GRADUATE COURSE DESCRIPTIONS for the Degree of Bachelor of Science in Agricultural Sciences: *Agronomy & Plant Breeding*

36501 Research Methods 2 Cr. Introduction (Aims, description, types), scientific methods, research phases; choice of topic and preparation of research projects; research proposal writing, preparing a bibliography; scientific writing (reports, articles); presentation skills.

36660 Advanced Genetics 3 Cr. Extrachromosomal inheritance, mutation, genetics of bacteria and their viruses, transposable elements, polyploidy and aneuploidy, DNA recombinant technology, genetic engineering, Molecular genetics and molecular analysis of gene.

36661 Quantitative Genetics 3 Cr. Genetic constitution of a population including gene and genotypic frequencies, Hardy-Weinberg equilibrium. Changes of gene frequency in random mating and small populations. Linkage and in breeding. Continuous variation. Values, means and gene effects. Resemblance between relatives. Variance components. Mating designs.

36662 Biometry I 2 Cr. Linear regression and correlation including estimate of the model, test of hypothesis and matrix algebra. Multiple regression and correlation. Stepwise regression, nonlinear relations, general linear models, Anova with regression method.

36663 Biometry II 2 Cr. Samples from multivariate normal population, multivariate analysis of variance, cononical correlation and principal components analysis. Factor and cluster analysis.

36664 Cytogenetics 3 Cr. History of cytogenetics, structure of chromosomes, meiotic pachytene chromosomes, cytological basis of crossing over, variations in chromosome type, chromosome structure and numbers.

36665 Advanced Plant Breeding 3 Cr. Natural breeding systems including apomixis, incompatibility and male sterility. Comparison of different breeding methods. Maximizing genetic improvement, genotype X environment interaction and stability analysis. Germplasm and plant breeding. Mutation, Polyploidy, Breeding for quality and resistance to biotic and abiotic stresses.

36668 Applied Plant Breeding 2 Cr. Tissue culture : preparation of media and explant, embryo rescue, mature embryo culture, anther culture; Interspecific hybridization; emasculation and pollination techniques; application of colchicine/inducing auto-and allopolyploids, techniques of breeding for rust resistance.