

## FSM - Feed Production Emphasis

| Freshman - Fall    |                             |   | Freshman - Spring     |                              |   |
|--------------------|-----------------------------|---|-----------------------|------------------------------|---|
| ENGL 100           | Expos Writing I             | 3 | BIOL 198              | Prin of Biology              | 4 |
| <b>FGRSC 100</b>   | Grain Sci Orientation       | 2 | COMM 105              | Public Speaking              | 2 |
| GRSC 150           | Principles of Milling       | 2 | MATH 205              | Gen Calc & Algebra           | 3 |
|                    | Social Sci Elect            | 3 |                       | Specialization Elective      | 3 |
|                    | Specialization Elective     | 3 |                       | Unrestricted Elective        | 3 |
| <b>13</b>          |                             |   | <b>15</b>             |                              |   |
| Sophomore - Fall   |                             |   | Sophomore - Spring    |                              |   |
| AGEC 120           | Ag Econ & Ag Bus            | 3 | ASI 318               | Fund of Nutrition            | 3 |
| <u>or</u> ECON 120 | Prin of Micro Econ          |   | CHM 230               | Chemistry II                 | 4 |
| CHM 210            | Chemistry I                 | 4 | <b>SGRSC 310</b>      | Materials Handling           | 2 |
| ENGL 200           | Expos Writing II            | 3 | <b>SGRSC 510</b>      | Feed Tech I                  | 3 |
| <b>FGRSC 210</b>   | CAD Flow Sheets             | 3 | PHYS 113              | Gen. Physics I               | 4 |
|                    | Social Sci Elect            | 3 |                       |                              |   |
| <b>16</b>          |                             |   | <b>16</b>             |                              |   |
| Junior - Fall      |                             |   | Junior - Spring       |                              |   |
| BIOL 455           | Gen Microbiology            | 4 | BIOCH 265*            | Intro to Biochemistry        | 5 |
| <b>FGRSC 612</b>   | Feed Tech II & Lab          | 4 | <u>or</u> CHM 350/351 | Gen Organic Chem & Lab       |   |
| <b>FGRSC 620</b>   | Extrusion Processing        | 4 | <b>SGRSC 561</b>      | Qual. Food/Feed Ingrid       | 4 |
| STAT 325           | Intro to Statistics         | 3 | <b>SGRSC 651</b>      | Food/Feed Prod Pro           | 2 |
|                    |                             |   |                       | Management Elective          | 3 |
|                    |                             |   |                       | Specialization Elective      | 2 |
| <b>15</b>          |                             |   | <b>16</b>             |                              |   |
| Senior - Fall      |                             |   | Senior - Spring       |                              |   |
| <b>FGRSC 530</b>   | Mngt Appl in Grain Proc Ind | 3 | <b>SGRSC 655</b>      | Feed Plant Layout and Design | 2 |
| <b>FGRSC 591</b>   | Internship in Grain Sci     | 1 |                       | Communication Elective       | 3 |
| <b>FGRSC 615</b>   | Animal Food Safety          | 2 |                       | Management Elective          | 3 |
|                    | Management Elective         | 3 |                       | Specialization Elective      | 3 |
|                    | Management Elective         | 3 |                       | Unrestricted Elective        | 3 |
|                    | Specialization Elective     | 3 |                       |                              |   |
| <b>15</b>          |                             |   | <b>14</b>             |                              |   |

\* Especially for PreVet option

F Fall only  
S Spring only

**Minimum of 120 credits required for graduation.**

**BOLD RED** Courses in BOLD must be taken in the designated semester.

**RED** GRSC 620 is offered only in even years. Students and advisors need to put special attention to enroll either in Junior Fall or Senior Fall semester, whichever is the right fit.

### Pre-Vet Professional Track:

The pre-professional requirements for admission to the Doctor of Veterinary Medicine degree program may be met by appropriate course elective selection while completing a degree in FSM.

## FSM - Pet Food Emphasis

| Freshman - Fall    |                             |   | Freshman - Spring     |                         |   |
|--------------------|-----------------------------|---|-----------------------|-------------------------|---|
| ENGL 100           | Expos Writing I             | 3 | BIOL 198              | Prin of Biology         | 4 |
| <b>FGRSC 100</b>   | Grain Sci Orientation       | 2 | COMM 105              | Public Speaking         | 2 |
| GRSC 150           | Principles of Milling       | 2 | MATH 205              | Gen Calc & Algebra      | 3 |
|                    | Social Sci Elect            | 3 |                       | Specialization Elective | 3 |
|                    | Specialization Elective     | 3 |                       | Unrestricted Elective   | 3 |
| <b>13</b>          |                             |   | <b>15</b>             |                         |   |
| Sophomore - Fall   |                             |   | Sophomore - Spring    |                         |   |
| AGEC 120           | Ag Econ & Ag Bus            | 3 | ASI 318               | Fund of Nutrition       | 3 |
| <u>or</u> ECON 120 | Prin of Micro Econ          |   | CHM 230               | Chemistry II            | 4 |
| CHM 210            | Chemistry I                 | 4 | <b>SGRSC 310</b>      | Materials Handling      | 2 |
| ENGL 200           | Expos Writing II            | 3 | <b>SGRSC 510</b>      | Feed Tech I             | 3 |
| <b>FGRSC 210</b>   | CAD Flow Sheets             | 3 | PHYS 113              | Gen. Physics I          | 4 |
|                    | Social Sci Elect            | 3 |                       |                         |   |
|                    | Specialization Elective     | 3 |                       |                         |   |
| <b>16</b>          |                             |   | <b>16</b>             |                         |   |
| Junior - Fall      |                             |   | Junior - Spring       |                         |   |
| <b>FASI 520</b>    | Companion Animal Mntg       | 3 | BIOCH 265*            | Intro to Biochemistry   | 5 |
| <b>FASI 677</b>    | Companion Animal            | 1 | <u>or</u> CHM 350/351 | Gen Organic Chem & Lab  |   |
| BIOL 455           | Gen Microbiology            | 4 | <b>SGRSC 561</b>      | Qual. Food/Feed Ingrid  | 4 |
| <b>FGRSC 612</b>   | Feed Tech II & Lab          | 4 | <b>SGRSC 651</b>      | Food/Feed Prod Pro      | 2 |
| <b>FGRSC 620</b>   | Extrusion Processing        | 4 |                       | Management Elective     | 3 |
|                    |                             |   |                       | Specialization Elective | 2 |
| <b>16</b>          |                             |   | <b>14</b>             |                         |   |
| Senior - Fall      |                             |   | Senior - Spring       |                         |   |
| <b>FGRSC 530</b>   | Mngt Appl in Grain Proc Ind | 3 |                       | Communication Elective  | 3 |
| <b>FGRSC 591</b>   | Internship in Grain Sci     | 1 |                       | Management Elective     | 3 |
| <b>FGRSC 615</b>   | Animal Food Safety          | 2 |                       | Social Sci Elect        | 3 |
| <b>FGRSC 645</b>   | Pet Food Processing         | 4 |                       | Specialization Elective | 2 |
|                    | Management Elective         | 3 |                       | Unrestricted Elective   | 3 |
|                    | Management Elective         | 3 |                       |                         |   |
| <b>16</b>          |                             |   | <b>14</b>             |                         |   |

\* Especially for PreVet option

F Fall only

**Minimum of 120 credits required for graduation.**

**BOLD RED** Courses in BOLD must be taken in the designated semester.

**RED** GRSC 620 (even) and GRSC 645 (odd) sequence has to be arranged based on odd/even year course offerings.

### K-State 8 General Education requirements:

Students must meet the requirements of the K-State 8 General Education Program.

FSM core curriculum fulfills some of the K-state-8 requirements. Advisors and students need to make the *right course choices* for the ELECTIVES to satisfy the remaining K-State 8 requirements. Please check the link below for complete list of courses tagged for the K-State 8 areas:

<http://www.k-state.edu/kstate8/lists/>

## FSM - Bioprocessing Emphasis

| Freshman - Fall             |                             | Freshman - Spring  |                             |                            |   |
|-----------------------------|-----------------------------|--------------------|-----------------------------|----------------------------|---|
| ENGL 100                    | Expos Writing I             | 3                  | BIOL 198                    | Prin of Biology            | 4 |
| <b><sup>F</sup>GRSC 100</b> | Grain Sci Orientation       | 2                  | COMM 105                    | Public Speaking            | 2 |
| GRSC 150                    | Principles of Milling       | 2                  | MATH 205                    | Gen Calc & Algebra         | 3 |
|                             | Social Sci Elect            | 3                  |                             | Specialization Elective    | 3 |
|                             | Specialization Elective     | 3                  |                             | Unrestricted Elective      | 3 |
| <b>13</b>                   |                             |                    |                             | <b>15</b>                  |   |
| Sophomore - Fall            |                             | Sophomore - Spring |                             |                            |   |
| AGEC 120                    | Ag Econ & Ag Bus            | 3                  | ASI 318                     | Fund of Nutrition          | 3 |
| <sup>or</sup> ECON 120      | Prin of Micro Econ          |                    | CHM 230                     | Chemistry II               | 4 |
| CHM 210                     | Chemistry I                 | 4                  | <b><sup>S</sup>GRSC 310</b> | Materials Handling         | 2 |
| ENGL 200                    | Expos Writing II            | 3                  | <b><sup>S</sup>GRSC 510</b> | Feed Tech I                | 3 |
| <b><sup>F</sup>GRSC 210</b> | CAD Flow Sheets             | 3                  | PHYS 113                    | Gen. Physics I             | 4 |
|                             | Social Sci Elect            | 3                  |                             |                            |   |
| <b>16</b>                   |                             |                    |                             | <b>16</b>                  |   |
| Junior - Fall               |                             | Junior - Spring    |                             |                            |   |
| BIOL 455                    | Gen Microbiology            | 4                  | <sup>S</sup> ATM 545        | Proc and Storage of Grains | 3 |
| <b><sup>F</sup>GRSC 612</b> | Feed Tech II & Lab          | 4                  | BIOCH 265*                  | Intro to Biochemistry      | 5 |
| <b><sup>F</sup>GRSC 620</b> | Extrusion Processing        | 4                  | <sup>or</sup> CHM 350/351   | Gen Organic Chem & Lab     |   |
| STAT 325                    | Intro to Statistics         | 3                  | <sup>S</sup> GRSC 540       | Process Calcs in Food      | 3 |
|                             |                             |                    | <b><sup>S</sup>GRSC 561</b> | Qual. Food/Feed Ingred     | 4 |
|                             |                             |                    | <sup>S</sup> GRSC 651       | Food/Feed Prod Pro         | 2 |
| <b>15</b>                   |                             |                    |                             | <b>17</b>                  |   |
| Senior - Fall               |                             | Senior - Spring    |                             |                            |   |
| <b><sup>F</sup>GRSC 530</b> | Mngt Appl in Grain Proc Ind | 3                  | <sup>S</sup> GRSC 745       | Fundamentals of            | 3 |
| <sup>F</sup> GRSC 591       | Internship in Grain Sci     | 1                  |                             | Communication Elective     | 3 |
| <b><sup>F</sup>GRSC 615</b> | Animal Food Safety          | 2                  |                             | Management Elective        | 3 |
|                             | Management Elective         | 3                  |                             | Management Elective        | 3 |
|                             | Management Elective         | 3                  |                             | Specialization Elective    | 1 |
|                             | Unrestricted Elective       | 3                  |                             |                            |   |
| <b>15</b>                   |                             |                    |                             | <b>13</b>                  |   |

\* Especially for PreVet option

<sup>F</sup> Fall only  
<sup>S</sup> Spring only

### Minimum of 120 credits required for graduation.

**BOLD RED** Courses in BOLD must be taken in the designated semester.

**RED** GRSC 620 is offered only in even years. Students and advisors need to put special attention to enroll either in Junior Fall or Senior Fall semester, whichever is the right fit.

#### List of Communication Electives:

AGCOM 400, 610  
COMM 311, 322, 326, 465, 480, 535  
ENGL 302, 417, 510, 516  
Modern languages

#### List of Specialization Electives:

AGRON 220, 340 or above  
ASI 102, 300 or above  
ATM 300 or above  
BIOCH 521, 522  
CHM 531, 532  
ENTOM 300 or above  
FDSCI 305 or above  
FNDH 711  
GRSC 151 or above  
LEAD 212 or above  
PHYS 114

#### List of Management Electives:

ACCTG 231 or above  
AGEC 115 or above  
ECON 110 or above  
ENTRP 340  
FINAN 450 or above  
MANGT 300 or above  
MKTG 400 or above

#### Feed Science Minor:

|   |           |
|---|-----------|
| GRSC 310 – Material Handling .....            | 2         |
| GRSC 510 – Feed Technology I .....            | 3         |
| GRSC 561 – Quality of Feed Ingredients .....  | 4         |
| GRSC 612 – Feed Technology II & Lab .....     | 4         |
| GRSC 615 – Animal Food Safety.....            | 2         |
| GRSC 655 – Feed Plant Layout and Design ..... | 2         |
| <b>TOTAL .....</b>                            | <b>17</b> |

#### Pet Food Science Minor:

|  |           |
|--|-----------|
| ASI 520 – Companion Animal Management .....                          | 3         |
| GRSC 510 – Feed Technology I .....                                   | 3         |
| GRSC 645 – Pet Food Processing & Lab .....                           | 4         |
| Minimum 6 credit hours from the following list:                      |           |
| ASI 675 – Monogastric Nutrition .....                                | 1         |
| FDSCI 600 – Microbiology of Foods .....                              | 2         |
| FDSCI 690 – Principles of HACCP.....                                 | 2         |
| FNDH 711 – Pet Food Sensory Analysis .....                           | 2         |
| GRSC 561 – Quality of Feed Ingredients .....                         | 4         |
| GRSC 612 – Feed Technology II & Lab .....                            | 3         |
| GRSC 620 – Extrusion Processing in the Food and Feed Industries..... | 4         |
| GRSC 750 – Pet Food Formulation for Commercial Production .....      | 1         |
| <b>TOTAL .....</b>   | <b>16</b> |