Department of

Applied Plant Science

Department Description

The Department of Applied Plant Science emphasizes the relationship between the art and science of plant culture. This relationship affects production on thousands of acres as well as on a smaller, more urban scale in residential gardens, and in the ornamental use of plants where art is specifically emphasized. In all these areas, plants are an integral part of the human experience. The emphasis on both production and aesthetics in the department’s degrees and programs has prophetic roots:

“There is a great work for the Saints to do. Progress, and improve upon and make beautiful everything around you. Cultivate the earth, and cultivate your minds. Build cities, adorn your habitations, make gardens, orchards, and vineyards, and render the earth so pleasant that when you look upon your labors you may do so with pleasure, and that angels may delight to come and visit your beautiful locations.” Brigham Young, Deseret News, Aug. 8, 1860, 177.

Students in these programs apply scientific knowledge to practical, hands-on experience in the Thomas E Ricks Gardens and Greenhouses, the Hill View Farm, the Plant Shop, the Ag Shop (Ag Engineering Building), and The Flower Center. They also provide produce and ornamentation for the BYU Idaho campus, events, community and local farmers markets. The department focuses on learning how plants grow, how to propagate them, and how to prepare them for consumer use. From basic plant science, to artistic embellishments for life events, this department offers a buffet of opportunities to improve the quality of life.

Horticulture

The Horticulture Program is a nationally recognized and accredited leader in horticulture education preparing students for expanding career opportunities in nurseries, garden centers, florist shops, floral wholesalers, plant brokers, landscape contractors, lawn service companies, interior plant companies, greenhouses, golf courses, parks, botanical gardens, landscape management, event planning, design build, plant production, plant breeding, horticulture sales and marketing, and horticulture supply companies.

Agronomy, Crop, and Soil Science

The Agronomy, Crop, and Soil Science Program provides excellent connections with local and international Agricultural companies doing research through the farm on campus, as well as coordinating internships and employment opportunities throughout their network in the industry. Employment opportunities for students with a background in Agriculture are excellent. Examples of career opportunities available are specialists in crop consulting, plant genetics, soil and water, environmental science, GPS/GIS, machinery management, agronomy, education, food processing, plant nutrition, food safety, range resource management, government agency workers and researchers. Internships are an integral component of the various programs in the Applied Plant Science Department. They are a doorway to the industry, and provide students with practical exposure to real world applications of plant studies.

Agriculture Technology

The Agriculture Technology Program prepares students for a career in the technical and mechanical world of agriculture. Rapid mechanization of the industry over the past two generations has made shop work a larger and more essential part of agriculture operations. Students will attain skills needed to diagnose, repair, and maintain all equipment related to agriculture systems. In addition, learning the technology of global positioning systems and geographical information systems will prepare technicians in all aspects of equipment operation and maintenance.

Students who seek advanced degrees find opportunities in education, research, extension, and government service. Several graduates of this department have gone on to advanced degrees in Landscape Architecture, Agriculture Engineering, Agronomy, and other industry certification. Students who like plants, have a desire to improve the world around them, and enjoy applying the law of the harvest will benefit from their time in the programs of Applied Plant Science. From seed to bouquet, from farm to table, the principles of the plant’s potential are the core of this Department.
### AAS in Plant Science and Technology (365)

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### Credit Requirements:

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### AAS in Floral Design (373)

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### BS in Agronomy, Crop and Soil Sciences (642)

**Core Courses**
- Take these courses during your first 2 semesters:
  - APS 122 4
  - APS 220 3
  - APS 398R 1-5
- CHEM 101 3

**Agronomy Courses**
- Take 27 credits:
  - AGRON 321 3
  - AGRON 325 3
  - AGRON 330 3
  - AGRON 343 3
  - AGRON 400 3
  - AGRON 420 1.2
  - AGRON 445 2
  - AGRON 446 3

**Program Notes:**
- No Double Counting of Major Courses
- No Grade Less Than C- in Major Courses

### Credit Requirements:
- Foundations 40
- Major 55
- Elective 25
- Total 120

### BS in Agriculture Technology (644)

**Core Courses**
- Take these courses:
  - APS 122 4
  - AGTEC 186 1
  - AGTEC 220 1
  - AGTEC 360 4
  - AGTEC 486 3
  - APS 220 3
  - APS 220L 1
  - APS 398R 1.5

**Supplemental Courses**
- Take 30 credits:
  - AGTEC 286 3
  - GEOG 230 3
  - AGTEC 301 4
  - AGTEC 335 4

**Program Notes:**
- No Double Counting of Major Courses
- No Grade Less Than C- in Major Courses

### Credit Requirements:
- Foundations 40
- Major 55
- Elective 25
- Total 120

### BS in Horticulture Design/Build/Maintain Emphasis (695-14)

**Core Courses**
- Take these courses:
  - APS 122 4
  - APS 220 3
  - APS 412 2
  - HORT 230 3
  - HORT 297R 1
  - HORT 322 3
  - HORT 324 2
  - HORT 335 2

**Seminar**
- Take 2 times:
  - APS 299R 0.5

**Emphasis Courses**
- Take 28 credits:
  - APS 299R 1.5
  - HORT 252 4
  - HORT 319 3
  - HORT 325 2
  - HORT 329 3
  - HORT 334 2
  - HORT 336 2
  - HORT 358R 1
  - HORT 385R 1
  - HORT 395 1
  - HORT 430 3
  - HORT 455 3

**Program Notes:**
- No Double Counting of Major Courses

### Credit Requirements:
- Foundations 40
- Major 55
- Elective 25
- Total 120

### BS in Horticulture Design/Build/Maintain Emphasis (695-14)

**Internship**
- Take this course for 1 credit:
  - APS 398R 1.5

**Recommended courses for this emphasis:**
- HORT 252 4
- HORT 319 3
- HORT 329 3
- HORT 334 2
- HORT 336 2
- HORT 358R 1
- HORT 385R 1
- HORT 395 1
- HORT 430 3
- HORT 455 3

### Tracks Available:
- Fall-Winter Yes
- Winter-Spring Yes
- Spring-Fall Yes

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### BS in Agronomy, Crop and Soil Sciences (642)

**Core Courses**
- Take these courses during your first 2 semesters:
  - APS 122 4
  - APS 220 3
  - APS 398R 1-5
  - CHEM 101 3

**Take these courses:
- AGRON 321 3
- AGRON 325 3
- AGRON 330 3
- AGRON 400 3
- AGRON 420 1.2
- AGRON 445 2
- AGRON 446 3

**Program Notes:**
- No Double Counting of Major Courses
- No Grade Less Than C- in Major Courses

### Credit Requirements:
- Foundations 40
- Major 55
- Elective 25
- Total 120

### BS in Agriculture Technology (644)

**Core Courses**
- Take these courses:
  - APS 122 4
  - AGTEC 186 1
  - AGTEC 220 1
  - AGTEC 360 4
  - AGTEC 486 3
  - APS 220 3
  - APS 398R 1.5
  - APS 398R 1.5

**Take 1 course:
- AGTEC 286 3
- GEOG 230 3
- AGTEC 301 4
- AGTEC 335 4

**Program Notes:**
- No Double Counting of Major Courses
- No Grade Less Than C- in Major Courses

### Credit Requirements:
- Foundations 40
- Major 55
- Elective 25
- Total 120

### BS in Horticulture Design/Build/Maintain Emphasis (695-14)

**Core Courses**
- Take these courses:
  - APS 122 4
  - APS 220 3
  - APS 412 2
  - HORT 230 3
  - HORT 297R 1
  - HORT 322 3
  - HORT 324 2
  - HORT 335 2

**Seminar**
- Take 2 times:
  - APS 299R 0.5

**Emphasis Courses**
- Take 28 credits:
  - APS 299R 1.5
  - HORT 252 4
  - HORT 319 3
  - HORT 325 2
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  - HORT 334 2
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**Recommended courses for this emphasis:**
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### Credit Requirements:
- Foundations 40
- Major 55
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- Total 120

### Tracks Available:
- Fall-Winter Yes
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### BS in Horticulture Design/Build/Maintain Emphasis (695-14)

**Core Courses**
- Take these courses:
  - APS 122 4
  - APS 220 3
  - APS 412 2
  - HORT 230 3
  - HORT 297R 1
  - HORT 322 3
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**Seminar**
- Take 2 times:
  - APS 299R 0.5

**Emphasis Courses**
- Take 28 credits:
  - APS 299R 1.5
  - HORT 252 4
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**Program Notes:**
- No Double Counting of Major Courses

### Credit Requirements:
- Foundations 40
- Major 55
- Elective 25
- Total 120

### Tracks Available:
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- Spring-Fall Yes

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### BS in Horticulture

#### Production Emphasis (695-15)

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<td>Spring-Fall Yes</td>
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### BS in Horticulture

#### Floral Design Emphasis (695-16)

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<td>Elective 25</td>
<td>Spring-Fall Yes</td>
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</table>
### BS in Agriculture Education Composite (825)

#### Education Core
- **Take these courses:**
  - ED 200 2
  - ED 304 3
  - ED 461 3
  - ED 492 10
  - SPED 360 2
- **Total:** 20

#### Supplemental Courses
- **Take these courses:**
  - ED 200 2
  - ED 304 3
  - ED 461 3
  - ED 492 10
  - SPED 360 2
- **Total:** 10

#### Technology Courses
- **Take 4 credits:**
  - AGRUS 210 3
  - AGTEC 124 2
  - AGTEC 220 1
  - AGTEC 320 3
  - AGTEC 335 4
  - AGTEC 360 4
- **Total:** 10

#### Program Notes:
- **• No Double Counting of Major Courses**
- **• No Grade Less Than C- in Major Courses**

### Minor in Horticulture (204)

#### Core Courses
- **Take this course:**
  - APS 122 4
- **Take 1 course:**
  - HORT 230 3
  - HORT 335 3
- **Total:** 10

#### Elective Courses
- **Take 9 credits:**
  - APS 103 3
  - APS 299R 0.5
  - APS 310 2
  - APS 312 2
  - APS 339R 3
  - APS 350 3
  - APS 412 2
  - APS 413 3
  - APS 465 3
  - HORT 230 3
- **Total:** 18

#### GIS Courses
- **Take 1 course:**
  - AGTEC 286 3
  - GEOG 340 3
  - MATH 221A 3
  - MATH 221B 3
  - MATH 221C 3
- **Total:** 6

#### GIS Project
- **Take 1 course:**
  - AGRON 486 3
  - AGTEC 486 3
  - AGTEC 440R 3
  - AGTEC 486 3
  - AGTEC 440R 3
  - GEOL 440R 3
  - COMM 125 3
  - GEOG 240 3
  - ME 142 or CIT 110 6
- **Total:** 13

### Credit Requirements:
- **Foundations:** 40
- **Major:** 60
- **Education Core:** 20
- **Total:** 120

#### Tracks Available:
- **Fall-Winter:** Yes
- **Winter-Spring:** Yes
- **Spring-Fall:** No

### Geographical Information Systems (GIS) Technology Minor (222)

#### Core Courses
- **Take these courses:**
  - CIT 111 3
  - CS 101 2
  - GEOL 140 1
- **Total:** 6

#### GIS Courses
- **Take 1 course:**
  - AGTEC 286 3
  - GEOG 340 3
  - MATH 221A 3
  - MATH 221B 3
  - MATH 221C 3
- **Total:** 6

#### GIS Project
- **Take 1 course:**
  - AGRON 425 3
  - CIT 160 3
  - CIT 260 3
  - COMM 125 3
  - GEOG 240 3
  - ME 142 or CIT 110 6
- **Total:** 15

#### Credit Requirements:
- **Total:** 24

#### Tracks Available:
- **Fall-Winter:** Yes
- **Winter-Spring:** Yes
- **Spring-Fall:** Yes

---

**Program Notes:**
- **• No Double Counting of Minor Course**
- **• No Grade Less Than C- for Minor Courses**
- **• A directed studies or other project oriented course in a student chosen discipline may be substituted for this requirement with the Geology Chairs permission.**
## Minor in Plant Science and Technology (243)

<table>
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### Core Courses
- APS 122
- APS 220
- APS 220L
- AGTEC 220

### Supplemental Courses
- AGRON 321
- AGRON 330
- AGRON 425
- AGRON 440
- AGRON 445
- AGRON 460
- AGTEC 132

### Credit Requirements:
Total: 25

### Tracks Available:
- Fall-Winter: Yes
- Winter-Spring: Yes
- Spring-Fall: Yes

---

## Horticulture Concentration (D 150)

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### Core Courses
- APS 122
- APS 220
- APS 220L
- AIS 412
- HORT 297R
- HORT 322

### Interdisciplinary Courses
- IDS 398R
- IDS 499

### Supplemental Courses
- AGRON 321
- AGRON 330
- AGRON 425
- AGRON 440
- AGRON 445
- AGRON 460
- AGTEC 132

### Credit Requirements:
Total: 32

### Tracks Available:
- Fall-Winter: Yes
- Winter-Spring: Yes
- Spring-Fall: Yes
## Applied Plant Science Pre-approved Clusters

### Event Planning

**Take 12 credits:**
- AGBUS 232  Ag Sales and Merchandising 3
- HORT 287R  Flower Center 1
- HORT 325  Internescaping 2
- HORT 335  Flower Arranging 3
- HORT 338R  Wedding and Event Planning 3

**Total Credits 12**

### Horticulture

**Take 12 credits:**
- APS 103  Home Gardening 3
- APS 122  Introduction to Plant Science 4
- APS 299R  Seminar 0.5
- APS 310  Tree Fruit & Nut Crops 2
- APS 312  Alternative Cropping Systems 2
- APS 350  Plant Breeding and Genetics 3
- APS 412  Integrated Pest Management 2
- APS 413  Pesticide Application 1
- HORT 230  Intro to Architecture/Landscape Design 3
- HORT 252  Landscape Construction 4
- HORT 287R  Flower Center 1
- HORT 311  Introduction to Arboriculture 2
- HORT 319  Landscape Management 3
- HORT 320  Plant Propagation 3
- HORT 322  Woody Plant Identification 3
- HORT 324  Herbaceous Plant Identification 2
- HORT 325  Internescaping 2
- HORT 329  Irrigation 3
- HORT 334  Greenhouse Operations 3
- HORT 335  Flower Arranging 3
- HORT 336  Cultural Design Influence 2
- HORT 338R  Wedding and Event Planning 3
- HORT 410  Turfgrass Management 3
- HORT 430  Advanced Landscape Design 3
- HORT 455  Nursery Management 2
- HORT 460  Cut Flower Crops 2
- HORT 461  Potted Plants 2
- HORT 470  Edible Landscaping 2

**Total Credits 12**

### Natural Resources

**Take 4 courses:**
- BIO 225  Range Management 3
- BIO 302  Ecology  4
- BIO 325  Range Ecology Systems Management 3
- BIO 455  Rangeland Inventory & Analysis Lab 3
- BIO 466  Rangeland Vegetation Manipulation & Improvement 3

**Total Credits 12**

### Soil Management

**Take these courses:**
- APS 220  Introduction to Soils 3
- AGRON 321  Soil Fertility and Plant Nutrition 4
- AGRON 325  Water Management Systems 3
- AGRON 425  Soil Management 3

**Total Credits 15**

### Crop Production

**Take 12 credits:**
- APS 103  Home Gardening 3
- APS 310  Tree Fruit & Nut Crops 2
- APS 312  Alternative Cropping Systems 2
- AGRON 330  Forage Crops 3
- AGRON 435  Root, Tuber, and Vegetable Crops 3
- AGRON 455  Grain and Oil Seed Crops 3

**Total Credits 12**

### Crop Protection

**Take these courses:**
- AGRON 321  Soil Fertility and Plant Nutrition 4
- AGRON 325  Water Management Systems 3
- AGRON 445  Crop Advisor Certification 2
- APS 412  Integrated Pest Management 2
- APS 413  Pesticide Application 1

**Total Credits 12**

### GIS in Agriculture and Natural Resources

**Take these courses:**
- AGTEC 286  Intro to Geographic Information Systems 3
- AGTEC 474  Mechanical Systems Analysis 3
- AGTEC 486  Precision Agriculture 3
- GEOG 240  Maps and Remote Sensing 3
- GEOG 340  Advanced GIS and Spatial Analysis 3

**Total Credits 12**

### Agriculture Technology

**Take 14 credits:**
- AGED 460  Experiential Laboratory Methods 2
- AGTEC 220  Machinery Safety Training 1
- AGTEC 320  Agricultural Machinery 3
- AGTEC 335  Electronic Systems Diagnostics and Repairs 2
- AGTEC 360  Agricultural Hydraulics 4
- AGTEC 465  Machinery Management 3
- AGTEC 474  Mechanical Systems Analysis 3

**Total Credits 14**

### Geographical Information System (GIS)

**Take this course:**
- GEOL 140  Intro to Global Positioning Systems 1
- **Take 1 course:**
  - AGTEC 286  Intro to Geographic Information Systems 3
  - GEOG 230  Intro to Geographic Information Systems 3
  - GEOIL 340  Introduction to GIS for Geoscientists 3
  - MATH 221A  Business Statistics 3
  - MATH 221B  Biostatistics 3
  - MATH 221C  Social Science Statistics 3
  - **Take 1 course:**
    - AGTEC 486  Precision Agriculture 3
    - GEOIL 340  Advanced GIS and Spatial Analysis 3
    - GEOIL 440R  Applied GIS 3
  - **Take 1 course:**
    - CIT 111  Introduction to Databases 3
    - CIT 160  Introduction to Programming 3
    - COMM 125  Visual Fundamentals 3
    - CS 101  Introduction to Programming 3

**Total Credits 12**

Some courses may have a prerequisite that must be met in order to take that course.
### Course Descriptions

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<th>Title</th>
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**Credits**

- Credit Hours: Lecture Hours per week: Lab Hours per week: Guided Instruction Hours per week

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### Description of Courses

1. **AGRON 435 Root, Tuber, and Vegetable Crops**
   - Total Course Fees: $25.00
   - This course involves the study of potato production including seed, water, fertilizer, and harvest management. The course includes lectures, field study, and outside the classroom experiences to enable the student to become more knowledgeable of potato management.
   - (See Rotation Schedule on page 106)

2. **AGRON 440 Crop Physiology**
   - Prerequisites: (BIO 100 and CHEM 101 or higher) or (APS 122 and CHEM 101 or higher)
   - In this course students will learn the science and application of crop science and physiology. This course will apply cellular and biochemical analysis of plant physiology to the more applied aspects of plant growth specifically agricultural crops.
   - (See Rotation Schedule on page 106)

3. **AGRON 445 Crop Advisor Certification**
   - Course Requirements: Instructor Approval Required
   - The International Certified Crop Advisor program is designed to provide qualified credentials to professionals in Agriculture who consult and make nutrient and pesticide recommendations to Grower/Producers. Completion of the course prepares students to take two required examinations for CCA certification.
   - (See Rotation Schedule on page 106)

4. **AGRON 455 Grain and Oil Seed Crops**
   - Total Course Fees: $25.00
   - This course covers crop history and the biology of major cereal and oil seed crops produced during both warm and cool seasons. The course also introduces principles of cereal and oil crop chemistry, development and processing.
   - (See Rotation Schedule on page 106)

5. **AGRON 460 Plant Pathology**
   - Total Course Fees: $25.00
   - This course will help plant growers to understand the potential for plant disease, to recognize symptoms of disease, understand the life cycle of the pathogen, and find a way to control, minimize, or eliminate it.
   - (See Rotation Schedule on page 106)

6. **AGRON 470 Agronomy Capstone: Agro-Ecology**
   - Total Course Fees: $25.00
   - This is a capstone course for agronomy, crop, and soil science majors. The course is a study of sustainable agriculture, including modern agricultural impacts on natural ecosystems. The application of modern agricultural technology to improve agriculture and economical sustain ability will be studied.
   - (See Rotation Schedule on page 106)

7. **AGTEC 122 Small Engines**
   - Total Course Fees: $15.00
   - This course covers the selection, adjustment, and care of small engines. Small engine theory and procedures for complete small engine overhaul will be studied.
   - (See Rotation Schedule on page 106)

8. **AGTEC 124 Compact Equipment**
   - Total Course Fees: $15.00
   - In this course, students will test and repair procedures for engines, electrical, power trains, and hydraulics found on compact equipment.
   - (See Rotation Schedule on page 106)

9. **AGTEC 125 Agricultural Maintenance Welding**
   - Total Course Fees: $15.00
   - This course is an overview in the use of electric arc and oxy acetylene welding equipment with an emphasis upon maintenance welding as it pertains to farm and ranch applications.
   - (See Rotation Schedule on page 106)

10. **AGTEC 132 Climate Control**
    - This course covers system theory, diagnosis, and repair of air conditioning and heating systems in agricultural equipment.
    - (See Rotation Schedule on page 106)

11. **AGTEC 186 GPS Applications in Agriculture**
    - This course will examine the technology and application of global positioning systems (GPS) in agriculture.
    - (See Rotation Schedule on page 106)
AGTEC 220 Machinery Safety Training  
This course is an overview of preventive maintenance, care, and operation of Agricultural equipment.  
(See Rotation Schedule on page 106)

AGTEC 230 Agriculture Electrification - AC  
This course involves principles, systems, and applications of electrical energy in agriculture.  
(See Rotation Schedule on page 106)

AGTEC 286 Introduction to Geography Information Systems  
This course is designed to teach the basics of geographical information systems in agriculture and natural resources and how global positioning systems and geographical information systems can be used to improve agricultural and natural resource management.  
(See Rotation Schedule on page 106)

AGTEC 290R Individual Study  
This course incorporates independent study, special assignment and/or advanced inquiry in an area of special interest, approved after consultation with instructor in charge.  
(Fall, Winter, Spring)

AGTEC 294 Agriculture Fabrication  
Prerequisite: ME 105  
In this course, students will learn how rapid mechanization of agriculture over the past generation has made shop work a larger and more essential part of agriculture operations. This course will help develop specific skills used in agriculture mechanics and improve the ability to perform at high productive levels.  
(See Rotation Schedule on page 106)

AGTEC 301 Engine Repair  
This course will teach students about the practical application and use of the principles and practices of major diesel engine repair. Students will study the mechanics and operational procedures and repair of tractors and other forms of farm power units, with emphasis on adjustments, operations, and care of the power unit.  
(See Rotation Schedule on page 106)

AGTEC 320 Agricultural Machinery Management  
Total Course Fees: $20.00  
In this course, students will learn about selection, servicing, maintenance, operation, testing, repair, use, and general management of agricultural equipment.  
(See Rotation Schedule on page 106)

AGTEC 335 Electronic System Diagnostic Repair  
This course involves basic electricity in farm power electrical circuits, with emphasis in starting systems, charging systems, lighting systems and accessory systems. This course will focus on advanced electronics used in farm power; fuel injection systems, monitors and controllers.  
(See Rotation Schedule on page 106)

AGTEC 360 Agricultural Hydraulics  
In this course, students will study the fundamental and advanced principles governing and regulating the transmission and control of fluid power hydraulics. Trouble shooting and system repairs will also be studied.  
(See Rotation Schedule on page 106)

AGTEC 465 Machinery Management  
This course involves a study of machinery efficiency, matching machines, and horsepower. Analyzing and estimating costs associated with keeping machines running will also be studied.  
(See Rotation Schedule on page 106)

AGTEC 474 Mechanical Systems Analysis  
Prerequisites: AGTEC 220 and AGTEC 335  
This course involves the testing and diagnosis for various pieces of equipment related to agriculture systems pertaining to the production of food.  
(See Rotation Schedule on page 106)

AGTEC 486 Precision Agriculture  
Prerequisite: AGTEC 286  
This course is designed to apply geographical information systems (GIS) to agriculture and natural resource disciplines. The course will focus on collecting, analyzing, interpolating, and decision making using GIS software and GPS equipment.  
(See Rotation Schedule on page 106)

APS 103 Home Gardening  
Total Course Fees: $20.00  
In this course, students will learn basic principles, culture, and production of vegetables, fruits, flowers, trees, shrubs, and turf, as it relates to the home garden and self-reliance.  
(Fall, Winter, Spring)

APS 122 Introduction to Plant Science  
Total Course Fees: $125.00  
This course introduces the basic principles of structure, form, and function of plants in both the higher and lower plant kingdoms.  
(Fall, Winter, Spring)

APS 220 Introduction to Soils  
This is a basic course dealing with the formation of soils as well as the physical, chemical and biological properties of soils.  
(Fall, Winter, Spring)

APS 220L Introduction to Soils Lab  
This course is a hands on experience determining soil texture, structure, color, measuring soil pH, nitrates, and fertilizers.  
(Fall, Winter, Spring)

APS 290R Special Problems  
Repeatable Course: May earn maximum of 8 credits  
In this course, students may pursue a subject of interest through independent study under personal direction of a faculty specialist.  
(Fall, Winter, Spring)

APS 298R Internship  
Repeatable Course: May earn maximum of 2.5 credits  
This course includes guest lectures from industry leaders.  
(See Rotation Schedule on page 106)

APS 310 Tree Fruit and Nut Crops  
This course provides a study of the importance of tree fruit and nut production, and how these products contribute to global agriculture and the human diet.  
(See Rotation Schedule on page 106)

APS 312 Alternative Cropping Systems  
This course is a study and application of alternative cropping systems. Hydroponic, Crop Tunnels, Row Covers, Hoop Houses, Trellises, Soil Amendment, LED Lighting and alternative energy sources will be covered in the course material.  
(See Rotation Schedule on page 106)

APS 339R APS Portfolio  
Repeatable Course: May earn maximum of 8 credits  
Total Course Fees: $30.00  
This is a course to help students develop a personal portfolio of the skills acquired during their studies at BYU-Idaho in preparation for employment or additional graduate school study. Students are taught to document their learning with digital photography web design, letters of introduction, presentation of résumé, and personal vitae.  
(See Rotation Schedule on page 106)

APS 350 Plant Breeding and Genetics  
Prerequisites: APS 122 and APS 220 and APS 220L and CHEM 101 or higher  
A study of plant biotechnology and the role it plays in our everyday lives from the foods we eat, to the jobs we work at, to the diseases we suffer from. This course will not only teach the science content that is necessary to work in a biotechnology lab, but will develop the critical thinking skills that are necessary to keep up with the rapidly advancing scientific knowledge.  
(See Rotation Schedule on page 106)
**APR 307 Research Methods**
(1:0:3:0)
Repeatable Course: May earn maximum of 4 credits
Students engage in the process of scholarly research by applying writing, literature review, and statistical analysis to develop a research thesis. Students learn and prepare to apply the fundamentals of conducting research in the laboratory or field. The course is repeatable to provide students with peer mentoring opportunities and to develop high quality oral and poster presentations for local, regional, and national conferences.
(Fall, Winter, Spring)

**APR 397 Agriculture Research Practicum**
(1:2:0:0:0)
The practicum provides students with opportunities to participate in undergraduate research through classroom discussion and supervised practical experience. The course will provide for the development and improvement of critical thinking and problem solving skills through the application of research methodologies.
(Fall, Winter, Spring)

**APR 398R Internship**
(1:5:0:0:0)
Repeatable Course: May earn maximum of 5 credits
Internship Fees: $78 (LDS) $156 (non-LDS) per credit
Exempt from tuition, but charged this independent course fee
This course involves work experience in the plant science industry.
(Fall, Winter, Spring)

**APR 412 Integrated Pest Management**
(2:1:2:0)
Total Course Fees: $20.00
This course incorporates the identification and control of plant pests, including insects, weeds and diseases by integrating proper use of chemical and biological methods. Students will learn to describe the legal and ecological issues that influence decisions about pest management.
(See Rotation Schedule on page 106)

**APR 413 Pesticide Application**
(1:0:3:0)
This course will prepare students to properly and safely apply chemicals and other integrated pest management techniques in preparation for taking exams for pesticide applicator licensing.
(See Rotation Schedule on page 106)

**APR 465 Integrated Weed Management**
(3:2:2:0)
Prerequisites: APR 222 and APR 220 and APR 222L
This course is a study of weeds and their impacts on agricultural production. The course will include instruction on weed physiology, identification, control practices, and ecological impacts.
(See Rotation Schedule on page 106)

**APR 498R Internship**
(1:5:0:0:0)
Repeatable Course: May earn maximum of 5 credits
Internship Fees: $78 (LDS) $156 (non-LDS) per credit
Exempt from tuition, but charged this independent course fee
(Fall, Winter, Spring)

**HORT 230 Introduction to Architecture and Landscape Design**
(3:2:2:0)
Total Course Fees: $12.50
This course enhances the student's understanding of the outdoor environment and how they can contribute to the quality of that environment through design and planning. Students will also study the history of landscape architecture and its effect on man.
(Fall, Winter, Spring)

**HORT 252 Landscape Construction**
(4:3:4:0)
Total Course Fees: $40.00
Prerequisite: HORT 230
This is a practical course of layout and construction techniques for landscape projects. This course includes masonry, wood structures, irrigation, and plant installations.
(See Rotation Schedule on page 107)

**HORT 287R Flower Center**
(1:9:2:0)
Repeatable Course: May earn maximum of 8 credits
Total Course Fees: $20.00
Prerequisite: HORT 335
Course Requirement: Horticulture Majors Only
This course provides training and experience in presentation of flowers in: display windows and coolers, large banquet halls, auditoriums, custom design in residential and commercial settings. Floral skills, shop management techniques, and floral nomenclature are all emphasized. The class is provided as an opportunity to reinforce principles learned in the various floral classes, and to prepare students for internship and retail employment.
(Fall, Winter, Spring)

**HORT 297R Practicum in Horticulture**
(1:9:3:0)
Repeatable Course: May earn maximum of 3 credits
Course Requirement: Horticulture Majors Only
This course involves supervised practical experience for the development and improvement of horticultural skills in preparing plant materials and products for market.
(Fall, Winter, Spring)

**HORT 311 Introduction to Arboriculture**
(2:1:2:0)
Total Course Fees: $15.00
This course involves the establishment, culture, and maintenance of trees and shrubs in the landscape.
(See Rotation Schedule on page 107)

**HORT 319 Landscape Management**
(3:2:3:0)
Total Course Fees: $25.00
Prerequisite: APR 122
In this course, students will learn about the irrigation of turf and landscape plants. This course covers the design of irrigation and landscape lighting systems, with selection and assembly of components.
(See Rotation Schedule on page 107)

**HORT 320 Plant Propagation**
(3:2:3:0)
Total Course Fees: $15.00
Prerequisites: APR 122
In this course, students will learn about the identification, landscape values, and special cultural requirements of evergreen trees, shrubs, and ground covers. This course includes a lecture and lab experience.
(See Rotation Schedule on page 107)

**HORT 322 Woody Plant Identification**
(3:1:6:0)
Total Course Fees: $430.00
In this course, students will learn about the identification, landscape values, and special cultural requirements of evergreen trees, shrubs, and ground covers. This course includes a lecture and lab experience.
(See Rotation Schedule on page 107)

**HORT 324 Herbaceous Plant Identification**
(2:1:2:0)
Total Course Fees: $15.00
In this course, students will learn about the identification, landscape values, and special cultural requirements of annual and perennial flowers.
(See Rotation Schedule on page 107)

**HORT 325 Interniorscaping**
(2:1:2:0)
Total Course Fees: $25.00
This course prepares students to demonstrate the use of plants in interior landscapes. Skills include proper care and maintenance of plants, plant identification, and a thorough introduction into the industry of production, acquisition, and marketing of interior plant products. This is an opportunity to discover how plants make people more productive in the home and workplace.
(See Rotation Schedule on page 107)

**HORT 329 Irrigation**
(3:1:6:0)
Total Course Fees: $15.00
In this course, students will learn about the identification, landscape values, and special cultural requirements of annual and perennial flowers. This course covers the design of irrigation and landscape lighting systems, with selection and assembly of components.
(See Rotation Schedule on page 107)
HORT 334 Greenhouse Operations
(3:2:3:0)
Total Course Fees: $15.00
This course teaches students about greenhouse construction, environmental control, pest control, and plant culture including production of greenhouse floral crops.
(See Rotation Schedule on page 107)

HORT 335 Flower Arranging
(3:2:2:0)
Total Course Fees: $110.00
This course offers instruction and care in the handling of flowers, historical and current application, identification, and use.
(Fall, Winter, Spring)

HORT 336 Cultural Design Influence
(2:1:2:0)
Total Course Fees: $25.00
This course helps students discover and describe how culture influences design, and how design influences culture, resulting in the applications of plant usage to create healthy and beautiful surroundings and living spaces in society. Consideration is given to a sense of humor and beauty, and how family life is blessed by recognizing and applying cultural influences.
(See Rotation Schedule on page 107)

HORT 338R Wedding and Event Planning
(3:3:0:0)
Repeatable Course: May repeat a maximum of 3 times
Total Course Fees: $75.00
Prerequisite: HORT 335
This course involves students in preparing floral displays for wedding and special events. Students study the cost and organization of events, basic and advanced bridal design, and provide large scale designs for campus events.
(See Rotation Schedule on page 107)

HORT 340 Landscape Computer Operations
(2:0:0:0)
Prerequisite: HORT 230
This course involves the application of specific computer software programs that are commonly used in the horticulture industry; including sprinkler design, landscape design, bidding and estimating, GPS, and the internet.
(See Rotation Schedule on page 107)

HORT 350R PLANET Career Days
(1:1:0:0)
Repeatable Course: May earn maximum of 3 credits
Total Course Fees: $1000.00
Course Requirement: Instructor-Approval Required
This course is for students selected to participate in the yearly PLANET Student Career Days field excursion with the Horticulture Program. The course is designed to assist students with their preparations to communicate with potential employers during the career day events. Students also are given special attention in perfecting practical skills that they have been taught throughout their tenure at the University.
(Fall, Winter)

HORT 351 Landscape Contracting
(2:1:2:0)
This course teaches students the estimating, bidding, and contracting procedures for landscape construction, and maintenance projects. Students will experience a hands-on approach to bidding and estimating jobs for the Green Industry.
(See Rotation Schedule on page 107)

HORT 375 Floriculture Applications
(1:1:0:0)
Total Course Fees: $1000.00
Prerequisite: HORT 320
In this course, students learn the Case Studies of plant growth in relation to the floriculture industry with emphasis on the physiological interactions of plant growth resulting from fertilization, plant growth regulators, growing structures, irrigation, and container media.
(See Rotation Schedule on page 107)

HORT 410 Turfgrass Management
(3:2:3:0)
Total Course Fees: $40.00
This course teaches students about the establishment, culture, and maintenance of turf grass in the landscape.
(See Rotation Schedule on page 107)

HORT 430 Advanced Landscape Design
(3:2:2:0)
Total Course Fees: $25.00
Prerequisites: HORT 230 and HORT 322
In this course, students learn advanced applications in the artistic and functional design of landscapes.
(See Rotation Schedule on page 107)

HORT 435 Advanced Floral Design
(3:2:2:0)
Total Course Fees: $800.00
Prerequisite: HORT 335
In this course, students learn about professional floral design with emphasis on retail flower shop operation, products, and materials. Particular attention is given to developing speed, proficiency, and quality.
(See Rotation Schedule on page 107)

HORT 436 Competition Design and Comment
(1:0:3:0)
Total Course Fees: $50.00
Prerequisite: HORT 335
Course Requirement: Horticulture Majors Only
In this course, students develop freelance and structured designs from various materials for competitive designing and judging.
(See Rotation Schedule on page 107)

HORT 437 Interpretive Design
(1:0:3:0)
Total Course Fees: $50.00
Prerequisite: HORT 335
Course Requirement: Horticulture Majors Only
This course is the final evaluation of the student's ability to assess proper design interpretations, artistic dimensions of the student's preparation and training, fluency with the language of flowers, and product knowledge.
(See Rotation Schedule on page 107)

HORT 453 Land Construction Material
(3:2:2:0)
Total Course Fees: $15.00
Prerequisites: HORT 230 and HORT 322
This course studies the construction and design used for typical landscape construction materials such as pavers, concrete, wood, and rock.
(See Rotation Schedule on page 107)

HORT 455 Nursery Management
(2:1:2:0)
Total Course Fees: $200.00
Prerequisite: HORT 320
This course will focus on the development, organization, infrastructure, and operation of a production nursery. The course will cover production principles and practices and strategies for wholesale and retail marketing of nursery crops. The laboratory will concentrate on the development of skills associated with the production and marketing of nursery crops.
(See Rotation Schedule on page 107)

HORT 460 Cut Flower Crops
(2:1:2:0)
Prerequisite: HORT 320
This course helps students develop the knowledge of cutting flowers and crops through commercial production, harvesting, marketing, and scheduling.
(See Rotation Schedule on page 107)

HORT 461 Potted Plants
(2:1:2:0)
Total Course Fees: $15.00
Prerequisite: HORT 320
This course teaches students about commercial production, harvesting, marketing, and scheduling of bedding plants and potted commercial crops.
(See Rotation Schedule on page 107)

HORT 470 Edible Landscaping
(2:1:2:0)
Course Requirement: Horticulture Majors Only
In this course, students will develop the principles and practical applications for fruit and vegetable establishment, culture, production, storage, and Economics.
(See Rotation Schedule on page 107)
Some courses will not appear in this rotation schedule because they are offered every semester.

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Although unforeseen circumstances may result in occasional changes to this schedule, we will make every attempt to adhere to it.