<table>
<tr><td>Course Code</td><td colspan="6">BYU5306</td></tr>
<tr><td>Level</td><td colspan="6">05</td></tr>
<tr><td>Course Title</td><td colspan="6">Plant Breeding</td></tr>
<tr><td>Credit value</td><td colspan="6">03</td></tr>
<tr><td>Core/Optional</td><td colspan="6">Optional</td></tr>
<tr><td>Prerequisites</td><td colspan="6">BYU4301 CR/Pass/Valid OCAM, BOU2101 EL/pass</td></tr>
<tr><td rowspan="2">Hourly breakdown</td><td colspan="2">Theory</td><td>Practical hours</td><td>Independent Learning</td><td>Assessment</td><td>Total</td></tr>
<tr><td>19 Sessions x 2 = 38 hrs</td><td>3 DS x 3 = 09 hrs</td><td>6 x 5 x 1.5 = 45 hrs

(5 days Lab/Field)</td><td>• Sessions (57 hrs) ie 3 x 19 sessions
• Lab/Field [5hrs] independent/ group learning for practical
• Online [5 hrs]
• Recommended readings [10hrs]
77 hrs</td><td>(2 CAT x 1hr) + (1 Practical test x 1 hr)
03 hrs</td><td>172 hrs</td></tr>
<tr><td>Course Aim/s</td><td colspan="6">To provide knowledge on basic concepts in Plant Breeding, conventional and novel plant breeding methods, application of the knowledge of Genetics in practical application in Plant Breeding, understand pollination techniques, germplasm conservation, seed production, improving quality of crop/ornamental plants, conduct and interpret scientific investigations, writing reports and maintaining records of activities.</td></tr>
<tr><td>PLOs addressed by course</td><td colspan="6">PLO1: Knowledge: Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the degree.
PLO2: Practical Knowledge and Application. Demonstrate the competency to use the knowledge and practical skills appropriately.
PLO3: Communication: Demonstrate the competency in communicating efficiently and effectively to present information, ideas and concepts to the scientific community as well as to the wider society.
PLO4: Individual Work, Team Work and Leadership: Demonstrate the competency in working independently and in groups in addressing issues in multi-disciplinary environments and completing the tasks on time through collaborative learning while exhibiting leadership.
PLO5: Creativity and Problem Solving: Identify and analyze problems using quantitative and/or qualitative approaches using scientific methodology to provide valid conclusions.
PLO6: Adaptability and Flexibility: Demonstrate the ability to adapt to diverse working environments using flexible approaches and strategies.
PLO7: Information and Communication Technology Literate: Demonstrate the competency of using Information and Communication Technology for numerical and statistical analysis, and in day to day applications.
PLO8: Vision for Life: Develop the capacity to project for future through identifying self-directed goals and continuously targeting towards them for self-improvement by undertaking further studies.
PLO9: Lifelong Learning: Develop the capacity to foresee new trends and their impacts and continuously update knowledge and develop skills willingly to meet those future challenges.</td></tr>
<tr><td>Course Learning Outcomes (CLO)</td><td colspan="6">The students should be able to:

CLO1- Describe the basic concepts in Plant Breeding (PLO1-6)
CLO2: Apply concepts in Genetics in breeding Plants (PLO1-6)
CLO3: Apply conventional and novel breeding techniques to improve crop and ornamental plants (PLO1-7)
CLO4: Develop skills in improving quality of crop/ornamental Plants, germplasm conservation and seed production practices (PLO1-8)
CLO5: Perform scientific investigations, data analysis, interpreting data, writing reports, maintaining records (PLO1-8)
CLO6: Develop skills in the area of plant breeding for career development (self-employment or in industries) (PLO6, 8 and 9)</td></tr>
<tr><td>Content (Main topics, sub topics)</td><td colspan="6">Basic Concepts in Plant Breeding
Plant breeding, Quantitative Inheritance in Plant Breeding, Population Genetics, Values and Means, Variance
Conventional Plant Breeding Techniques
Populations in Plant Breeding, Breeding Self Pollinated Crops, Breeding Cross Pollinated Crops, Methods of Breeding Asexually Propagated Plants and Mutation Breeding
Modern Methods of Plant Breeding
Plant Tissue Culture, Some Applications in Tissue Culture, Somaclonal variation and Mutant selection, Protoplast fusion and Somatic Hybridization, In vitro Conservation and Transport of Germplasm, The role of Gene Technology in Plant Breeding
Reproduction, Germplasm Conservation and Seed Production Practices in Plants
Reproduction in Plants, Plant Genetic Resources, Plant Genetic Resources Conservation and their Management in Sri</td></tr>
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<tr><td></td><td colspan="2">Lanka, Seed Production Practices in Plant Breeding</td></tr>
<tr><td>Teaching Learning methods (TL)</td><td colspan="2">Self- learning/Independent learning
▪ Instructional Material (IL)
▪ Online Activities(OL)
▪ Reference Work (RE)

Compulsory contact sessions
▪ Practical Sessions (PR)
▪ Laboratory Training(LT)
▪ Group Projects (GP)
▪ Field Trip (FT)
▪ Assessments (AS) and Feedback – MCQs (MCQ); Structurer Essay (SEQ), Reports (RE), Presentations (PS), Practical Tests (PT)

Non-compulsory contact sessions
▪ Day Schools (DS)</td></tr>
<tr><td rowspan="2">Assessment strategy</td><td>Overall CA Mark (OCAM): 40%</td><td>Final Assessment: 60%</td></tr>
<tr><td>CAT I (OBT) – 1 hr, CAT II (NBT) - 1 hr, PT –1hr

Overall CA Mark (OCAM): 50% from best CAT + 20% from the other CAT + 30% from PT (minimum 30% and attendance compulsory)</td><td>Theory Final Examination (Essay type) – 2hrs – 100%</td></tr>
<tr><td>Recommended Readings:</td><td colspan="2">• Chaudhary, R. C. (2017). Introductory Principals of Plant Breeding, 2nd Edition. Oxford & IBH Publishing Co. New Delhi.
• Weaver, R. F. (2015). Molecular Biology, 5th Edition. McGraw Hill Company, New York.
• Poehlman, J. M. (1995). Breeding Field Crops, 4th Edition, AVI Publishing Company, Inc. Connecticut.
• Plant Genetic Resources Conservation and management (1996). Plant Genetic Resources Centre, Department of Agriculture, Ministry of Agriculture and Lands, Sri Lanka.
• Dodds, J. H. and Roberts, L. W. (1990). Experiments in Plant Tissue Culture, 5th Edition, Cambridge University Press.</td></tr>
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