be competent enough to motivate/convince farmers to fully understand and utilize the latest innovations in agriculture. The curriculum in the discipline of Agricultural Extension Education for B.Sc. (Hons) Agriculture Degree programs has therefore been updated to meet the present day needs of extension workers and farmers. Efforts have been made to make a world-class curriculum so that Pakistani students should be able to compete for the relevant jobs in international market.

## Template for 4-Year B.Sc. (Hons) in Agricultural Disciplines

### 1. Compulsory Courses

	<b>Credits Hours</b>
Mathematics / Biology (2 courses)	6 (3-0) (2-1)
Statistics 1 & 2	6 (3-0) (3-0)
Computers / IT	3 (2-1)
Pakistan Studies	2 (2-0)
Islamic Studies	2 (2-0)
Communications Skills	3 (3-0)
English	3 (3-0)
Basic Agriculture	3 (2-1)

**Sub-Total 28**

### 2. Interdisciplinary Foundation Courses

Agronomy	3 (2-1)
Plant Breeding & Genetics	3 (2-1)
Entomology	3 (2-1)
Plant Pathology	3 (2-1)
Food Technology	3 (2-1)
Horticulture	3 (2-1)
Soil Sciences	3 (2-1)
Agriculture Economics	3 (2-1)

**Sub-Total 24**

### 3. Supporting Courses {6-8 courses (3 Cr. hr) amongst below}

Agriculture Extension	
Forestry & Range Management	
Animal Science	
Marketing & Agri Business	
Rural Development	
Human Nutrition	
Agriculture Chemistry	
Agriculture Engineering	
Water Management	
Any other discipline recommended by the university	

**Sub-Total 18-24**

**Sub-Total during the first four semesters****70-76****Semester 5, 6, 7 & 8****Project / Internship****Grand Total****56-60****04****130-140**

- 1 credit of Theory = one contact hour per week for 16-18 weeks and 1 Practical/Lab hour = 3 contact hours per week for 16-18 weeks.
- In case of non availability of department of supporting courses, courses from foundation courses can be opted.

**SCHEME OF STUDIES FOR GRADUATE COURSES**

AEE 301	Introduction to Agricultural Extension Education	3(3-0)
AEE 401	Communication Skills in Agricultural Extension	3(2-1)
AEE 501	Extension Program Development	3(2-1)
AEE 502	Agricultural Extension Methods	4(3-1)
AEE 503	History and Philosophy of Agricultural Extension Education	4(4-0)
AEE 504	Computer Application in Agricultural Extension	3(1-2)
AEE 505	Rural Development Programs in Pakistan	4(3-1)
AEE 506	Psychology of Adult Learning	4(4-0)
AEE 507	Rural Youth in Agricultural Development	3(2-1)
AEE 508	Human Resource Management	4(3-1)
AEE 509	Dyadic Communication	3(2-1)
AEE 510	Introduction to Research Methods	4(3-1)
AEE 511	Emerging Issues in Agriculture and Technology Transfer	4(3-1)
AEE 512	Introduction to Program Evaluation	4(3-1)
AEE 513	Fundamentals of Agricultural Journalism	4(2-2)
AEE 514	Rural Development Through Agricultural Extension	3(3-0)
AEE 515	Internship	4(0-4)

## **DETAILS OF COURSES FOR UNDER-GRADUATE STUDIES IN AGRICULTURAL EXTENSION EDUCATION**

**AEE 301      INTRODUCTION TO AGRICULTURAL      3(3-0)  
EXTENSION EDUCATION**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Define the given concept of Agricultural Extension Education
- Describe principles of effective extension
- Identify the organizational set-up of agricultural extension
- Analyze barriers to communication

### **Theory**

Agricultural Extension; its definition, objectives and importance. Types of education. Brief history/recent trends in Agricultural Extension. Organizational set-up in Pakistan. Role of private sector in agricultural development. Characteristics of Pakistani farmers, farming problems and solutions thereof. Roles and duties of extension workers at various organizational levels. Principles of effective extension work. Communication process and its components. Barriers to effective communication. Adoption and diffusion of agricultural innovations. Motivation techniques. Laws of adult learning. Role of rural youth and women in agricultural development. Extension, research and farmers linkages. Basic concept of planning, monitoring, and evaluation in Agricultural Extension.

### **Books Recommended:**

1. Bashir, E. (Ed.). 1997. Extension Methods (2<sup>nd</sup> Edition). National Book Foundation, Islamabad.
2. Leeuwis, C. and Van den Ban, A. 2004. Communication for Rural Innovation: Rethinking
3. Agricultural Extension (3<sup>rd</sup> Edition). Wiley-Blackwell.

**AEE 401      COMMUNICATION SKILLS IN  
AGRICULTURAL EXTENSION**

**3(2-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Define the given concepts of communication
- Identify the types of communication
- Conduct interviews
- Demonstrate improved communication skills

**Theory**

Concept, purpose and scope of communication in Agricultural Extension. Factors affecting communication fidelity. Types/forms of communication i.e. written, verbal, and non-verbal. **Communication skills:** Speaking, listening, writing and reading. **Speaking**---Face-to-Face communication. Preparing and delivering a speech. Conducting discussions and interviews including probing, counseling, appraisal, focus groups, and job interviews. Conducting extension meetings. Improving facilitation skills. **Listening**---Reasons for poor listening. Tips for improving listening skills. **Writing**---Art of good writing. Writing for newspapers and magazines. Writing letters, reports and articles frequently required for the job of an extension worker. **Reading**---Reasons for poor reading. Tips for developing effective reading skills. Use of audio-visual aids. Presentation skills.

**Practical**

**Micro-teaching**---Students will plan and practice extension teaching in small groups. They will also maintain a practical notebook regarding preparation of instructional designs.

**Interviewing** ---Students will interview farmers and extension workers to identify the problems.

**Writing Skills**---Students will prepare various entries of registers including stock register, store book, etc. and will prepare different type of reports required for the job of extension worker including maintenance of office records.

## **Books Recommended**

1. Calvert, P. (Ed.) 2000. The Communicator's Handbook: Tools, Techniques and Technology (4<sup>th</sup> Edition). Maupin House Publishing.
2. Murphy, H. A., Hildebrandt, H. P. and J. P. Thomas. 2000. Effective Business Communication. International Series. NBF, Islamabad.

## **AEE 501 EXTENSION PROGRAM DEVELOPMENT 3(2-1)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Define the given concept of program development
- Describe principles of effective program development
- Define basic concept of program monitoring and evaluation
- Analyze various program development models
- Plan an extension program

### **Theory**

Program development; purpose, concept, scope, significance, assumptions, characteristics, and principles. Program development approaches and models. Steps in program development: Situation analysis, needs assessment, statement of objectives, and plan of work. Planning, implementing, monitoring and evaluating programs.

### **Practical**

The students will conduct situation analysis and needs assessment. They will plan extension programs based on prioritized needs of extension clientele. They are required to submit a written report thereon.

## **Books Recommended**

1. Bennett, C. & Rockwell, K. 1994. Targeting Outcomes of Programs. An Integrated Approach to Planning and Evaluation.
2. Boyle, P. G. 1981. Planning Better Programs. McGraw-Hill Book Company, New York.
3. Caffarella, R. S. 2001. Planning programs for adult learners. A Practical guide for educators, trainers, and staff developers. 2<sup>nd</sup> Edition. Jossey-Bass Publishers
4. Swanson, B. E. et al 1997. Improving Agricultural Extension: A Reference Manual, FAO Rome.

**AEE 502 AGRICULTURAL EXTENSION METHODS 4(3-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Develop an instructional plan
- Select an appropriate extension method
- Apply the given extension method under the given situation
- Apply the teaching-learning process

**Theory**

Teaching as a process of facilitating learning, developing an instructional plan for extension teaching. Classification and critical analysis of extension methods. Planning, conducting and making follow up of various extension methods.

**Practical**

Each student will develop an instructional plan for a given extension-teaching situation. The student(s) will be involved in micro teaching/field situation concerning agricultural extension work.

**Books Recommended**

1. Bashir, E. (Ed.) 1997. Extension Methods (2<sup>nd</sup> Edition). National Book Foundation, Islamabad.
2. Sharma, S.R. 1998. Extension Education. Omsons Publications, New Delhi, India.
3. Swanson, B.E. et al 1997. Improving Agricultural Extension; A reference manual, FAO, Rome.

**AEE 503 HISTORY AND PHILOSOPHY OF AGRICULTURAL EXTENSION EDUCATION (4-0)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Explain the philosophical roots of Agricultural Extension Education
- Describe the historical perspective of Agricultural extension in the given era
- Analyze Islamic philosophy of extension education

## **Theory**

Evolution of Agricultural Extension Worldwide. Historical perspective of Agricultural extension education in Pakistan. The past performance of various extension programs, systems and models practiced in Pakistan. The emergence of private sector extension in Pakistan including input manufacturing and supply agencies, commercial banks, NGO's, private advisory services etc. Philosophy, its definition and branches. Philosophical foundation of agricultural extension education. Islamic bases and foundations of agricultural enterprises. Islamic philosophy of extension education.

## **Books Recommended**

1. Adams, M. E. 1988. Agricultural Extension in Developing Countries, Longman Singapore Publishing Private, Ltd, Singapore.
2. Blackburn, D. J. 1989. Foundations and Changing Practices in Extension. Guelph, Ontario, Canada: University of Guelph.
3. Cahn, S. M. (Ed.) 2009. Philosophy of Education: The Essential Texts. Routledge
4. Hussain, M. 1993. Agricultural Extension in Islamic Cultural Millieu, Islamabad: National Science Council.
5. Ornstein, A. C. & Levine, D. E. 1994. Foundations of Education, Houghton Mifflin Company.

**AEE 504      COMPUTER APPLICATION IN      3(1-2)**  
**AGRICULTURAL EXTENSION**

## **Course Objectives**

At the completion of this course, the students will be able to:

- Use software related to farm management
- Develop computer literacy
- Demonstrate computer skills

## **Theory**

Importance of information and communication technologies in extension education. Developing computer files and data bases. Data communication and networks. Internet basics, E-commerce. MS-Office. MS-Project, Internet Browsers, Use of software for farm management. Browser of website related to agriculture. Use of search engines, email systems, and knowledge portals.



## **Practical**

Students will be given assignments requiring the use of computer application in farm management and agricultural extension education.

## **Books Recommended**

1. Bashir, E. (Ed.) 1997. Extension Methods (2<sup>nd</sup> Edition). National Book Foundation, Islamabad.
2. Norton, P. 2006. Introduction to Computers (6<sup>th</sup> International Edition). McGraw Hills.
3. Davis, G. H. 1997. The ABC's of Micro Soft Office 97 Professional Edition; India.

## **AEE 505 RURAL DEVELOPMENT PROGRAMS 4(3-1) IN PAKISTAN**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Describe philosophy of rural development programs
- Identify the key rural development programs
- Evaluate critically Government plans and policies related to rural development

### **Theory**

Concept, philosophy, importance and objectives of rural development. Main approaches/programs of rural development in Pakistan i.e. V-AID, Basic democracies, rural works program, IRDP, social action program, village cooperatives, supervised credit schemes, participatory rural development projects, community based organizations. Current rural development programs: rural support programs and rural development programs of NGOs. A critical analysis of current government plans and policies for rural development. Emerging trends of rural development in Pakistan.

### **Practical**

Each student will be assigned a project related to any important aspect of rural development. After completing the project, each student will write, submit, and present a comprehensive report on the given problem.

## Books Recommended

1. Burkey, S. 1993. People First: A Guide to Self-reliant Participatory Rural Development. Zed Books Ltd., London.
2. Chambers R. 1993. Rural Development - Putting the Last First - John Wiley, New York.
3. Ison, R. & Russell, D. (Eds.) 2004. Agricultural Extension and Rural Development: Breaking out of Knowledge Transfer Traditions. Cambridge University Press.
4. Narasaiah, M.L. 2003. Approaches to Rural Development. Discovery Publishing House New Delhi (India).

## AEE 506 PSYCHOLOGY OF ADULT LEARNING 4(4-0)

### Course Objectives

At the completion of this course, the students will be able to:

- Describe the Psychology and discuss its application in Agricultural Extension
- Differentiate between active and passive learners
- Demonstrate the working knowledge of theories of learning
- Evaluate the learners achievement

### Theory

Definition of Psychology and related concepts, Application of educational Psychology in Agricultural Extension Education. **Domain of learning:** Cognitive, Psychomotor, and Affective. Levels of learning. Comparative analysis of active learners with passive learners. **Farmers as adult learners;** implications of physical, mental, emotional and social aspects for learning; personality types and their effect on learning and human relationship. Information **processing models.** Sensory input. Pattern recognition and various theories of pattern recognition. Theories of attention and motivation. Problems of adjustment and understanding human behavior according to the changed conditions. Problem-solving and decision- making strategies. Evaluation of learners' achievements.

## Books Recommended

1. Glover, J. A. & R. H. Bruning. 1990. Educational Psychology: Principles and Applications. Harper Collins Publishers.
2. Woolfolk, A. E. 1999. Educational Psychology. Allyn & Bacon Company, Singapore.
3. Tennant, M. 2005. Psychology and Adult Learning. Routledge Publishers

**AEE 507 RURAL YOUTH IN AGRICULTURAL DEVELOPMENT 3(2-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Define the meaning and philosophy behind rural youth work
- Describe rural youth clubs/work in global perspective
- Developing guideline for involving youth in Agricultural Extension
- Establish and manage youth clubs for agricultural development

**Theory**

Meaning, philosophy, and objectives of rural youth work. Characteristics, needs, and problems of rural youth in Pakistan. Participation of rural youth in agricultural development programs. Review of youth organizations. Guidelines for organizing a youth program. Identification of projects for the youth clubs. Participation of rural schools in dissemination of agricultural information.

**Practical**

The students will be assigned projects involving youth in agricultural development and submit the report.

**Books Recommended**

1. Curtis, K. 2008. Empowering Youth: How to Encourage Young Leaders to Do Great Things. Search Institute Press, Minneapolis, MN: USA.
2. Swanson, B.E. et al (Eds.) 1997. Improving Agricultural Extension; A reference manual, FAO, Rome.

**AEE 508 HUMAN RESOURCE MANAGEMENT 4(3-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Develop the Job design and analyzing skills
- Analyze the management styles
- Resolve group conflict
- Manage human resources

## **Theory**

Concept of Human Resource Management. **Job design and analysis;** personnel recruitment, selection; training and development, compensation and performance evaluation. Administration, management, leadership, supervision, authority, role, staffing, communication, conflict, control, motivation, negotiation, delegation, consultation and participation. Management theories. Organizational behavior analysis, Dimensions of human behavior. Behavior style patterns. Process of behavior modification. Group Behavior: group meetings, group conflict and management. Strategic management. Effective leadership styles.

## **Practical**

The students will be required to analyze their own management style using various techniques and participatory approaches. The students will also be required to develop strategies to improve their management styles.

## **Books Recommended**

1. Hellrigel, D. 2004. Organization Behavior (10<sup>th</sup> Edition). Thomson: USA
2. Noe, R., Hollenbeck, J., Gerhart, B., & Wright, P. (2008). Fundamentals of Human Resource Management. McGraww-Hill/Irwin Publishers.

## **AEE 509      DYADIC COMMUNICATION                      3(2-1)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Describe the types of Interviews
- Develop questions for interviews
- Conduct interviews

### **Theory**

Dyadic communication: its uses in Agricultural Extension Education. Informal face to face communication. Planning, conducting and interpreting various types of interviews: briefing, probing, selection, performance appraisal and discipline, counseling, persuasive, press conference and broadcast interviews. Principles and techniques of conducting interviews. The interview guide and the interview

schedule. Types of questions to be asked in interviews. Criteria for phrasing questions and question sequences.

### **Practical**

Student(s) will plan and conduct interviews in the class in a simulated situation. Interviews will be recorded and discussed in the class.

### **Books Recommended**

1. Broadwell, M.M. 1990. Interviewing Skills. The New Supervisor (4 ed.) Addison wesly Publishing Co., Inc, New York.
2. McDowell, E.E. 1991. Interviewing Practices for Technical Writers. Baywood Publishing Company, Inc. New York.
3. Perkins, P. S. 2008. The Art and Science of Communication: Tools for Effective Communication in the Workplace. Wiley Publishers: USA.

## **AEE 510 INTRODUCTION TO RESEARCH METHODS 4(3-1)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Describe the concepts and types
- Develop research instruments
- Develop plan of work for conducting research
- Apply research skills in real scenario

### **Theory**

Concept of research. Types of research: basic, applied, action. Quantitative and Qualitative research. Developing a research synopsis. Research instruments (questionnaire, interview schedule, interview guide etc). Data collection, analysis and writing a report.

### **Practical**

Each student will develop a questionnaire/interview schedule/interview guide for data collection. The student(s) will collect data on limited scale, analyze and submit the research report.

### **Books Recommended**

1. McMillan, J. H. 2007. Educational Research: Fundamentals for

- the Consumer (5th Edition)
2. O' Leary, Z. 2005. Essential Guide to Doing Research, Sage Publications, New Delhi. India

## **AEE 511 AGRICULTURAL TECHNOLOGY TRANSFER 4(3-1)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Discuss the scope and importance of technology transfer
- Evaluate the technology transfer process
- Identify barriers to technology transfer
- Analyze issues in technology transfer

### **Theory**

Definition and importance of technology transfer. Characteristics of promising agricultural technology. Barriers to technology transfer. Business considerations of a farm enterprise. and its technological aspects. Farm safety measures. Preparing feasibility reports of alternative farm enterprises. Recent technological developments in agriculture. Characteristics of technology generation, transfer and utilization sub- systems in Pakistan with special reference to agricultural development. WTO and its implications for Pakistan's agriculture. Corporate farming and its issues.

### **Practical**

Students will be required to demonstrate/present promising technologies in the class.

### **Books Recommended**

1. Arnon, I. 1989. Agricultural Research and Technology Transfer. Elsevier Science Publishing Co., New York, USA.
2. Lionberger, H.F. and P.H. Gwin. 1991. Technology Transfer: From Researchers to Users. University of Missouri, USA.
3. Rogers, E.M. 1995. Diffusion of Innovations. The Free Press. New York.

**AEE 512      INTRODUCTION TO PROGRAM  
EVALUATION**

**4(3-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Define the basic concepts of evaluation
- Identify the types and forms of evaluation
- Analyze various evaluation techniques
- Develop plan of evaluation

**Theory**

Concept, purposes, uses, and philosophy behind program evaluation. Importance of evaluation. Types and forms of evaluation. Qualitative v/s Quantitative evaluation. Developing a plan for evaluation. Evaluation techniques. Reporting evaluation results.

**Practical**

The student(s) is required to submit an evaluation plan of any social/development program. The plan will then be presented before the classroom for critical analysis.

**Books Recommended**

1. Wholey, J. S. Hatry, H. P., and Newcomer, K. E. (Editors).. 2004. Handbook of Practical Program Evaluation. Jossey-Bass publishers, USA.
2. Worthen, B. R., Sanders, J. R., and Fitzpatrick, J. L. 2003. Program Evaluation: Alternative approaches and Practical guidelines (3<sup>rd</sup> Edition). Allyn & Bacon, USA.

**AEE 513      FUNDAMENTALS OF AGRICULTURAL  
JOURNALISM**

**4(2-2)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Define the given concepts of Agricultural Journalism
- Develop news, news stories, and articles
- Criticize various news stories and articles

## **Theory**

Journalism: definition, types, importance, and history. Development Journalism: concept, scope, significance, roles, and functions. Application of Agricultural Journalism in Agricultural Extension Education. Fundamental elements of print and broadcast Journalism. Preparation and reporting news for print media. News editing and its significance. Column writing. Laws and codes of ethics for the agricultural professional journalists involved in publishing. Review of some important world newspapers publishing agricultural news stories, articles, and related information. Introduction to e-journalism. Exposure to important agricultural news channels, websites, radio, and TV.

## **Practical**

The student(s) will prepare and report agricultural information in the form of news, news stories, news articles, and/or documentaries.

## **Books Recommended**

1. Fang, I. 1997. A History of Mass Communication: Six Information Revolutions, by Focal press USA 1997.
2. Harcup, T. 2009. Journalism: principles and practice. SAGE publishers.
3. Vivian, J. 2000. Media of mass communication(5th Ed). Allyn and Bacon, London.
4. Yusuf, M. M. 1993. Exploring Journalism (3<sup>rd</sup> Edition). A-One Publishers, Lahore.

## **AEE 514 POVERTY ALLEVIATION AND SUSTAINABLE LIVELIHOODS 3(3-0)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Describe the basic concepts poverty alleviation and livelihoods
- Analyze the role of Agricultural Extension in Rural development
- Discuss various projects/programs of rural development
- Evaluate the development efforts

## **Theory**

Definition of poverty. Reasons of poverty. Technology, natural resources & rural poverty reduction. Employment, wages & the rural poor. Rural



employment: pattern & trends. Rural public works. Skill formation. Market prices & access to inputs, services and credit. Agricultural policy reforms. Expanding capability and strategies of reducing poverty. Enhancing women agency to promote social transformation and agricultural development. Development of under privileged areas. Reducing poverty by enhancing the role of indigenous knowledge and technology. Enhancing peace for poverty reduction. Sustainable agriculture & rural development. Sustainable livelihoods frameworks. Innovative Approaches: Grameen Bank experience. Factors affecting poverty in Pakistan

### **Books Recommended**

1. Sahibzada, M. 1999. Poverty Alleviation in Pakistan: Present scenario and future strategy. Institute of Policy Studies. Islamabad.
2. Shepherd, A. 1998. Sustainable Rural Development: McMillan Press.

### **AEE-515 INTERNSHIP**

**4(0-4)**

The students will be attached singly or in groups with the field staff of the Department of Agriculture (Extension), Nation Building Departments (NBDs), Non-Governmental Organizations (NGOs), etc. In addition, the students will pay study visits to various agricultural research stations and extension projects in the province/country with special reference to the following:

- i. Field crop production and protection
- ii. Farm machinery/workshops (tractors, threshers, etc.)
- iii. Livestock and poultry management
- iv. Farm forestry
- v. Seed farms etc.
- vi. Fish farming
- vii. Fruit and Vegetable production, preservation, processing (packages industry, cold storage, etc) and protection
- viii. Manures/chemical fertilizers
- ix. Soil reclamation and conservation (SCARP) projects
- x. Water management/Irrigation department
- xi. Maintenance of official records.
- xii. Agriculture credit, business and marketing
- xiii. Cooperatives
- xiv. Rural Support Programs/NGOs etc.

Every student will write a comprehensive report based on his/her

field experiences, according to the following guidelines:

- i. Introduction
- ii. Objectives of apprenticeship training program
- iii. Daily activity report
- iv. Extension activities undertaken during training
- v. Future plans for extension work in the area
- vi. Problems faced by field staff (host institutes/department), farmers and internee
- vii. Relationship of Agricultural Extension service with other nation building departments, agencies and stakeholders.
- viii. Suggestions for improvement of internship program.
- ix. Suggestions for the improvement of Agricultural Extension service.

### **Books Recommended**

1. Manuals of Agriculture (Extension Services), published by the USAID Washington, D. C., USA.
2. Swanson, B. E. et al. 1997, Improving agricultural extension methods, A reference Manual, FAO, Rome.

**SCHEME OF STUDIES  
FOR POST-GRADUATE COURSES**

AEE 701	Agricultural Extension Methods	3(2-1)
AEE 702	Program Planning	4(3-1)
AEE 703	Supervised Field Experience	3(0-3)
AEE 704	Monitoring and Evaluation in Agricultural Extension	4(3-1)
AEE 705	Communication Strategies in Agricultural Extension	4(3-1)
AEE 706	Advanced Research Methods	4(3-1)
AEE 707	Scientific and Technical Writing	4(3-1)
AEE 708	Applications of Information and Communication Technologies in Agricultural Extension	4(2-2)
AEE 709	Human Resource Development	3(2-1)
AEE 710	Community Development and Gender Issues	3(3-0)
AEE 711	International Agricultural Extension Systems	3(2-1)
AEE 712	Adult and Continuing Education	3(3-0)
AEE 713	Administration and Supervision in Agricultural Extension	4(4-0)
AEE 714	Special Problem	1(0-1)
AEE 715	Seminar	1(0-1)
AEE 716	Dissertation and Research	10 (0-1)

**DETAIL OF COURSES  
FOR POST-GRADUATE STUDIES IN  
AGRICULTURAL EXTENSION EDUCATION**

**AEE 701      AGRICULTURAL EXTENSION METHODS 3(2-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Identify various extension teaching methods
- Analyze the strengths and weakness of various extension teaching methods
- Practice teaching methods in real field like situation
- Identify ways of involving local institutions in extension teaching

**Theory**

Extension teaching methods, their merits, demerits, and applicability. Effects of various extension teaching methods at different stages of adoption of farm and home practices. Personal versus impersonal extension teaching methods and their significance. Ways of involving local institutions in extension teaching. Critical analysis of alternative extension methods. Recent advances in agricultural extension methods.

**Practical**

Students will plan, analyze, and apply given extension teaching method(s) in the simulated situation.

**Books Recommended:**

1. Bashir, E. (Ed.) 1997. Extension Methods (2<sup>nd</sup> Edition). National Book Foundation, Islamabad.
2. Swanson, B.E. et al. 1997. Improving Agricultural Extension; A reference Manual, FAO Rome.

**AEE 702      PROGRAM PLANNING      4(3-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Define the concepts, scope and role of program planning
- Analyze the role of change agents in program planning

- Differentiate between the long-term and short-term program planning
- Describe various program planning models in Extension

### **Theory**

Planning for social change; Planned versus un-planned change; Democratic versus autocratic program planning; Planning Extension Education Programs. Involving grass-roots in the planning process. Role of change agents (Extension workers) in program planning. Identifying the gaps between planning theories and practices. Long-term, short-term, tactical, and strategic planning. Program planning models: review, analysis, and application .

### **Practical**

The students will be given assignments to plan an agricultural extension education program for a typical Pakistani village/farming community and will make presentation.

### **Books Recommended:**

1. Bennett, C. & Rockwell, K. 1994. Targeting Outcomes of Programs. An Integrated Approach to Planning and Evaluation.
2. Boyle, P. G. 1981. Planning Better Programs. McGraw-Hill Book Company, New York.
3. Swanson, B.E. et al 1997. Improving Agricultural Extension; A Reference Manual, FAO Rome. Kretzman.

**AEE 703      SUPERVISED FIELD EXPERIENCE      3(0-3)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Observe and participate in real-life learning experience
- Develop on-the-job skills
- Develop report writing and presentation skills

### **Practical**

The students will be attached with experienced extension/development workers to learn on-the-job skills and gain experience in practical settings Each student will observe/participate and report the activities carried out during two weeks period. The

student(s) will be required to make a presentation in the class.

### **Books Recommended:**

1. Lindberg, K., Wood, M. and Engeldirum, D. 1999. Ecotourism- A guide for planners and Managers, Vol.-2. Natraj Publishers, New Delhi, India
2. Swanson, B.E. et.al. 1997 Improving Agricultural Extension. F.A.Q. Rome, Italy

## **AEE 704      MONITORING AND EVALUATION IN      4(3-1) AGRICULTURAL EXTENSION**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Define the concepts, scope and role of monitoring and evaluation
- Analyze the importance of evaluation for the future programs
- Develop data collection and analysis procedures for program evaluation

### **Theory**

Basic principles and role of of monitoring and evaluation. Evaluation standards. Evaluation: concept, objectives, and types of monitoring and evaluation i.e. formative, summative, and meta evaluation. Participatory Monitoring & Evaluation. Determining the type and the sources of data to be collected for an evaluation study. Data collection methods. Designing instruments, interview techniques. Testing reliability and validity of the instruments. Practical problems in data collection, data analysis and interpretation. Writing monitoring and evaluation report. Utilization of evaluation results.

### **Practical**

The students will be required to review critically monitoring and evaluation reports of development/research projects. They have to identify strengths and weaknesses of the report(s). Each student will select an extension program/project/activity for evaluation. The student(s) will plan and conduct evaluation and submit the report to the concerned teacher.

### **Books Recommended**

1. Wholey, J. S. Hatry, H. P., and Newcomer, K. E. (Editors).. 2004. Handbook of practical Program Evaluation. Jossey-Bass

- publishers, USA.
2. Worthen, B. R., Sanders, J. R., and Fitzpatrick, J. L. 2003. Program Evaluation: Alternative approaches and practical guidelines (3<sup>rd</sup> Edition). Allyn & Bacon, USA.
  3. Sanders, J. R. et al. 1994. The Program Evaluation Standards (2nd Edition). How to Assess Evaluations of Educational Programs. SAGE Publishers.

**AEE 705      COMMUNICATION STRATEGIES IN      4(3-1)**  
**AGRICULTURAL EXTENSION**

**Course Objectives**

At the completion of this course, the students will be able to:

- Identify and define the communication process and models
- Analyze the components of an effective message
- Design and apply various communication methods
- Analyze various barriers to communication

**Theory**

Defining communication process. Models of communication. **Variables in communication process:** source variables, **receiver variables** such as demographic analysis, personality analysis, interpersonal trust, listening ability and feed-back, and verbal message variables. The components of a persuasive message, factors affecting persuasive message, structuring a persuasive message. Non-verbal message variables and difficulties in their understanding. Non-verbal communication, functions of non-verbal communication, non-verbal communication as a global approach. Obstacles to effective communication. Horizontal and vertical communication. The structures of communication process; face to face communication, small group communication, public address communication, mass communication.

**Practical**

Visits to various Media Centers and holding discussions with media personnel. Participation of students in various communication situations and presenting the results before the class.

**Books Recommended**

1. Hirevenkanagoudar L. 2005. Extension Strategies For Human Resource Development. Agrotech Books. India.

2. Leeuwis, C. & Van den Ban, A. (2004). *Communication for Rural Innovation: Rethinking Agril. Extension*. Wiley-Blackwell; 3rd Edition.

**AEE 706      ADVANCED RESEARCH METHODS      4(3-1)**

**Course Objectives**

At the completion of this course, the students will be able to:

- Identify research problem
- Analyze and interpret research data
- Critically analyze various methods of qualitative and quantitative research
- Apply various research designs

**Theory**

Selecting and defining a research problem. Conducting review of literature and computer search. Delimiting the research problem. Introduction to research designs. Defining population and selecting samples. Choosing alternative methods for data collection. Determining reliability and validity of the research instrument. Selecting and applying appropriate statistical techniques for data analysis. Planning, developing, and critically analyzing research proposals. Ethical principles and constraints for planning, conducting, and reporting research in Agricultural Extension. Qualitative research design. Purposeful sampling techniques. Methods of qualitative research. Taking field notes for observations and interviews. Strategies for analyzing, interpreting, synthesizing, and reporting qualitative data.

**Practical**

The students will be engaged to prepare and present their brief research proposals and plan and conduct pilot studies.

**Books Recommended**

1. Creswell, J. W. 2007. *Study Guide for Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Prentice Hall, NJ; USA.
2. Creswell, J. W. 2008. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.
3. M. D. Gall, M. D., Gall, J. P. & Borg, W. R. 2006. *Educational Research: An Introduction (8<sup>th</sup> Edition)* Longman Inc., New York.



## **AEE-707      SCIENTIFIC AND TECHNICAL WRITING    4(1-3)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Apply scientific writing skills in their fields
- Identify various formats of research report writing
- Develop report writing and presentation skills
- Present research reports at appropriate forums

### **Theory**

Writing as means of communication in professional and scientific fields. Differences between scientific and general audience writing. Alternative requirements and formats of synopses, theses, technical articles and research papers. Introduction to American Psychological Association (APA) and Council of Biological Editors (CBE) style manuals.

### **Practical**

Every student will be required to write technical articles/reports on given topics and present in the class. Moreover, they will critically evaluate and edit reports prepared by other students and present it.

### **Books Recommended**

1. Hofman, A. H. 2009. Scientific Writing and Communication: Papers, Proposals, and Presentations. Oxford university Press, USA.
2. APA. 2009. Publication Manual of the American Psychological Association (6th Edition). APA; USA.
3. Council of Science Editors. (2006). Scientific Style And Format: The CSE Manual for Authors, Editors, And Publishers (CSE, Scientific Style and Format).

## **AEE 708      APPLICATION OF INFORMATION AND    4(2-2) COMMUNICATION TECHNOLOGIES IN AGRICULTURAL EXTENSION**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Compare the role of various extension teaching methods
- Determine role of GIS and remote sensing in extension education
- Use given information technology for extension work

## **Theory**

Overview of technologies used in extension programs (Teaching Aids like multimedia projectors, computers and internet), use of databases for agriculture products, computerized weather forecasting and usage, computerized map reading and interpretation, color coding, spectroscopic study. Introduction to remote sensing & geographical information systems (GIS) for Agricultural Extension Education. Role of remote sensing & GIS for agricultural resource management and rural development. Computerized mass media applications in Agricultural Extension Education: teleconferencing, e-conferencing, knowledge portal, e-office, e-agriculture, e-business etc. Use of mobile communication for agricultural development and business.

## **Practical**

Student will be given hands-on experience in above mentioned technologies

## **Books Recommended**

1. Mather, P. M. 2004. Computer Processing of Remotely Sensed Images (3<sup>rd</sup> Edition) John Wiley and Sons.
2. Geographical Information Systems – Principles, Techniques, Applications and Management, Edited by -Paul A. Longley, Michael Goodchild, David Maguire and David W. Rhind, Publisher - John Wiley and Sons
3. An Introduction to Geographical Information Systems, By -Ian Heywood, Sarah Cornelius and Steve Carver, Publisher - Addison Wesley Longman Limited, New York
4. Campbell, James B. 2002. Introduction to Remote Sensing (3rd Edition). The Guilford Press.

## **AEE 709 HUMAN RESOURCE DEVELOPMENT 3(2-1)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Discuss concept and role of human resource development
- Organize training programs
- Manage training programs
- Evaluate training programs

### **Theory**

Concept of Human Resource Development (HRD). Purpose of

training. Types of training i.e. pre-service, in-service, and follow-up. Determining training needs; Organizing, supervising and managing training programs; Human relations training; identifying requirements. Training of Trainers: selecting, planning, and implementing training programs; Duties and responsibilities of trainers; Evaluating the training programs: performance appraisal, job satisfaction, career planning, conflict management and resolution.

### **Practical**

Student will plan and conduct a training program for a given situation.

### **Books Recommended**

1. Swanson, R. A. and Holton, E. F. 2009. Foundations of Human Resource Development (2<sup>nd</sup> Edition). Berrett-Koehler Publishers
2. Werner, J. M. & DeSimone, R. L. 2008. Human Resource Development (5<sup>th</sup> Edition). South-Western College Pub.
3. Wilson, J. P. \* Wilson, J. P. 2005. Human Resource Development: Learning and Training for Individuals and Organizations. Kogan Page Publishers.

**AEE 710      COMMUNITY DEVELOPMENT AND      3(3-0)**  
**GENDER ISSUES**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Define the given concepts of community development process
- Determine essential elements of community development
- Discuss socio-cultural constraints to gender mainstreaming
- Describe the role of women in community development

### **Theory**

Community development: definition, concept, elements, and past and current programs. Essential elements in building a national program of community development. Methods of community development. Training of local leaders and personnel for community development. Monitoring and evaluation of community development programs. Gender role in community development. Socio-cultural constraints and obstacles to gender mainstreaming in Agricultural Extension.. Role of Agricultural Extension in sustainable livelihoods with special reference to rural women.

**Books Recommended:**

1. Chambers, R. 1994. Rural Development. McMillan Publishing Company.
2. Chambers, R. 2005. Ideas For Development. Earthscan Publications Ltd.
3. Homan, M. S. 2010. Promoting Community Change: Making it Happen in the Real World (5<sup>th</sup> Edition). Brooks/Cole Publishing Company.

**AEE-711      INTERNATIONAL AGRICULTURAL      3(2-1)  
EXTENSION SYSTEMS****Course Objectives**

At the completion of this course, the students will be able to:

- Compare extension systems in selected countries
- Analyze strengths and weakness of the extension system in the given country
- Describe limitations of agricultural extension services

**Theory**

Agricultural Extension in Bangladesh; Farmers' Association in Malaysia; Agricultural Development through the participation of small farmers in Afghanistan; Farmers' training and functional literacy in India; Farmers' training programs in Asia with special reference to small farmers. Agricultural extension service in Japan with special reference to training of rural youth; Farmers' education services in selected Asian countries. Agricultural extension system in developed countries i.e. USA, Canada, UK, China etc.

**Practical**

The students will compare extension systems in two different countries and present it in the class.

**Books Recommended:**

1. Botha, N. 2004. Contracting for agricultural extension: international case studies and emerging practices [A book review from: Journal of Rural Studies. Elsevier Publishers.
2. Snapp, S. & Pound, B. Agricultural Systems: Agroecology and Rural Innovation for Development. Academic Press.

## **AEE 712 ADULT AND CONTINUING EDUCATION 3(3-0)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Narrate the significance of adult education in agriculture
- Describe basic principles of adult education programs
- Select appropriate method(s) of adult education for the given situation
- Demonstrate the use of given adult education method
- Monitor and evaluate adult education programs

### **Theory**

The nature, extent and significance of adult education with special reference to agriculture. Characteristics of adults; Recent trends in adult education; Principles involved in educating adults; Selecting, suitable methods for teaching adults; Nature of adult education programs in agricultural development; Contribution of adult education to agricultural development; Monitoring and evaluation of adult education programs.

### **Books Recommended:**

1. Galbraith, M.W. (Editor).1998. Adult Learning Methods. Krieger Publishing Company.
2. Kasworm, C. E., Rose, A. D. & Gordon, M. R. 2010. Handbook of Adult and Continuing Education. SAGE publications.
3. Merriam, S.B. & Cafferalla, R.S. 1999. Learning in adulthood Jossey-Bass Publications.

## **AEE 713 ADMINISTRATION AND SUPERVISION IN AGRICULTURAL EXTENSION 4(4-0)**

### **Course Objectives**

At the completion of this course, the students will be able to:

- Define basic concepts of administration and supervision in extension education
- Practice coordination between national building departments
- Apply basic principles of supervision in real life situation
- Appraisal of various administrative tasks in extension

### **Theory**

Meaning and objectives of extension administration. The organization and administration of extension at different administrative tiers.

Coordinative capacity of the Department of Agriculture (Extension) with the nation building departments, research organizations and related universities. Role of the different administrative heads (Agri. Extension) in planning and coordinating resources and delegation of authority. Meaning and objectives of supervision. Principles of supervision. Staff recruitment, placement, training programs, counseling, job description, ranks, promotion and salary adjustment. Effective team building. Leadership vs management. Leadership theories and styles. Appraisal and improvement of administrative and supervisory activities.

**Books Recommended:**

1. Berkley, J. D. 2008. Leadership Handbook of Management and Administration. Baker Books Publishers.

**AEE 714      SPECIAL PROBLEM      1(0-1)**

**Practical**

A study of problem(s) of special concern assigned to the student in Agricultural Extension

**AEE 715      SEMINAR      1(0-1)**

**Practical**

Students will prepare paper on assigned topic and deliver seminar in given situation

**Annexure - A**

**DETAILS OF COMPULSORY COURSES  
COMPULSORY COURSES IN ENGLISH FOR  
Undergraduate Level**

**English I (Functional English)**

**Credit Hrs. 3**

**Objectives:** Enhance language skills and develop critical thinking.

**Course Contents**

Basics of Grammar  
Parts of speech and use of articles  
Sentence structure, active and passive voice  
Practice in unified sentence  
Analysis of phrase, clause and sentence structure  
Transitive and intransitive verbs  
Punctuation and spelling

**Comprehension**

Answers to questions on a given text

**Discussion**

General topics and every-day conversation (topics for discussion to be at the discretion of the teacher keeping in view the level of students)

**Listening**

To be improved by showing documentaries/films carefully selected by subject teachers

**Translation skills**

**Urdu to English**

**Paragraph writing**

Topics to be chosen at the discretion of the teacher

**Presentation skills**

Introduction

*Note: Extensive reading is required for vocabulary building*

## Recommended books

### 1. Functional English

#### a) Grammar

1. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
2. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506

#### b) Writing

1. Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.

#### c) Reading/Comprehension

1. Reading. Upper Intermediate. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.

#### d) Speaking

## English II (Communication Skills)

Credit Hrs. 3

**Objectives:** Enable the students to meet their real life communication needs.

### Course Contents

#### Paragraph writing

Practice in writing a good, unified and coherent paragraph

#### Essay writing

Introduction

#### CV and job application

Translation skills  
Urdu to English



**Study skills**

Skimming and scanning, intensive and extensive, and speed reading, summary and précis writing and comprehension

**Academic skills**

Letter/memo writing, minutes of meetings, use of library and internet

**Presentation skills**

Personality development (emphasis on content, style and pronunciation)

*Note: documentaries to be shown for discussion and review*

**Recommended books:****Communication Skills**

- a) Grammar
  - 1. Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.
  
- b) Writing
  - 1. Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 45-53 (note taking).
  - 2. Writing. Upper-Intermediate by Rob Nolasco. Oxford Supplementary Skills. Fourth Impression 1992. ISBN 0 19 435406 5 (particularly good for writing memos, introduction to presentations, descriptive and argumentative writing).
  
- c) Reading
  - 1. Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.
  - 2. Reading and Study Skills by John Langan
  - 3. Study Skills by Richard Yorky.

## **English III (Technical Writing and Presentation Skills) Crh. 3**

**Objectives:** Enhance language skills and develop critical thinking

### **Course Contents**

#### **Presentation skills**

#### **Essay writing**

Descriptive, narrative, discursive, argumentative

#### **Academic writing**

How to write a proposal for research paper/term paper

How to write a research paper/term paper (emphasis on style, content, language, form, clarity, consistency)

#### **Technical Report writing**

#### **Progress report writing**

*Note: Extensive reading is required for vocabulary building*

### **Recommended books:**

#### Technical Writing and Presentation Skills

- a) Essay Writing and Academic Writing
  1. Writing. Advanced by Ron White. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 435407 3 (particularly suitable for discursive, descriptive, argumentative and report writing).
  2. College Writing Skills by John Langan. Mc=Graw-Hill Higher Education. 2004.
  3. Patterns of College Writing (4<sup>th</sup> edition) by Laurie G. Kirszner and Stephen R. Mandell. St. Martin's Press.
- b) Presentation Skills
- c) Reading  
The Mercury Reader. A Custom Publication. Compiled by norther Illinois University. General Editors: Janice Neulib; Kathleen Shine Cain; Stephen Ruffus and Maurice Scharon. (A reader which will give students exposure to the best of twentieth century literature, without taxing the taste of engineering students).

**ISLAMIC STUDIES  
(Compulsory)**

**Objectives:**

This course is aimed at:

- 1 To provide Basic information about Islamic Studies
- 2 To enhance understanding of the students regarding Islamic Civilization
- 3 To improve Students skill to perform prayers and other worships
- 4 To enhance the skill of the students for understanding of issues related to faith and religious life.

**Detail of Courses**

**Introduction to Quranic Studies**

- 1) Basic Concepts of Quran
- 2) History of Quran
- 3) Uloom-ul -Quran

**Study of Selected Text of Holly Quran**

- 1) Verses of Surah Al-Baqra Related to Faith(Verse No-284-286)
- 2) Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18)
- 3) Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)
- 4) Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77)
- 5) Verses of Surah Al-Inam Related to Ihkam(Verse No-152-154)

**Study of Selected Text of Holly Quran**

- 1) Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58.)
- 2) Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
- 3) Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14)

**Seerat of Holy Prophet (S.A.W) I**

- 1) Life of Muhammad Bin Abdullah ( Before Prophet Hood)

- 2) Life of Holy Prophet (S.A.W) in Makkah
- 3) Important Lessons Derived from the life of Holy Prophet in Makkah

### **Seerat of Holy Prophet (S.A.W) II**

- 1) Life of Holy Prophet (S.A.W) in Madina
- 2) Important Events of Life Holy Prophet in Madina
- 3) Important Lessons Derived from the life of Holy Prophet in Madina

### **Introduction To Sunnah**

- 1) Basic Concepts of Hadith
- 2) History of Hadith
- 3) Kinds of Hadith
- 4) Uloom –ul-Hadith
- 5) Sunnah & Hadith
- 6) Legal Position of Sunnah

### **Selected Study from Text of Hadith**

#### **Introduction To Islamic Law & Jurisprudence**

- 1) Basic Concepts of Islamic Law & Jurisprudence
- 2) History & Importance of Islamic Law & Jurisprudence
- 3) Sources of Islamic Law & Jurisprudence
- 4) Nature of Differences in Islamic Law
- 5) Islam and Sectarianism

### **Islamic Culture & Civilization**

- 1) Basic Concepts of Islamic Culture & Civilization
- 2) Historical Development of Islamic Culture & Civilization
- 3) Characteristics of Islamic Culture & Civilization
- 4) Islamic Culture & Civilization and Contemporary Issues

### **Islam & Science**

- 1) Basic Concepts of Islam & Science
- 2) Contributions of Muslims in the Development of Science
- 3) Quranic & Science

### **Islamic Economic System**

- 1) Basic Concepts of Islamic Economic System
- 2) Means of Distribution of wealth in Islamic Economics
- 3) Islamic Concept of Riba
- 4) Islamic Ways of Trade & Commerce

### **Political System of Islam**

- 1) Basic Concepts of Islamic Political System
- 2) Islamic Concept of Sovereignty
- 3) Basic Institutions of Govt. in Islam

### **Islamic History**

- 1) Period of Khlaft-E-Rashida
- 2) Period of Umayyads
- 3) Period of Abbasids

### **Social System of Islam**

- 1) Basic Concepts of Social System of Islam
- 2) Elements of Family
- 3) Ethical Values of Islam

### **Reference Books:**

- 1) Hameed ullah Muhammad, "Emergence of Islam", IRI, Islamabad
- 2) Hameed ullah Muhammad, "Muslim Conduct of State"
- 3) Hameed ullah Muhammad, "Introduction to Islam"
- 4) Mulana Muhammad Yousaf Islahi,"
- 5) Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.
- 6) Ahmad Hasan, "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad (1993)
- 7) Mir Waliullah, "Muslim Jrisprudence and the Quranic Law of Crimes" Islamic Book Service (1982)
- 8) H.S. Bhatia, "Studies in Islamic Law, Religion and Society" Deep & Deep Publications New Delhi (1989)
- 9) Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad (2001)

**PAKISTAN STUDIES  
(Compulsory)**

**Introduction/Objectives**

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

**Course Outline**

**1. Historical Perspective**

- a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah.
- b. Factors leading to Muslim separatism
- c. People and Land
  - i. Indus Civilization
  - ii. Muslim advent
  - iii. Location and geo-physical features.

**2. Government and Politics in Pakistan**

Political and constitutional phases:

- a. 1947-58
- b. 1958-71
- c. 1971-77
- d. 1977-88
- e. 1988-99
- f. 1999 onward

**3. Contemporary Pakistan**

- a. Economic institutions and issues
- b. Society and social structure
- c. Ethnicity
- d. Foreign policy of Pakistan and challenges
- e. Futuristic outlook of Pakistan

## Books Recommended

1. Burki, Shahid Javed. *State & Society in Pakistan*, The Macmillan Press Ltd 1980.
2. Akbar, S. Zaidi. *Issue in Pakistan's Economy*. Karachi: Oxford University Press, 2000.
3. S.M. Burke and Lawrence Ziring. *Pakistan's Foreign policy: An Historical analysis*. Karachi: Oxford University Press, 1993.
4. Mehmood, Safdar. *Pakistan Political Roots & Development*. Lahore, 1994.
5. Wilcox, Wayne. *The Emergence of Banglades.*, Washington: American Enterprise, Institute of Public Policy Research, 1972.
6. Mehmood, Safdar. *Pakistan Kayyun Toota*, Lahore: Idara-e-Saqafat-e-Islamia, Club Road, nd.
7. Amin, Tahir. *Ethno - National Movement in Pakistan*, Islamabad: Institute of Policy Studies, Islamabad.
8. Ziring, Lawrence. *Enigma of Political Development*. Kent England: WmDawson & sons Ltd, 1980.
9. Zahid, Ansar. *History & Culture of Sindh*. Karachi: Royal Book Company, 1980.
10. Afzal, M. Rafique. *Political Parties in Pakistan*, Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.
11. Sayeed, Khalid Bin. *The Political System of Pakistan*. Boston: Houghton Mifflin, 1967.
12. Aziz, K.K. *Party, Politics in Pakistan*, Islamabad: National Commission on Historical and Cultural Research, 1976.
13. Muhammad Waseem, *Pakistan Under Martial Law*, Lahore: Vanguard, 1987.
14. Haq, Noor ul. *Making of Pakistan: The Military Perspective*. Islamabad: National Commission on Historical and Cultural Research, 1993.

**COMPULSORY MATHEMATICS  
COURSES FOR B.Sc (Hons) AGRICULTURE**

**1. MATHEMATICS I (ALGEBRA)**

**Prerequisite(s):** Mathematics at secondary level

**Credit Hours:** 3 + 0

**Specific Objectives of the Course:** To prepare the students, not majoring in mathematics, with the essential tools of algebra to apply the concepts and the techniques in their respective disciplines.

**Course Outline:**

*Preliminaries:* Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.

*Matrices:* Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer's rule.

*Quadratic Equations:* Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.

*Sequences and Series:* Arithmetic progression, geometric progression, harmonic progression.

*Binomial Theorem:* Introduction to mathematical induction, binomial theorem with rational and irrational indices.

*Trigonometry:* Fundamentals of trigonometry, trigonometric identities.

**Recommended Books:**

Dolciani MP, Wooton W, Beckenback EF, Sharron S, *Algebra 2 and Trigonometry*, 1978, Houghton & Mifflin,

**Boston (suggested text)**

Kaufmann JE, *College Algebra and Trigonometry*, 1987, PWS-Kent Company, Boston



Swokowski EW, *Fundamentals of Algebra and Trigonometry* (6<sup>th</sup> edition),  
1986, PWS-Kent Company, Boston

## 2. MATHEMATICS II (CALCULUS)

**Prerequisite(s):** Mathematics I (Algebra)

**Credit Hours:** 3 + 0

**Specific Objectives of the Course:** To prepare the students, not majoring in mathematics, with the essential tools of calculus to apply the concepts and the techniques in their respective disciplines.

### **Course Outline:**

*Preliminaries:* Real-number line, functions and their graphs, solution of equations involving absolute values, inequalities.

*Limits and Continuity:* Limit of a function, left-hand and right-hand limits, continuity, continuous functions.

*Derivatives and their Applications:* Differentiable functions, differentiation of polynomial, rational and transcendental functions, derivatives.

*Integration and Definite Integrals:* Techniques of evaluating indefinite integrals, integration by substitution, integration by parts, change of variables in indefinite integrals.

### **Recommended Books:**

Anton H, Bevens I, Davis S, *Calculus: A New Horizon* (8<sup>th</sup> edition), 2005, John Wiley, New York

Stewart J, *Calculus* (3<sup>rd</sup> edition), 1995, Brooks/Cole (suggested text)

Swokowski EW, *Calculus and Analytic Geometry*, 1983, PWS-Kent Company, Boston

Thomas GB, Finney AR, *Calculus* (11<sup>th</sup> edition), 2005, Addison-Wesley, Reading, Ma, USA

## 3. MATHEMATICS III (GEOMETRY)

**Prerequisite(s):** Mathematics II (Calculus)

**Credit Hours:** 3 + 0

**Specific Objectives of the Course:** To prepare the students, not majoring in mathematics, with the essential tools of geometry to apply the concepts and the techniques in their respective disciplines.

### **Course Outline:**

*Geometry in Two Dimensions:* Cartesian-coördinate mesh, slope of a line, equation of a line, parallel and perpendicular lines, various forms of equation of a line, intersection of two lines, angle between two lines, distance between two points, distance between a point and a line.

*Circle:* Equation of a circle, circles determined by various conditions, intersection of lines and circles, locus of a point in various conditions.

*Conic Sections:* Parabola, ellipse, hyperbola, the general-second-degree equation

### **Recommended Books**

Abraham S, *Analytic Geometry*, Scott, Freshman and Company, 1969  
Kaufmann JE, *College Algebra and Trigonometry*, 1987, PWS-Kent Company, Boston  
Swokowski EW, *Fundamentals of Algebra and Trigonometry* (6<sup>th</sup> edition), 1986, PWS-Kent Company, Boston

### **Note:**

1. ***Two courses will be selected from the following three courses of Mathematics.***
2. ***Universities may make necessary changes in the courses according to the requirement as decided by the Board of Studies.***

## **Annexure - E**

### **Statistics-I**

#### **Credit 3 (2-1)**

Definition and importance of Statistics in Agriculture, Data Different types of data and variables

Classification and Tabulation of data, Frequency distribution, stem-and-Leaf diagram, Graphical representation of data Histogram, frequency polygon, frequency curve.

Measure of Central tendency, Definition and calculation of Arithmetic mean, Geometric mean, Harmonic mean, Median quantiles and Mode in grouped and ungrouped data.

Measure of Dispersion, Definition and Calculation of Range, quartile deviation, Mean deviation, Standard deviation and variance, coefficient of variation.

#### **Practicals**

- a. Frequency Distribution
- b. Stem-and-Leaf diagram
- c. Various types of Graphs
- d. Mean, Geometric mean Harmonic Mean,
- e. Median, Quartiles Deviation, mean Deviation.
- f. Standard Deviation, Variance, Coefficient of variation,
- g. Skewness and kurtosis

#### **Book Recommended**

1. Introduction to Statistical Theory Part- I by Sher Muhammad and Dr. Shahid Kamal (Latest Edition)
2. Statistical Methods and Data Analysis by Dr. Faquir Muhammad
3. A. Concise Course in A. Level Statistic with world examples by J. Crawshaw and J. Chambers (1994)
4. Basic Statistics an Inferential Approach 2<sup>nd</sup> Ed. (1986) Fran II. Dietrich-II and Thomas J. Keans

## Statistics-II

Credit 3 (2-1)

Sampling Probability and non-Probability Sampling, Simple random sampling stratified random sampling Systematic sampling error, Sampling distribution of mean and difference between two means. Interference Theory: Estimation and testing of hypothesis, Type—I and type-II error, Testing of hypothesis about mean and difference between two means using Z-test and t-test, Paired t-test, Test of association of attributes using  $\chi^2$  (chi-square) Testing hypothesis about variance.

### Practicals

- a. Sampling random sampling
- b. Stratified random sampling.
- c. Sampling distribution of mean
- d. Testing of hypotheses regarding population mean
- e. Testing of hypotheses about the difference between population means
- f. Chi-square test
- g. Testing of Correlation Coefficient
- h. Fitting of simple linear regression
- i. One-way ANOVA
- j. Two-way ANOVA

### Book Recommended

1. Introduction to Statistical Theory Part-II by Sher Muhammad and Dr. Shahid Kamal (Latest Edition)
2. Statistical Methods and Data Analysis by Dr. Faquir Muhammad
3. Principles and Procedures of Statistics A Bio-metrial approach, 2<sup>nd</sup> Edition, 1980 by R.G.D Steal and James H. Tarric
4. Statistical Procedures for Agricultural Research 2<sup>nd</sup> Edition (1980) by K.A. Gomez and A.A. Gomez

**Note:** *Universities may make necessary changes in the courses according to the requirement as decided by the Board of Studies.*

## Annexure – F

**Course Name:**

### **Introduction to Information and Communication Technologies**

**Course Structure:** Lectures: 2 Labs: 1      **Credit Hours: 3**

**Pre-requisite: None**                              **Semester: 1**

#### **Course Description:**

This is an introductory course on Information and Communication Technologies. Topics include ICT terminologies, hardware and software components, the internet and world wide web, and ICT based applications.

After completing this course, a student will be able to:

- Understand different terms associated with ICT
- Identify various components of a computer system
- Identify the various categories of software and their usage
- Define the basic terms associated with communications and networking
- Understand different terms associated with the Internet and World Wide Web.
- Use various web tools including Web Browsers, E-mail clients and search utilities.
- Use text processing, spreadsheets and presentation tools
- Understand the enabling/pervasive features of ICT

#### **Course Contents**

- : Basic Definitions & Concepts
- : Hardware: Computer Systems & Components
- : Storage Devices, Number Systems
- : Software: Operating Systems, Programming and Application Software
- : Introduction to Programming, Databases and Information Systems
- : Networks
- : Data Communication
- : The Internet, Browsers and Search Engines
- : The Internet: Email, Collaborative Computing and Social Networking
- : The Internet: E-Commerce

- : IT Security and other issues
- : Project Week
- : Review Week

**Text Books/Reference Books:**

Introduction to Computers by Peter Norton, 6th International Edition (McGraw HILL)  
 Using Information Technology: A Practical Introduction to Computer & Communications by Williams Sawyer, 6th Edition (McGraw HILL)  
 Computers, Communications & information: A user's introduction by Sarah E. Hutchinson, Stacey C. Swayer  
 Fundamentals of Information Technology by Alexis Leon, Mathewsleon Leon Press.

**Functional Biology-I**

***Credit Hours 3+0***

**Biological Methods**

- Principles of Cellular Life
- Chemical Basis
- Structure and Function
- Principles of Metabolism
- Energy Acquisition

Principles of Inheritance

- Mitosis and Meiosis
- Chromosomes
- Observable Inheritance Patterns
- DNA Structure and Function
- RNA and Proteins
- Genes
- Genetic Engineering and Biotechnology

Biodiversity

- Fundamental Concept of Biodiversity
- One or two examples of each of the following from commonly found organism
- Prions
- Viruses
- Bacteria
- Protistans
- Algae
- Fungi
- Plants

Crops  
Animals  
Invertebrates  
Vertebrates

***Reading***

1. Roberts, M.M., Reiss and G.Monger. 2000. Advanced Biology, Nelson.
2. Starr, C, and R, Taggart, 2001. Biology: The Unity and Diversity of Life Brooks and Cole.
3. Campbell, N.A., J.B, Reece, L.G. Mitchell, M.R, Taylor. 2001. Biology: Concepts and Connections. Prentice-Hall.



## Functional Biology-II

**Credit Hours 3+0**

Myths and Realities of Evolution

Microevolution

Speciation

Macroevolution

Level of Organization

Plants

Tissues

Nutrition and Transport

Reproduction

Growth and Development

Animals

Tissue, Organ System and Homeostasis

Information Flow and Neuron

Nervous System

Circulation and Immunity

Nutrition and Respiration

Reproduction and Development

Ecology and Behavior

Ecosystems

Biosphere

Social Interactions

Community Interactions

Human Impact on Biosphere

Environment Conservation

### **Reading**

1. Roberts, M.M., Reiss and G.Monger. 2000. Advanced Biology, Nelson.
2. Starr, C, and R, Taggart, 2001. Biology: The Unity and Diversity of Life Brooks and Cole.
3. Campbell, N.A., J.B, Reece, L.G. Mitchell, M.R, Taylor. 2001. Biology: Concepts and Connections. Prentice-Hall.

**Note: Universities may make necessary changes in the courses according to the requirement as decided by the Board of Studies.**

## RECOMMENDATIONS

After thorough discussion, the participants of the National Curriculum Revision Committee of Agricultural Extension formulated the following recommendations:

- The Higher Education Commission may provide financial help for conducting a national conference of various stakeholders related to Agricultural Extension as the NCRC realized the importance of Agricultural Extension for boosting the agricultural production in the country.
- Promoting the activities of Pakistan Association for the Advancement of Agricultural Extension Education (PAAEE).
- Establishing the Media Centers in the Departments of Agricultural Extension in all agricultural universities/institutes. This may also include FM radio station.
- Supporting post graduate students and faculty to visit sister organization in other cities of the country for searching literature and conducting research.