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| brasao_UFSC_CFH_horizontal | **FEDERAL UNIVERSITY OF SANTA CATARINA****CENTER OF AGRICULTURAL SCIENCES****PLANT GENETIC RESOURCES GRADUATE PROGRAM****COURSE SYLLABUS** |  |
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| **I. COURSE DESCRIPTION:** |
| **CODE** | **COURSE NAME** | **COURSE HOURS PER WEEK****THEORETICAL PRACTICAL** | **TOTAL SEMESTER HOURS** |
| RGV 410005 | Conservation of Plant Genetic Resources | 04 |  | 72 |
| **I.1. SCHEDULE** |
| **THEORETICAL SECTION** | **PRACTICAL SECTION** |
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| **II. PROFESSOR(S)** |
| Miguel Pedro GuerraRubens Onofre Nodari |
| **II. PREREQUISITE(S):** |
| **CODE** | **COURSE NAME** |
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| **IV COURSE(S) FOR WHICH THE DISCIPLINE IS OFFERED** |
| Plant Genetic Resources |
| **V. COURSE SYNOPSIS:** |
| The state of biodiversity, ecosystem evaluation, biodiversity hotspots, and the Living Planet Index. Threats to Biodiversity. The Convention of Biological diversity and its related agreements. The policies of conservation and international treaties. Origin, domestication, use, and conservation of plant genetic resources (PGRs). Methods of germplasm conservation. Conservation systems. In vitro conservation. Preservation policies, conservation, and use of genetic resources. Conservation projects. |
| **VI. OBJECTIVES** |
| To present, to analyze, and to discuss the principles and strategies of conservation and the sustainable use of plant genetic resources. |
| **VII. COURSE PROGRAM** |
|  1. Historical context. Definitions and concepts. The state of diversity. Biodiversity, PGRs, and agriculture. Biodiversity hotspots. Living Planet Index. Environmental crises and sustainability.2. The Convention of Biological Diversity (CDB). Access to biodiversity components. The International Regime on Access and Benefit Sharing (ABS). National and international programs and treaties for the conservation and use of PGRs.3. Centers of origin and diversity. Levels of diversity. Strategies for the maintenance of genetic diversity. Biogeography and central questions in the domestication of plants and animals.4. The worth of plant genetic resources. Vulnerability and genetic erosion.In situ conservation of PGRs. Protected and non-protected natural lands. On-farm conservation.Priorities for *in situ* conservation.*Ex situ* conservation of PGRs: Harvest, Collection, Preservation, Characterization, Evaluation, Documentation, and Exchange of germplasm. *In vitro* conservation techniques for PGRs.Brazilian policies and regulations. Units of conservation, Criteria and degrees of threat, National System of Conservation Units. |
| **VIII. TEACHING METHOD / COURSE DEVELOPMENT** |
| Lectures, directed discussions, seminars, and analysis of selected articles. Grading will be based on a test, class participation, a seminar, and a conservation project  |
| **IX. EVALUATION METHOD** |
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| **X. NEW EVALUATION** |
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| **XII. PRACTICAL SECTION CHRONOGRAM** |
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| **XIII. MAIN BIBLIOGRAPHY** |
| **a) Books and Book Chapters**Bailie, J.E.M.; Hilton-Taylor, C.; Stuart, S.N. IUCN *Red List of Threatened speciesTM. A Global Species Assessment*. IUCN, Cambridge. 2004. 191p.Barbieri, R.L.; Stumpf, E.R.T. *Origem e Evolução de Plantas Cultivadas*. Brasília: Embrapa, 2008, 909p.Brasil. Ministério do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal. *Primeiro relatório nacional para a Convenção sobre Diversidade Biológica*. Brasília, MMA. 1998. 283p.Brasil. Ministério do Meio Ambiente. *Biodiversidade Brasileira*, 5, 2002, 404p.Brasil. Ministério do Meio Ambiente. *Fragmentação de Ecossistemas*. Brasília, MMA. 2003. 508p.Brown, A.H.D., Frankel, O.H., Marshall, D.R. *The use of plant genetic resources*. Cambridge: Cambridge University Press, 1989. 382p.Brush, S.B. *Genes in the field – On farm conservation of crop diversity*. Rome, IPGRI-CRC Press, 2000, 288p. Borém, A.; Lopes, M.T.G.; Clement, C.R.; Noda, H. (Org.). *From plant domestication to breeding. In:. Domestication and breeding: Amazonian species.* Viçosa, MG: Editora da Universidade Federal de Viçosa, 2012. Coradin, L.; Siminski, A.; Reis, A. (Orgs.). *Espécies nativas da flora brasileira de valor econômico atual ou potencial: plantas para o futuro Região Sul*. Brasilia: MMA, 2011. v.1. 934p.Diamond, J.D. *Guns, Germs, and Steel: The Fates of Human Societies***.** New York, W.W. Norton & Company. 1999. 480p. Dinerstein, E.; Olson, D.M.; Graham, D.J.; Webster, A.; Primm, S.A.; Bookbinder, M.P.; Ledec, G*.*A. *Conservation Assessment of the Terrestrial Ecorregions of Latin America and the Caribbean.* Washington. WWF/World Bank. 1995. 129p.Dobson, A.P. *Conservation and Biodiversity*. New York, Scientific American. 1996. 264p.Duncan, R.R.; Kral, D.M.; Viney, M.K. (eds.). *International Germoplasm Transfer: Past and Present*. Madison, CSSA, 1995. 206p. Evenson, R.E. Gollin, D., Santaniello, V. (eds.). *Agricultural Values of Plant Genetic Resources*. Wallingford, FAO/CABI, 1998, 285p.Falk, D. A., Holsinger, K.E*. Genetic and conservation of rare plants.* New York: Oxford University Press, 1991. 283p.FAO*. Plant Genetic Resources.* Rome. FAO, 1989. 38p.FAO. *The state of the world’s plant genetic resources for food and agriculture*. Rome. FAO.1996. 336p. FAO. *The state of the world’s plant genetic resources for food and agriculture*. Second Report. Rome. FAO.2010. 398p. Disponível em: [www.fao.org/docrep/013/i1500e/i1500e00.htm](http://www.fao.org/docrep/013/i1500e/i1500e00.htm)FAO. *Plan de acción Mundial*. Roma, 1996, 64p.Frankel, O.H., Benett, E. (eds.). *Genetic resources in plants: their exploitation and conservation.* Oxford: Blackwell, 1970. 382p.Gaifami, A & Cordeiro, A . *Cultivando a diversidade*. Rio de Janeiro, AS-PTA, 1994. 205p.Garay, I. & Dias, B. *Conservação da biodiversidade em ecossistemas tropicais*. Petrópolis: Vozes, 2001. 430p. Given, D.R. *Principles and practice of plant conservation*. Portland: Timber Press, 1994. 292p.Guarino, L.; Rao, V.R. Reid, R. (eds.). *Collecting Plant Genetic Diversity*. Wallingford, CABI, 1995. 748p.Heywood, V.H. (ed.). *Global Biodiversity Assessment*. Cambridge. UNEP/Cambridge Univ. Press. 1995. 1140p.Hodgkin, T., Brown, A.H.D., van Hintum, Morales, E.A.V. *Core Collections of Plant Genetic Resources*. John Willey & Sons. New York. 1995. 269p.Jarvis, D.I., Myer, L., Klemick, H., Guarino, L., Smale, M., Brown, A.H.D., Sadiki, M., Sthapit, B., Hodgkin, T. 2000. *A Training Guide for In Situ Conservation On-Farm*. IPGRI, Rome. 161p.Jarvis, D. I., Padoch, C., Cooper, H. D. [*Managing Biodiversity in Agricultural Ecosystems*](http://www.amazon.com/Managing-Biodiversity-Agricultural-Ecosystems-Jarvis/dp/023113648X/ref%3Dsr_1_1?ie=UTF8&s=books&qid=1235752637&sr=1-1). Columbia University Press, 2007. 512p.Kate, K.K. e Laird, S.A. *The commercial use of biodiversity – access to genetic resources and benefit-sharing*. Earthscan, Londres, 1999, 398p.Kemp, R.H.; Namkoong, G.; Wadsworth, F.H. *Conservation of genetic resources in tropical forest management.* (FAO Forestry Paper 107) Rome. FAO, 1993. 106p.Lewinsohn, T. (org.). *Avaliação do Estado do Conhecimento da Biodiversidade Brasileira*. Vol I Brasília: MMA, 2006. 269p.Lewinsohn, T. (org.). *Avaliação do Estado do Conhecimento da Biodiversidade Brasileira*. Vol II Brasília: MMA, 2006. 249p.Marengo, J. A. *Mudanças climáticas globais e seus efeitos sobre a biodiversidade*. Brasília: MMA, 2006. 211p. (Série Biodiversidade, n° 26) Milano, M.S. Unidades de Conservação: conceitos básicos e princípios gerais de planejamento, manejo e administração. In: Sá, R.F.R. e Milano, M.S. *Manejo de áreas naturais protegidas*. (ed.). Curitiba: Universidade do Meio Ambiente, 1997. p.1-61.Morato Leite, J.R. & Peralta, C.E (0rgs). Perspectivas e Desafios para a Proteção da Biodiversidade no Brasil e na Costa Rica. São Paulo, Instituto O Direito por um Planeta Verde. 503 p. E-book disponível em: <http://www.planetaverde.org/arquivos/biblioteca/arquivo_20140517170251_1477.pdf>Nabhan, G.P. Where our food comes from: retracting Nikolay Vavilov’s quest to end famine. Washington: Island Press, 2009. 223p.NRC/USA. *Managing global genetic resources: forest trees.* Washington: National Academic Press, 1991. 229 p.Pan American Health Organization (PAHO). *Biodiversity, biotechnology, and sustainable development in health and agriculture*. Washington: PAHO, 1996. 230p.Pistorius, R*. Scientist, plants and politics.* Roma. FAO/IPGRI. 1997. 134p.Pistorius, R.; van Wijk J. *The exploitation of Plant Genetic Information – Political strategies in crop development.* New York: CABI, 2001. 231p. Qualset, C.O.; Damania, A. B.; Zanatta, A.C.; Brush, S.B. Locally based crop plant conservation. In: Maxted, N.; Ford-Loyd, B.V.; Hawkes, J.G. (eds.). *Plant Genetic Conservation*. London: Chapman & Hall, 1997. p.161-175.Smale, M. (ed). *Valuing crop biodiversity – on farm genetic resources and economic change*. Wallingford: CABI Publishing, 2005. 336 pp.Sodhi, N.S.; Ehrlich. P.E. 2010. Conservation Biology for All. Oxford Univ. Press. 400p. Disponível em <http://www.dbs.nus.edu.sg/staff/details/sodhi/aConservation_Biology_for_All.pdf> Solbrig, O. *From genes to ecosystems*: a research agenda for biodiversity. Cambridge: IUBS/UNESCO, 1991. 124p.Twarog, S.; Kapoor, P. (ed). *Protecting and promoting traditional knowledge: systems, national experiences and international dimensions*. New York: United Nations, 2004. 400p.UNEP. *Handbook of the Convention on Biological Diversity*. Montreal, UNEP/CDB. 2003. 937p. Varella, M.D. *Propriedade Intelectual de Setores Emergentes*. São Paulo. Atlas, 1996. 255p.Vavilov, N.I. Five Continents. Roma: IPGRI, 1997. 198p. Disponível em [www2.bioversityinternational.org/Publications/419/](http://www2.bioversityinternational.org/Publications/419/%22%20%5Ct%20%22_blank)Walter, B.M.T.; Cavalcanti, T.B. (eds.). *Fundamentos para a Coleta de Germoplasma Vegetal.* Brasília: Embrapa, 2005. 778p.Wilson, E.O*. Biodiversity.* Washington: National Academic Press, 1988. 521p. **b) Articles** Burton, P.J.; Balisky, A.C.; Coward, L.P.; Cumming, S.G.; Kneeshaw, D.D. The value of managing for biodiversity. *The Forestry Chronicle*, *68*(2):225-237. 1992. Chang, T.T. Principles of genetic conservation, Collection of crop germplasm.Preservation of crop germplasm. *Iowa State J. Research,* v.59, n.4, p. 325-348, 349-364, 365-378*.* 1985Clement, C.R. 1492 and the loss of amazonian crop genetic resources. I. The relation between domestication and human population decline. *Economic Botany*, *53*(2): 203-216. 1999a.Clement, C.R. 1492 and the loss of amazonian crop genetic resources. II. Crop biogeography at contact. *Economic Botany*, *53*(2):188-202, 1999b. Clement, C.R. Um pote de ouro no fim do arco-iris? O valor da biodiversidade e do conhecimento tradicional associado, e as mazelas da lei de acesso – uma visão e proposta a partir da Amazônia. *Amazônia: Ciência & Desenvolvimento*, *3*(5):7-28, 2007. Clement, C.R.; Cristo-Araújo, M. de; Coppens d’Eeckenbrugge, G.; Alves Pereira, A.; Picanço-Rodrigues, D. Origin and Domestication of Native Amazonian Crops. *Diversity*, *2*:72-106; doi:10.3390/d2010072, 2010. Costanza, R.; d’Arge R.; Groot G.; Farber, S.; Grasso, M.; Hannon, B.; Limbur, K.; Naeem, S.; O’neill, R.V.; Paruelo, J.; Raskin, R.G.& Sutton, P. The value of the world’s ecosystem services and natural capital. *Nature*, *387*:253-260, 1997.Costanza, R. Social Goals and the Valuation of Ecosystem Services. *Ecosystems*, vol. 3, p 4 -10. 2000. Diamond, J. Evolution, consequences and future of plant and animal domestication. *Nature*, *418*:700-707.Frison, E. A.; Cherfasand, J.; Hodgkin, T. 2011. Agricultural Biodiversity is Essential for a Sustainable  Improvement in Food and Nutrition Security. *Sustainability, 3*: 238- 253. Foster, K.P. The earliest zoos and gardens. *Scientific American*, 281(1):48-55, 1999.Iowa State Journal of Research*. Plant Genetic Resources – Key to Future Plant Production.* Vol. 59, n 4, 1985.Myers, N.R.A.; Mittermeier C.G.; da Fonseca, G.A.B.; Kents, J. ***Biodiversity hotspots for conservation priorities***. Nature,  ***403:*** 853 – 858. 2000.Nature. Nature Insight Biodiversity. Reprinted from Vol. 405, no. 6783, 11 May 2000. **Review articles**: Tilman. D. Causes, consequences and ethics of biodiversity, p. 208-211. A. Purvis, A.; Hector, A. Getting the measure of biodiversity, p. 212-219.K. J. Gaston. K.J. Global patterns in biodiversity, p. 220-227. McCann, K.S. The diversity–stability debate, p. 228-233. F. S. Chapin III, F.S. et al. Consequences of changing biodiversity, p. 234-242.Margules, C.R.; Pressey, R.L. Systematic conservation planning, p. 243-253. Ruddiman, W.F. 2013.The Anthropocene. *Annu. Rev. Earth Planet. Sci. 41*:4.1–4.24.Sala, O.E. et al. Global Biodiversity Scenarios for the Year 2100. *Science*, 287:1770-1774. Wood, D. & Lenné, J.M. The conservation of agrobiodiversity on-farm: questioning the emerging paradigm. *Biodiversity and Conservation*, *6*:109-129, 1997. Zeven, A.C. Landraces: a review of definitions and classifications. *Euphytica,184*:127-139, 1998.**c) Web Pages**[www.wwf.org](http://www.wwf.org/), [www.iucn.org](http://www.iucn.org/), [www.cbd.int](http://www.cbd.int), [www.bioquest.net](http://www.bioquest.net/), [www.mma.gov.br/port](http://www.mma.gov.br/port), [www.conservation.org](http://www.conservation.org), [www.bioversityinternational.org](http://www.bioversityinternational.org) |
| **XIII. COMPLEMENTARY BIBLIOGRAPHY** |
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