UNIVERSITY OF KENTUCKY
APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

1. Submitted by College of Agriculture
   Department/Division offering course Horticulture
   Date 01/06/2005

2. Changes proposed:
   (a) Present prefix & number PLS 520
       Proposed prefix & number PLS 520
   (b) Present Title Vegetable Crop Management
       New Title Fruit & Vegetable Production
   (c) If course title is changed and exceeds 24 characters (Including spaces), include a sensible title (not to exceed 24 characters) for use on transcripts:
       Fruit & Vegetables
   (d) Present credits: 3
       Proposed credits: 4
   (e) Current lecture: laboratory ratio 2/2
       Proposed: 3/2
   (f) Effective Date of Change: (Semester & Year) Fall 2005

3. To be Cross-listed as
   Prefix and Number
   Signature: Department Chair

4. Proposed change in Bulletin description:
   (a) Present description (including prerequisite(s)):
       A study of the fundamental principles involving management of vegetable crops produced in the field and in the greenhouse.
   (b) New description:
       Commercial production practices for major fruits and vegetables.
   (c) Prerequisite(s) for course as changed: PLS 386

5. What has prompted this proposal?
   Some of the material in the original courses PLS 520 Vegetable Crop Management and PLS 402 Fruit Crop Management (dropped from course offerings) is included in PLS 386. Plant Production Systems PLS 386 is required for all Horticulture students. Adding one credit hour will provide time to include both Fruit & Vegetable production.

6. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:
   Fruit Production Systems has been added to course. See new and old class syllabi attached.

7. What other departments could be affected by the proposed change?
   Agriculture Education students may take the course.

8. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky?
   ☑ Yes ☐ No

9. Will changing this course change the degree requirements in one or more programs?*
   ☑ Yes ☐ No
   *If yes, please attach an explanation of the change.*

10. Is this course currently included in the University Studies Program?
    If yes, please attach correspondence indicating concurrence of the University Studies Committee.
    ☐ Yes ☑ No

11. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.

*NOTE: Approval of this change will constitute approval of the program change unless other program modifications are proposed.
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12. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. ☑ Check here if 400G-500.

12. Is this a minor change? ☑ Yes ☑ No (NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)

13. Within the Department, who should be consulted for further information on the proposed course change?

Name: Doug Archbold or Jack Buxton Phone Extension: 7-3352 or 7-3781

Signatures of Approval:

[Signatures and dates]

ACTION OTHER THAN APPROVAL

**********

The Minor Change route for courses is provided as a mechanism to make changes in existing courses and is limited to one or more of the following:

a. change in number within the same hundred series;
b. editorial change in description which does not imply change in content or emphasis;
c. editorial change in title which does not imply change in content or emphasis;
d. change in prerequisite which does not imply change in content or emphasis;
e. cross-listing of courses under conditions set forth in item 3.0;
f. correction of typographical errors. [University Senate Rules, Section III - 3.1]
PLS 520  
FRUIT AND VEGETABLE PRODUCTION  
LECTURES MWF 10-11 AM  
LABORATORY W 1-3 PM  

INSTRUCTOR:  Douglas Archbold  
OFFICE:  N308c Agricultural Sciences North  
PHONE:  257-3352  
e-mail:  darchbol@uky.edu  
OFFICE HOURS:  MWF 11AM-12PM or any other time by appointment  

COURSE DESCRIPTION: A study of the principles and commercial production practices of the major fruit and vegetable crops in Kentucky. Lecture, three hours; laboratory, two hours per week. Prereq: PLS 210.

LEARNING OBJECTIVES:  
Upon completion of this course, the student should be able to:  

1) Explain general principles of fruit and vegetable crop production  
2) Describe and differentiate crop-specific production, harvest, and postharvest storage practices.  
3) Recognize important disease, insect, and other problems and strategies for their management  
4) Identify the plant material, the harvested organ, and the seed of the major crops  

REFERENCES:  
On-line/Hard copy  
UK Department of Horticulture Website  
Vegetable Production Guide for Commercial Growers  
Strawberry Production in Kentucky HO-16  
Growing Blackberries & Raspberries in Kentucky HO-15  
Growing Grapes in Kentucky ID-126  
Growing Highbush Blueberries in Kentucky HO-602002-03  
Penn State Tree Fruit Production Guide  http://ftp.g.cas.psu.edu/  
Small Scale Fruit Production  http://ssfruit.cas.psu.edu/  

On reserve  
Hartmann's Plant Science: Growth Development and Utilization of Cultivated Plants 3rd Ed. McMahon,  
Kofane, and Rubatzky  
Producing Vegetable Crops. 4th Ed. Swiader, Ware, and McCollum  
Vegetables: Characteristics, Production and Marketing. Peirce  
World Vegetables: Principles, Production and Nutritive Value. 2nd Ed. Rubatzky and Yamaguchi  
Temperate Zone Pomology 3rd Ed. Westwood  
Modern Fruit Science Childers, Morris, and Sibbett  
Small Fruit Crop Management Galletta and Himeirick  

MAJOR TOPICS  
Lecture Number  Topic  
1  Geography of fruit and vegetable production  
2  Site selection and preparation  
3  Fertility, nutrition, and irrigation  
Vegetables  
4  Historical overview, current production, classification of crops  
5-6  Seeding and transplanting  
7  Organic production techniques  
8  Row covers, tunnels, and greenhouse production  
9  Postharvest handling of vegetables  
10  Exam 1  
Production practices and economics of selected vegetable crops
11-12  Solanaceae – tomato, pepper, potato
13-14  Brassica - broccoli, cabbage, cauliflower
15  Leafy crops/greens - lettuce, spinach
16  Sweet corn
17-18  Cucurbita – melons, squash, cucumber, pumpkin
19  Legumes - beans, peas
20  Root crops - carrot
21  Allium – onion
22  Perennials – asparagus
23  Economics of Vegetable Production
24  Exam 2
25  Fruit
26  Historical perspective
27-28  Cultivar origins
29-30  Tree fruit crops – apple, pear, peach, plum, cherry
31-33  Species and rootstocks
34  Orchard design, planting, and cultural systems
35  Training and pruning young and mature trees
36  Flowering, pollination, and fruit set
37  Fruit thinning and development, and tree productivity
38-40  Ripening and harvest techniques
39  Exam 3
40  Small fruit crops
41-43  Grape
44-45  Brambles (raspberry and blackberry)
46  Strawberry
47  Blueberry and cranberry
48  Postharvest Handling and Processing
49  Economics of Fruit Production

LABORATORY TOPICS AND ACTIVITIES
Vegetables
  Vegetable seed production and ID
  Vegetable seed germination and temperature (Lab report 1)
  Postharvest storage and quality loss of vegetables (Lab report 2)
  Guest speakers on insect and disease control problems, and commercial production experiences

Fruit
  Cultivars/Descriptors/Flower and Fruit Morphology
  Vegetative Growth and Fruiting Habits
  South Farm Trip/Pruning
  Guest speakers on insect and disease control problems
  Crops Presentations

GRADING – Undergraduate Students
  Lecture exams 4 @ 100 pts each = 400
  2 Lab exams @ 75 pts = 200
  2 Lab reports @ 50 pts each = 100
  Discussion/position papers 2 @ 50 pts each = 100
  Production Issue Paper = 100
  New or Unique Crop Presentation = 50
  Attendance/participation = 50
  Total = 1000
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**GRADING – Graduate Students**

- Lecture exams 4 @ 100 pts each = 400
- 2 Lab exams @ 75 pts = 200
- 2 Lab reports @ 50 pts each = 100
- Discussion/position papers 2 @ 50 pts each = 100
- Production Issue Paper = 100
- 1 Class Lecture (50 min) = 100
- 1 Term Paper = 100
- New or Unique Crop Presentation = 50
- Attendance/participation = 50

**Total** = 1200

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January 31, 2005

To: Marilyn Lyons
   Graduate Council

From: Dr. Mike Mullen
       Associate Dean for Academic Programs

Re: PLS 520

Attached is a proposal for a course revision on PLS 520. This change has been approved by the College of Agriculture Undergraduate and Graduate Curriculum Committees.

Thank you.
Old and New Course Outlines

Following is the old course outline for HOR 510 Vegetable Crop Production and the new course outline for PLS 520 Fruit and Vegetable Production. Note that the old outline is for HOR 510. When the undergraduate programs in Agronomy and Horticulture were combined all HOR and AGR prefixes were changed to PLS. Because Agronomy had AGR 510, the HOR 510 Vegetable Crop Production course was changed to PLS 520.
1. The vegetable industry in the United States
   a. Major production areas in the U.S.
   b. Major production systems in Kentucky

2. Current issues facing vegetable producers in the United States
   a. Water availability
   b. Land values
   c. Labor issues
   d. Food safety
   e. Use and availability of pesticides in minor use crops
   f. Bioengineered crops

3. General management practices associated with vegetable production
   a. Soil tillage and crop establishment
   b. No-tillage, conventional tillage and minimum tillage

4. Vegetable seeding systems
   a. Conventional seeders
   b. Use of pelleted seed
   c. Seed priming
   d. Soil preparation

5. Transplant systems for vegetables
   a. Transplant production
      i. Flats
      ii. Field beds
      iii. Floating beds
   b. Transplant establishment
      i. Transplant shock
      ii. Fertilization
      iii. Watering
      iv. Hardening off
      v. Carbohydrate distribution

6. Greenhouse Production of Vegetables
   a. Hydroponic culture
   b. NFT
   c. Soilless beds
   d. Location of production across the U.S.
   e. Important crops
   f. Marketing of greenhouse produce
7. Modification of plant environment
   a. Irrigation
   b. Mulching
   c. Row covers
   d. Frost protection

8. Perennial vegetable crops
   a. Asparagus, rhubarb
   b. Production location, cultivar selection, dioecious growth habit
   c. Cultural practices utilized in production
   d. Harvest and postharvest handling
   e. Marketing and pricing
   f. Key pest problems

9. Leafy green crops
   a. Spinach
   b. Kale and collards
   c. Chard and mustards
      i. Production location, growth habit
      ii. Cultural practices used in production
         Harvest and postharvest handling
      iii. Marketing
      iv. Pest problems
      vi. Bolting, a physiological disorder

10. Leafy salad crops
    a. Lettuce and celery
        i. Production location, cultivar selection, growth habit
           Cultural practices used in production
           (1) seeding and transplanting
           Harvest and postharvest handling
           (1) vacuum cooling
           (2) hydrocooling
           (3) icing
        iv. Marketing
        v. Pest problems
        vi. Bolting

11. Cole crops
    a. Cabbage, cauliflower, broccoli, brussel sprouts and chinese cabbage
       i. Production locations in U.S.
       ii. Cultural practices used in production in U.S.
       iii. Cultural practices used in Kentucky
       iv. Harvest and postharvest handling
       v. Marketing
vi. Pest problems
vii. Bolting and other physiological disorders

12. Root crops
   a. Carrots, parsnips, beets, radishes, and turnips
   b. Cultural practices for production
   c. Harvest and postharvest handling
   d. Marketing
   e. Pest problems
   f. Physiological disorders
      i. Nutrient deficiencies

13. Allium species
   a. Onions, garlic, chives, shallots
   b. Cultural practices for production
   c. Harvest and postharvest handling
      i. Curing
      ii. Long and short-term storage
      iii. Cultivar selection
   d. Marketing
   e. Pest problems

14. Tuberous and other root crops
   a. Irish potato and sweet potato
   b. Cultural practices for production
      i. Seed production
      ii. Slip production
   c. Harvest and postharvest handling
      i. Curing
      ii. Storage conditions and diseases
      iii. Chipping, canning, mashing, freezing
      iv. Cultivar selection
   d. Marketing
   e. Physiological disorders

15. Solanaceous crops
   a. Tomato
      i. Fresh market and processing cultivars and growth habit
      ii. Cultural practices in U.S. and Kentucky
         (1) black plastic, trickle irrigation
         (2) transplanting vs. direct seeding
         (3) staking
      iii. Harvesting and grading
      iv. Fruit ripening
      v. Postharvest handling
vi. Physiological disorders and pests

b. Peppers and eggplant
   i. Fresh market or processing, growth habit
   ii. Cultural practices involved in production in the U.S. and in Kentucky
   iii. Harvesting and **postharvest** handling
   iv. Marketing
   v. Pest problems

16. Legume Crops
   a. Snapbean and lima bean
      i. Processing industry and fresh market
      ii. Cultural practices
          (1) industry contracts
          (2) mechanical harvest
          (3) processing
          (4) fresh market practices
      iii. Marketing
      iv. Pest control
   b. Pea crops
      i. Processing vs. fresh market industries
         Cultural practices
         Harvesting and postharvest handling
         (1) degree days
         (2) tenderometer readings
      iv. Marketing
      v. Pest control

17. Cucurbit crops
   a. Cucumber, muskmelon, watermelon, squash, pumpkin
      i. Cultivar description and taxonomy
      ii. Cultural practices in U.S. and in Kentucky
          (1) flowering
          (2) pollination
          (3) enhancement of fruit set
      iii. Harvesting and postharvest handling
      iv. Marketing - fresh market vs. processing
      v. Pest control and physiological disorders

18. Sweet corn
   a. Growth habit, cultivar selection
   b. Cultural practices for production
      i. Fresh market vs. processing industry
   c. Harvesting and postharvest handling
      i. Use of degree days
i. Ripening process

d. Marketing

e. Pest problems

1. Class project presentation
Laboratory Schedule HOR 510
Vegetable Crops 1994

Laboratory (Wednesday 1:00-2:50)  R.A. (Mindy Hoffman N-322)
                                      Roselee Harmon N-327

1. Jan 12  Introduction, vegetable anatomy, seed & seedling ID
2. Jan 19  Seed physiology (fruit & flowers), pregermination expt. setup
            Jan 26  Production issues (Harold Hempfing), systems project
4. Feb 02  Fertilizers, nutritional deficiency symptoms (hydroponics expt.)
5. Feb 09  LAB ID EXAM
6. Feb 16  Greenhouse vegetable production, bag culture, medias
            PREGERMINATION EXPERIMENT REPORT DUE
7. Feb 23  Vegetable weed control
8. Mar 02  Vegetable insect control & IPM (Rick Bessin)
9. Mar 09  Alternative and organic production of vegetables
            SPRING BREAK (March 14 - 18)
10. Mar 23 Troubleshooting vegetable production problems (Darryl Slone)
11. Mar 30 Vegetable production practices shift disease potential
            (Bill Nesmith)
12. Apr 06  Class project presentations
13. Apr 13  Class project presentations
14. Apr 20  Field trip - vegetable distribution
15. Apr 27  Field trip - vegetable producers
REQUIRED READINGS ARE LISTED NEXT TO LECTURES. Please read chapters in Pierce book before each lecture. Required readings will be handed out beforehand to allow ample time for class discussion of particular topics.

HOR 510 laboratory attendance is required for all sessions. Prior arrangements with instructor must be made for excused absences. Prompt arrival by 1:00 pm is required for field trips. The visit to production sites (April 20 & 27) will require additional time and return will occur in late afternoon. Please plan ahead for these excursions.

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100%