

# **RESIDENT INSTRUCTION BULLETIN**



**PUNJAB AGRICULTURAL UNIVERSITY  
LUDHIANA (INDIA)**

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## FOREWORD

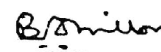
Punjab Agricultural University (PAU), a premier institute, was established in 1962 with the mission to achieve excellence in academics, undertake creditable research and develop an efficient system of technology transfer for increasing agricultural production. The University has produced a large number of eminent scientists, teachers and extension specialists who have played a pivotal role in ushering Green Revolution and thereafter in sustainable agricultural development which improved economic status of rural masses. In recognition of its highly commendable contributions to agricultural education, research and extension, PAU has received several first time awards and honours at the national level namely, ICAR Best Institution Award (1995), a Special Grant as large as Rs. 100 crore by the Central Government (2006), International Potash Institute – Fertilizer Association of India Award for Technology Transfer (2010) and Agricultural University of the Year Award (2011).



The University has set very high standards of academic pursuits. All the four constituent colleges (College of Agriculture, College of Agricultural Engineering and Technology, College of Home Science, and College of Basic Sciences and Humanities) have excellent infrastructural facilities for effective curricula delivery by the highly competent faculty. Lecture rooms are well equipped with state-of-the-art audio-visual aids. For undertaking practical exercises, the undergraduate and postgraduate laboratories in various departments are furnished with the latest equipments and facilities. The University also has well maintained research farms for conducting field trials on the main campus as well as at the regional research stations. Experiential Learning Units have been established in all the colleges for imparting practical training to the students so as to develop entrepreneurship skills and cater to the needs of stakeholders. Laboratories of Biotechnology, Pesticides Residue, Electron Microscopy and Nano-science, and Natural Resource Management are equipped with latest equipments and serve as the central facilities for use by the faculty and students. All buildings in the four colleges, the central library and hostels have computer and Local Area Network facility. The central library of the University is well stocked with a collection of around 4.2 lakh books and 3.1 lakh periodicals. It also has CD-ROM of databases accessible online along with e-journals, Cyberpoint facility, SOUL software and CD-Hybrid server. Besides the academically stimulating environment, the University has well maintained play grounds, indoor and outdoor sports facilities, requisite infrastructure for co-curricular activities and a well equipped hospital for basic health needs of the students and employees. In addition, there is a modern hostel for international students. PAU has become a preferred destination for international students, and during the last 5 years students from 19 countries have sought admission in various programmes of the University. To inculcate spirit of competition, a number of Merit Scholarships and Fellowships are offered to the brilliant students by the University and other agencies like ICAR, UGC, DST, CSIR, etc. For providing job avenues to the students, a university level Placement Cell is functioning efficiently. Besides, the college level placement cells are also proactive and arrange regular on-campus interviews with various companies/ organizations.

The University has been reorienting its teaching, research and extension programmes keeping in view the emerging needs in agriculture and allied disciplines. Initially, the focus was on productivity enhancement to meet national food security needs. In recent years, there has been a significant shift towards conservation agriculture, climate resilience and post-harvest management. The University has laid emphasis on developing well trained human resources having national and international exposure. Two Advanced Centres of Faculty Training and two Niche Areas of Excellence, operating now with support from the ICAR, have helped in capacity building of the faculty and in creating state-of-the-art infrastructure for research and teaching activities. The University keeps on revising and updating its course curricula to improve the knowledge and skill of students. During the last 5 years, 17 new teaching programmes have been started in view of the emerging scenario in agricultural education.

It is important to periodically revise and update course curricula for providing quality and demand driven education. Compilation of this revised edition of the Resident Instruction Bulletin (RIB) is a much needed step to meet such requirements. I appreciate efforts of the Editorial Board in this regard and believe that this edition of the RIB will provide updated information about course curricula of the University in consonance with the fast developing science and technology and will be of great use for the faculty and students.



**(B S Dhillon)**  
Vice Chancellor

## PREFACE

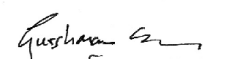
Resident Instruction Bulletin (RIB) of the Punjab Agricultural University (PAU) is a very important document containing information about the course curricula of all the teaching programmes offered by the University in addition to various chapters dealing with rules and regulations pertaining to academics and financial assistance to students. After shifting of College of Veterinary Science to the Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) in 2006, the PAU is left with four constituent colleges viz. College of Agriculture, College of Agricultural Engineering and Technology, College of Home Science, and College of Basic Sciences and Humanities. There are 29 Departments and 5 Schools including School of Agricultural Biotechnology, School of Business Studies, School of Climate Change and Agricultural Meteorology, School of Energy Studies for Agriculture, and School of Electrical Engineering and Information Technology, at the campus offering 10 Bachelors, 44 Masters and 29 Doctorate programmes. The University was established in 1962 on the US Land Grant Pattern of agricultural education. Ohio State University (OSU), Columbus, USA helped during the formative years and PAU introduced the trimester system of education similar to one of OSU. The flexibility in the system provided need-based introduction of new course(s) as well as change(s) in the existing course curricula. The University shifted to semester system in 1988 and has been able to update the course curricula to meet the growing needs of the stakeholders under fast changing agricultural scenario at national and international level. Globalization under World Trade Organization (WTO) and fast developments in science and technology including information and communication have redefined the role of agricultural education.



The first revision of course curricula/syllabi was carried out in PAU in 1964. Again it was done in 1969 in view of the recommendations of the First Deans' Committee of the ICAR. The elective system was introduced in 1977 and the fourth revision of course curricula attempted was on recommendation of the Second Deans' Committee in 1981. The restructuring of the course curricula/syllabi was again necessitated when the PAU shifted to semester system of education in 1988-89. The Third Deans' Committee of ICAR submitted its recommendation in 1995 and the PAU again carried out this exercise in 1998. A component of 'Rural Agricultural Work Experience' was introduced to impart knowledge relating to skill development. Subsequently, on recommendation of Fourth Deans' Committee, the curricula was again revised in the year 2009 for undergraduate programmes with a focus on equipping the graduate pass-outs with enough skill/practical knowledge to make them market-ready or start their own enterprise with the objective to make them 'job providers rather than job seekers'. To realize this 'Experiential Learning Units' have been established in constituent colleges of the University. Further, the postgraduate curricula revised in the light of recommendation of NCG (National Core Group) was also implemented w. e. f. the year 2010 after introducing relevant changes in the course contents to address issues relating to biotechnology, bioinformatics, nanotechnology, organic and conservation agriculture, agribusiness, value addition, information technology, biodiversity, and modern instructional technology. Collaborative and inter-disciplinary postgraduate education has been facilitated by operationalizing MoUs with national/international institutes/universities/organisations to ensure quality of resident instructions. Various academic rules and regulations have also been amended which are incorporated in this revised edition.

It is my privilege to place on record the sincere efforts carried out by the faculty, Heads of the Departments, Secretaries of the Board of Studies of the constituent Colleges, Deans of the Colleges, members of Resident Instruction Committee and the Academic Council for suggestions, critical appraisal and approval of the course curricula/syllabi, various academic rules and regulations. I gratefully acknowledge sincere efforts in updating the information from time to time by my predecessors. Thanks are due to the Members of the Editorial Board for their dedicated efforts in preparation of the RIB. I am thankful to Dr P K Khanna, Registrar of the University, for updating the information relevant to his office. Drs V K Dilawari (Adjunct Professor), S S Kang (Professor of Plant pathology), P K Chhuneja (Professor of Entomology), Seema Bedi (Professor of Botany) and Muninder Sidhu (Professor of Family Resource Management) deserve special appreciation for their co-operation in finalising the Document.

I express my deep sense of gratitude to Dr B S Dhillon, Vice Chancellor, Punjab Agricultural University, Ludhiana for his able guidance, foresight and vision in preparation of the Document.



**(Gursharan Singh)**  
Dean, Postgraduate Studies

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