ASM 368. Structures and Environment Systems

BASIC INFORMATION

<table>
<thead>
<tr>
<th>Class information:</th>
<th>Instructor information:</th>
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<tbody>
<tr>
<td>3 Credits</td>
<td>Dr. Halis Simsek</td>
</tr>
<tr>
<td>Fall 2017</td>
<td>Office: ABEN 106</td>
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<tr>
<td>Classroom: XX</td>
<td>Phone: 701-231-6107</td>
</tr>
<tr>
<td>Time: 10:00 – 10:50 am; MWF</td>
<td>E-mail: <a href="mailto:halis.simsek@ndsu.edu">halis.simsek@ndsu.edu</a></td>
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</tbody>
</table>

Textbook:

MidWest Plan Service (MWPS), Iowa State University, Ames, Iowa 50011.


References:


Prerequisites: MATH 103 or MATH 104.

Office hours: 11:00 – 12:00 a.m. M, W, & F; or by appointment or drop in.

Web pages: Blackboard gateway at bb.ndsu.nodak.edu.

COURSE DESCRIPTION

This course covers fundamental principles of controlling building environments and structure, ideal indoor environments in animal housing, construction materials, framing systems, and functional planning for biosystem structures. Student should be able to identify structural components, know what material characteristics are important, and how to select materials for various on-farm applications. Students will become familiar with how to control and maintain ideal indoor environments in animal housing under different environmental conditions.

COURSE OBJECTIVES

1. Become familiar with the anatomy of structures and the characteristics of building materials.
2. Become familiar with loads that are imposed on agricultural structures and how they influence selection of structural members. Student should understand the approach to load analysis and be able to assist an engineer in developing specifications for building design.

3. Become familiar with the kinds of stresses that are considered in selecting structural members for simple applications and have a knowledge of factors considered for more complex systems.

4. Learn psychrometric principles and how to use the psychrometric chart.

5. Become familiar with ventilation components and how to plan a ventilation system.

6. Learn how to determine the environmental requirement for housing of livestock and storage of agricultural products.


8. Learn principles and factors to be considered in farmstead planning.

9. Become familiar with the specific functional requirements for various enterprises.

10. Learn to evaluate the feasibility of agricultural housing systems.

**EVALUATION PROCEDURES AND GRADING CRITERIA**

**Assignment Policy:** Due dates for the homework and the term paper will be given with the assignments. Late assignments will be accepted with a 10% penalty per NDSU class day. Assignments must be submitted in hardcopy before 5 p.m. to be credited to the day they are received. Late assignments will not be accepted after solutions are posted/handed out/discussed or after 3 NDSU class days from the date they are due.

**Exam Policy:** Missed exams will receive zero points unless missed for a valid justification and the instructor is notified prior to the date and time of the exam. Valid justification is a statement indicating illness, obituary notice (death in family), or co-curricular activities. For such justified reasons, a make-up exam may be given at a mutually acceptable time or the weight of the missed mid-term exam will be shifted to the final exam. Extracurricular activities, weddings, vacations, hunting and fishing trips, work, dentist’s appointments, and undocumented car-related incidents are examples of unjustifiable reasons for missing the scheduled dates and times for exams. The instructor reserves the right to determine whether the excuse is legitimate or not.

**Grading Policy:** All students will have to complete the following four categories of work in this course: homework assignments, quizzes, one midterm exam, and one comprehensive final exam. Graduate students will be required to write a term paper in addition to the above course work. The term paper will be subject to approval from the instructor to ensure appropriate scope and content. A detailed guideline on how to complete the term paper will be provided separately. The grading procedure planned for the course is as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Point</th>
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<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
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<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>Final exam</td>
<td>30%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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The possible points which can be earned for all work categories are listed in the table below. The total of the possible points which can be earned for an undergraduate student is 100 (100%).

Each student’s final letter grade in the course will be determined by the percentage of the total earned points over the total possible points using the following grading scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
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</tbody>
</table>

**COURSE CONTENT**

Introduction  
Lumber and plywood  
Concrete  
Wood fastener  
Building loads  
Mescelessenous building materials  
Foundations and footings  
Exam  
Buildings framing / building failure, roof  
Selection of structural members  
Plans and economics  
Farmstead planning / shops, non-product storage  
Thermal properties, heat transfer fundamentals, and Psychrometrics  
Exam  
Animal thermal environment  
Insulating  
Ventilating systems  
Heat balance, heating and cooling systems  
Solar energy  
Product storage  
Exam  
Waste management  
Greenhouses  
Group housing reports  
Swine housing  
Beef / sheep housing  
Dairy housing  
Poultry housing  
Final exam
ATTENDANCE
According to NDSU Policy 333 (www.ndsu.edu/fileadmin/policy/333.pdf), attendance in classes is expected. Veterans and student service members with special circumstances or who are activated are encouraged to notify the instructor as soon as possible and are encouraged to provide Activation Orders.

DISABILITIES ACT FOR STUDENTS WITH SPECIAL NEEDS
Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office (www.ndsu.edu/disabilityservices) as soon as possible.

ACADEMIC HONESTY
The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at www.ndsu.edu/academichonesty.

College of Engineering (CoE) Honor System: All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct (http://www.ndsu.nodak.edu/policy/335.htm) and the CoE Honor System available at https://www.ndsu.edu/coe/undergraduate_students/honor_code/

Penalties for violations can range from assigned seating, failure of quiz/exam, failure of the course, to expulsion from the university depending on the severity of the offence and the instructor’s discretion and the honor code jurisdiction.