**The University of Jordan**

**Faculty: Agriculture Department: Horticulture & Crop Science**

**Program: Horticulture 2013-2014/ 1st Semester**

**MEDICINAL & AROMATIC PLANTS (0641331)**

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| Credit hours | 3 (2 LECTURES & 1 LAB) | Level | BSc. | Pre-requisite | Biology 1 |
| 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 deals with the history of medicinal and aromatic plants uses in different cultures and folk medicine of plant origin as practiced in Jordan and other Arab countries. Importance of both cultivated and wild grown medicinal species is emphasized. The course includes information on species distribution in relation to ecological factors and agricultural practices required for commercial production. It deals with biological and chemical aspects of medicinal plants followed by a survey of plant metabolites with physiological activity. Preparations and formulations of medicinal and aromatic plants and their healing properties are discussed. Information on the most important wild and cultivated species including their taxonomy, botanical description, parts used, chemical constituents, medicinal importance and precautions, cultivation, harvesting and storage of their chemical products are all considered.

Learning Objectives

Students learn as they can on medicinal and aromatic plants in their local habitats and abroad, and gain useful knowledge on their cultivation and commercial production for possible investment in this part of plant production sector. Students should also know on medicinal and aromatic plants, their parts and products used in folk medicine and on groceries of these in local markets. Their useful uses to treat ailments and possible side effects due to overdoses or misuses are also visualized. Students should be able to direct the uses and utilization of these plants in treatment of human diseases and for national income increases as a priority. The importance of medicinal and aromatic plants of both cultivated and wild grown in the local flora and for general ecosystem is emphasized. Student’s concentration and learning in this course should lead to very well trained students in medicinal and aromatic plants with all useful merits of these species for human welfare and health.

Intended Learning Outcomes (ILOs):

Successful completion of the course should lead to the following outcomes:

* Students have and idea on the importance of medicinal and aromatic plants in different cultures, and their historical uses.
* Students able to categorize medicinal and aromatic plants according to different systems, which enable them to know better these species and their role in human and animal health.
* Students know the role of different ecological factors on growth and productivity of these species and their responses to modification in growth factors.
* Students able to cultivate, grow, process and economically produce medicinal and aromatic plants.
* Students familiar with all agricultural practices that A & M species require.
* Students able to obtain the active constituents of medicinal and aromatic plants and know their chemistry and values.
* Students know on methods of medicinal and aromatic plants preparations, formulations for marketing and healing properties.

A. Knowledge and Understanding: Student is expected to

* Know most common cultivated and wild grown species in local habitats and some of the most important imported species available in local markets and their medicinal properties.
* Get familiar with all samples available in stores or local markets, their medical values and uses in folk medicine.
* Know chemical constituents of studied M & A species.

B. Intellectual Analytical and Cognitive Skills: Student is expected to

* Keep up to date with any progress in the cultivation, development or production and uses of medicinal and aromatic plants and their products.
* Consult recent published papers or references on the subject
* Interact with the lecturer and discuss any important related issues students think that introduce new knowledge or satisfy student quires on the topic.
* Become familiar with all materials found at the M&A plants markets and used in folk medicine.
* Know M&A species in their local habitats.

C. Subject- Specific Skills: Students is expected to

* Know how to prepare M&A plants for uses at home or in factories
* Learn methods of chemicals isolation, storage and processing
* How to write a scientific report and prepare the term paper at the end of semester by collecting literature from different sources on their assigned species.
* Know how to direct people on cultivating, processing and uses of these plants in the correct and useful way.
* Know the exact and correct site/environment in their local habitats to cultivate each species of M&A plants.

D. Transferable Key Skills: Students are expected to know:

How to collect, process and prepare dried samples with all necessary information on their habitats and medicinal values to keep and preserve these as a source of teaching samples, references on habitats species, and for herbarium collection in the future.

Instruct farmers on cultivation and production of these species and their importance in national income.

Course Contents

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| Content | Reference | Week | ILO/s |
| Introduction  Definition, importance and characteristics of medicinal and aromatic plants  Medicinal plants in different cultures | 8 | 1 | Lectures and Discussion |
| Geographical distribution of medicinal and aromatic plants in the world in relation to:  Temperature  Moisture  Soil | 8 | 2 | Lectures and Discussion |
| Classification of medicinal and aromatic plants | 8, 9 | 3 & 4 | Lectures and Discussion |
| Ecology of medicinal and aromatic plants | 1 & 8 | 5 | Lectures and Discussion |
| Cultivation and processing of medicinal and aromatic species | 11 | 6, 7 & 8 | Lectures and Discussion |
| Chemical groups of medicinal and aromatic plants constituents | 8 | 9 | Lectures and Discussion |
| Medicinal plants formulations and importance in folk medicine  Preparations & Treatments with medicinal herbs | 8 | 10 & 11 | Lectures and Discussion |
| Medicinal and aromatic plant species  A. Cultivated species  Coriander, Garlic, Onion, Leek, Celery, Cypresses, Saffron, Turmeric, Hemp, Cinnamon, Carob, Walnut, Senna, Caraway, Clove, Cumin, Coffee, Artichoke, Calendula, Eucalyptus, Fennel, Roselle, Liquorice, Iris, Jasmine, Lavender, Nutmeg, Basil, Chamomile, Mint, Oregano, Narcissi, Black cumin, Watercress, Anise, Pomegranate, Parsley, Sumac, Rosemary, Sage, Tea, Indian date, Fenugreek, Thyme, Christ's thorn, Orchid, Lemongrass, Henna | 1, 8, 11 | 12,13 & 14 | Lectures and Discussion |
| B. Wild species  Rose mallow, Bishop's weed, Borago, Wormwood, Anemone, Maidenhair fern, Mustard, Mexican tea, Shepherd's purse, Caper, Yarrow, Poison hemlock, Bitter apple, Thorn Apple, Chicory, Ferula, Henbane, Inula, Squirting cucumber, Mallow, Oleander, Wild rue, Castor bean, Common rue, Myrtle, Hawthorn, Oak, Mistletoe | 1, 8, 11 | 15 & 16 | Lectures and Discussion |

Learning Methodology

## Learning through lectures, field trips, practical part of this course and laboratory work, plant samples collection, slides on species in their natural habitats, term papers and their exchange among students, literature review for term paper preparation, all medicinal and aromatic plants samples and formulations displayed in the laboratory.

## Projects and Assignments

Each student will be asked on collecting literature and write a scientific report (term paper) on 1-2 plant species not studied in this course with all information on their taxonomy, botanical description, chemical constituents, medical uses, and ailments are used for, cultivation and production . Most recent literature on these species should be consulted and incorporated. The term paper should be submitted by the end of the semester and before the final exam.

# Evaluation

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| Exam | Grade% | Date |
| Mid. Term Exam | 30 | 8-9th week |
| Term Paper | 5 | 0ne week ahead of final exam |
| Lab. Reports | 5 | 0ne week ahead of final exam |
| Plant Collection | 10 | Two weeks before final exam |
| Final Lab. Exam | 15 | As scheduled by the university |
| Final Exam | 35 | As scheduled by the university |

Main Reference/s:

Ahmad, J.A.Al-Saed and Bedawe M. (1993). Medicinal and Aromatic Plants. University of Cairo, Egypt.

Qasem, J. R. (1997).Medicinal and Aromatic Plants. Al- Quds Open University Publications . 450 pp.

[Timothy R.; Akerele Tomlinson](http://www.amazon.co.uk/exec/obidos/search-handle-url/index=books-uk&field-author=Tomlinson%2C%20Timothy%20R.%3B%20Akerele/026-2410774-3069217) and [Olayiwola Akerele](http://www.amazon.co.uk/exec/obidos/search-handle-url/index=books-uk&field-author=Akerele%2C%20Olayiwola/026-2410774-3069217) (Editors) (1998). Medicinal Plants: Their Role in Health and Biodiversity. University of Pennsylvania.

حسين، فوزي طه قطب (1981). النباتات الطبية: زراعتها ومكوناتها.

# References:

1. Ahmad, J.A.Al-Saed and Bedawe M. (1993). Medicinal and Aromatic Plants. University of Cairo, Egypt.

2. Bunney, S. (1984). Herbs: Their Medicinal and Culinary Uses. Octopus Book. Ltd, London

3. Duke, T.A. (1989). Handbook of Medicinal Herbs. CRC Press Inc. Florida, USA.

4. Eagle, R. (1981). Herbs, Useful Plants. BBC Publications, London.

5. FAO-UN. (1983). Selected Medicinal Plants (Production & Protection).

6. Fluck, H. (1976). Medicinal Plants and Their Uses. W. Foulshman Co. Ltd.

7. Grewal, R.C. (2000). Medicinal Plants. D.K. Publishers Distributors.

8. Qasem, J. R. (1997). *Medicinal and Aromatic Plants*. Al- Quds Open University Publications . 450 pp.

9.[Timothy R.; Akerele Tomlinson](http://www.amazon.co.uk/exec/obidos/search-handle-url/index=books-uk&field-author=Tomlinson%2C%20Timothy%20R.%3B%20Akerele/026-2410774-3069217) and [Olayiwola Akerele](http://www.amazon.co.uk/exec/obidos/search-handle-url/index=books-uk&field-author=Akerele%2C%20Olayiwola/026-2410774-3069217) (Editors) (1998). Medicinal Plants: Their Role in Health and Biodiversity. University of Pennsylvania.

. القطب، محمد عدنان (1986). النباتات الطبية والعطرية. دمشق، المطبعة الجديدة .10

. حسين، فوزي طه قطب (1981). النباتات الطبية: زراعتها ومكوناتها. 11

Intended Grading Scale (Optional)

0-49 F

50-52 D-

53-55 D

56-58 D+

59-61 C-

62-64 C

65-67 C+

68-70 B-

71-73 B

74-76 B+

77-79 A-

80-100 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>