**The University of Jordan**

**Faculty: Agriculture Department: Plant Protection**

**Program: PhD. In Horticulture Year: Semester:**

**Wild Medicinal Herbs (0606958)**

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| --- | --- | --- | --- | --- | --- |
| Credit hours | 3  | Level | Ph.D  | Pre-requisite | Medicinal & Aromatic Plants (0641331) |
| Coordinator/ Lecturer | J. R. Qasem | Office number | 266 | Office phone | 22515 |
| Course website |  | E-mail | jrqasem@ju.edu.jo | Place | Faculty of Agriculture |

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| --- |
| Office hours |
| Day/Time | Sunday | Monday | Tuesday | Wednesday | Thursday |
|  | 10-12 | 10-12 | 9-11 | 10-12 | 11-1 |

**Course Description**

This course is designed to provide thorough information on Jordan biogeographical regions, their characteristics, prevailing environmental conditions and their relation with the vegetation type of medicinal wild species in each area. Identification of plant species, their richness and adaptation to local conditions. Dominant medicinal species and requirements for growth, their characteristics and role in vegetation communities are also emphasized. In addition, it provides information on chemical constituents of species and their importance in medicine and industry. It emphasizes the physiological effects of medicinal species or their chemicals and their healing properties on humans or animals. Any possible side or toxic effects resulted is also discussed. The course includes information on species taxonomic position, adaptation, richness, habitat, vegetation destructive factors and their conservation.

**Learning Objectives:**

 Familiarize students with wild medicinal and economical plant species in the flora of Jordan including plant species and their botanical affiliation, biogeographical regions, biotic and abiotic factors affecting plants distribution and their communities, ecological and economical importance of plant species in Jordan with special emphasis on the role of environment on the spread and abundance of certain species in different geographical regions and the importance of certain species in medicine and industry.

Students have information on chemical constituents, importance and their physiological activities and healing properties.

**Intended Learning Outcomes (Ilos)**

At the end of this course, students are expected to:

* Be acquainted with Jordan geography and characteristics
* Have and idea on the ecological and economical importance of medicinal plants in Jordan
* Able to categorize medicinal wild plant species in Jordan according to their biogeographical regions and their growth habit and habitat.
* Know the role of different ecological factors on growth, richness and productivity of different medicinal wild species and communities and their response to modification in these factors.
* Know factors lead to loss of vegetation and methods of conservation
1. **Knowledge and Understanding: Student is expected to:**
* Be acquainted with the ecological and economical importance of the studied species. .
* Be familiar with all species studied through slide projection and field trips
1. **Intellectual Analytical and Cognitive Skills:**
* Students are expected to keep up to date with any changes in Jordan vegetation, development or production of plant species in different biogeographical regions.
* They are required to consult recent published work or references on flora conservation and vegetation management.
* Students are encouraged to interact with the lecturer and to discuss any important relevant issues they think it provides new knowledge or satisfy their ambition on the topic.
* They expected to come familiar with important medicinal wild plant species in Jordan, their ecological, medicinal and economical values.
1. **Subject-specific skills: Students are expected to know:**
* Know the medicinal, industrial and ecological importance of wild medicinal herbs, their conservation strategies and their production.
* Well trained and experienced in collecting literature and information on certain topic and know how to prepare a scientific manuscript.
1. **Transferable Key Skills: Students are expected to know:**
* Wild medicinal plant species in Jordan geographical regions and their importance
* Effect of ecological factors on distribution, spread, growth and population and productivity of wild medicinal herbs
* Possible conservation and protection of these species in their natural habitats
* Factors responsible on degradation of these species in local habitats and their gene reserves.
* Importance of wild herbs in medicine, drug industry and folk medicine.

**Course Outline**

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| **Subject** | **Reference** | **Week** | **ILOs** |
| **Introduction**Plant main categories. | 1, 2, 3, 4, 5, 6, 7 | 1 | A, B, C, D. |
| **Plant /Environment interaction**Climatic factors (temperature, light/day length, topography, rain, RH, wind, snow) Edaphic factors (pH, fertility, water table, salinity… etc.).Biotic factors affect medicinal plants spread and distribution (competition, allelopathy, pests, grazing, cutting and herbivores) | 1, 11, 12, 13, 14 | 2  | A, B, C, D. |
|  **Jordan geography & physical characteristics** * Topography

 Rift valley, Mountain regions, Eastern desert (Plateau)* Rainfall
* Temperature
* Soil
 | 10 | 3 & 4  | A, B, C, D. |
| **Biogeographical regions of Jordan** Mediterranean region, Irano-Turanian Region, Sahara Arabian Region, Tropical or Sudanian region | 10 | 5  | A, B, C, D. |
| **Geographical distribution of plants in Jordan and their adaptation to ecological factors and growth habit and requirements** | 10 | 6 &7 | A, B, C, D. |
| **Vegetation types of Jordan**  |  | 8  | A, B, C, D. |
| **Biodiversity & main botanical medicinal plant families** The following plant species of different plant families will be studied in details (Latin name, family name, botanical description, life cycle, growth habit, method of reproduction, economic value, distribution and status in Jordan)Plant families and species Labiatae (*Mentha, Satureja, Thymus, Origanum, Salvia, Rosmarinus, Teucrium, Lamium, Marrubium*), Solanaceae (*Withania, Datura, Solanum, Hyoscyamus, Mandragora, Lycium*), Cruciferae (*Sinapis, Sisymbrium, Eruca, Capsella, Hershfeldia, Nastartium, Cardaria, Diplotaxis*), Compositae (*Sonchus, Carthamus, Gundelia, Xanthium, Centauria, Cirsium, Onopordon, Senecio, Conyza, Matricaria, Pallenis, Achillea, Artemesia, Cichorium, Tragopogon, Inula,, Anthemis, Chrysanthemum, Varthemia, Taraxacum, Calendula, Echinops and Pulicaria*, Oxalidaceae (*Oxalis*), Polygonaceae (*Polygonum, Rumex*), Malvaceae (*Malva, Althea*), Umbelliferae (*Daucus, Ridolphia, Eryngium, Anethum, Ammi, Apium, Ferula, Conium, Tordylium*), Euphorbiaceae (*Ricinus, Chrozophora, Euphorbia, Mercurialis*), Rosaceae (*Sacropoterium, Crategous, Rubus*), Ranunculaceae (*Ranunculus, Anemone, Adonis*), Papaviraceae (*Papaver, Glaucium*), Cucurbitaceae (*Ecballium, Citrullus, Bryonia, Cucumis*), Fumariaceae (*Fumaria*), Hypericaceae (*Hypericum*), Chenopodiaceae (*Chenopodium, Beta, Atriplex, Salsola, Anabasis, Sueada*), Rutaceae (*Ruta, Haplophyllum*), Convolvulaceae (*Convolvulus, Cuscuta*), Rhamanceae (*Zizyphus*), Zygophyllaceae (*Peganum, Tribulus, Nitraria*), Scrophulariaceae (*Verbascum*), Geraniaceae (*Geranium, Erodium*), Leguminosae (*Prosopis, Alhaji, Glycerrhiza, Cassia, Retama, Acacia, Callectoma, Vicia, Trifolium, Medicago, Astragalus, Ceratonia, Ononis, Melilotus*), Violaceae (*Viola*), Urticaceae (*Urtica, Paritaria*), Capparidaceae (*Capparis*), Boraginaceae (*Anchusa, Alkana, Echium, Heliotropeum*), Orchidaceae (*Orchis*), Cistaceae (*Cistus*), Berberidaceae (*Leontice*), Styraceae (*Styrics*), Ascelpiadaceae (*Calotropis*), Amaranthaceae (*Amaranthus*), Plantaginaceae (Plantago), Salicaceae (*Salix, Populus*), Anacardiaceae (*Rhus, Pistacia*), Caryophyllaceae (*Silene, Vaccaria, Paronychia*), Tamaricaceae (*Tamarix*), Linaceae (*Linum*), Oleaceae (*Laurus*), Verbanaceae (*Vitex*), Residaceae (*Resida*), Apocyanaceae (*Nerium*), Ephdraceae (*Ephedra*), Primulaceae (*Anagallis, Cyclamin*), Orobanchaceae (*Orobanche, Cistanche*), Viscaceae (*Viscum*), Loranthaceae (*Loranthus*), Myrtaceae (*Myrtus*), Cactaceae (*Cactus, Opuntia*), Potulaceae (*Portulaca*),Juncaceae (*Juncus*), Scrophulariaceae (*Scrophularia*), Dipsicaceae (*Galium, Cephilaria*), Rubiaceae (*Asperula*), Gramineae (*Cynodon, Sorghum, Digitaria, Echinochloa, Avena, Arundo, Stipa, Panicum, Poa, Lolium, Orysopsis, Bromus, Aegilops, Phalaris, Dactylis*), Liliaceae (*Allium, Colchicum, Urginea, Asparagus*), Araceae (*Arum*), Iridaceae (*Iris, Crocus*), Acanthaceae (*Acanthus, Blepharis*), Palmae (*Phoenix*), Cyperaceae (*Cyperus*), Typhaceae (*Typha*), Amaryllidaceae (*Narcissus*), Zygophyllaceae (*Nitraria*), Adiantaceae (*Adiantum*), Balantiaceae (*Balanites*),  | All references | 9, 10, 11,12 &13  | A, B, C, D. |
| **Destructive factors and loss of medicinal wild species in Jordan** | All references | 14 | Lectures and Discussion |
| **Conservation and gene bank: Importance, methods and suggestions** | All references | 15 & 16 | Lectures and Discussion |

**Learning Methodology**

Duration: 16 weeks in second semester, 48 hours in total

3) Demos many-slide projections

3) Tutorial:…as needed…..

4) Case Study: each student must carry out a case study,

6) Assignments, Reports, Projects: reports on case studies, and presentations are required

**Projects & Assignments**

Each student is required to perform, present and discuss a case study on one of the key topics in the course

**Evaluation**

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| --- | --- | --- | --- |
| **Exam** | **Grade** | **Day** | **Date** |
| Med. Term Exam | 40 |  |  |
| Term paper | 20 |  |  |
| Final Exam | 40 |  |  |

**Main Reference**

Bunny ,S. (Edit.) 1984. The Illustrated Book of Herbs and their Medicinal and Culinary Uses . London: Octopus Book Ltd.

Fuller , D.J. 1979. Culinary and Medicinal Herbs. Ministry of Agriculture , Fisheries and Food . London : Reference Book 325.,

**References**

1. Boulos. L. 1983. Medicinal Plants of North Africa, Michigan: USA, Publication INC Algonac
2. Eagle, R. 1981. Herbs, Useful Plants. London: BBC publication.
3. Flora Europe
4. Flora of Iraq
5. Flora of Lebanon
6. Flora Palaestina
7. Fluck, H . 1976. Medicinal Plants and their Uses, London: W. Foulshman Co. Ltd. ,
8. Fuller , D.J. 1979. Culinary and Medicinal Herbs. Ministry of Agriculture , Fisheries and Food . London : Reference Book 325.,
9. Hlava, and lanska, D.A. 1980. Guide in Colour to Kitchen Herbs and Spices, London: Octopus Book.
10. Kasapligil, B. 1956. Plants of Jordan with Notes on their Ecology and Economic Uses. Forestry Department (FAO), Amman, Jordan.
11. Launert, E. 1981. Edible and Medicinal Plants of Britain and North Europe. Hamlyn, London, UK.
12. Medicinal and Aromatic Plants (Different references and authors)
13. Plants of Arid and Semi Arid Regions.
14. Plants of Saline Conditions
15. Qasem, J.R. (1997). Medicnal and Aromatic Plants. Al-Quds Open University, Amman, Jordan
16. Range Plants
17. Stobart , T. 1977. Herbs, Spices and Flavoring . London: Penguin Books,
18. Tamplon , J. 1977. Dangerous Plants. London: David and Charles,
19. UNESCO. 1960. Medicinal Plants of the Arid Zone. Paris: UNESCO, William Charles, Daphne Trease and Evans ,Trease and Evans Pharmacognosy.

Any other references dealt with Plants of Jordan (University Publications and others)

**Intended Grading Scale (Optional)**

0-69 **C**

70-73 **C+**

74-76 **B**-

77-80 **B**

81-84 **B+**

85-89 **A**-

90-100 **A**

**Notes:**

* Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming, then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter, problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For final complaints, there will be a committee to review grading the final exam.
* For more details on University regulations please visit:

 <http://www.ju.edu.jo/rules/index.htm>