BIOLOGICAL ENGINEERING 7304
ADVANCED NATURAL RESOURCES ENGINEERING
CREDIT HOURS: 3 (3 HOURS LECTURE)
SPRING SEMESTER 2013
ROOM 115 E.B. DORAN BUILDING
4:30 - 7:30 P.M. Tuesday

COURSE DESCRIPTION: BE 7304 Advanced Natural Resource Engineering
(3) Advanced topics in statistical hydrology, flow theory, evapotranspiration, transport of
pollutants, drainage, irrigation, erosion, sediment transport, and sedimentation applied
to rural fields and watersheds.

OBJECTIVE: To enable the student to analyze and design natural
resource control systems.

INSTRUCTOR: Dr. Richard L. Bengtson, Room 177, E.B. Doran
Building, Phone: 225-578-1056,
e-mail: ben gtson@lsu.edu

REFERENCE: MICROCLIMATE – THE BIOLOGICAL ENVIRONMENT by Norman J.
Rosenberg, Blaine L. Blad, and Sashi B. Verma.

GRADING OUTLINE:
Homework and Quizzes 25%
Mid-Term Examination 25%
Research Paper 25%
Final Examination 25%

RESEARCH PAPER: Subject to be announced.

Homework will be due one (1) week after it is assigned.

Quizzes and tests cannot be made up.

ACADEMIC MISCONDUCT:

"Academic Misconduct, as defined in the Code of Student Conduct, will not be tolerated in this
course. It is my responsibility as the instructor to report such incidents to the Department of
Judicial Affairs. It is your responsibility to understand the Code of Student Conduct and make
sure your actions and perceived actions are not considered as misconduct. Ignorance of these
rules will not be an adequate defense in such cases. Go to
http://appl003.lsu.edu/slas/judicialaffairs.nsf/index for a copy of the current Code of Student
Conduct."

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<thead>
<tr>
<th>CLASS</th>
<th>DATE</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>1</td>
<td>JAN 15</td>
<td>Introduction to soil erosion</td>
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<tr>
<td></td>
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<td>Mechanics of erosion</td>
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<td>2</td>
<td>JAN 22</td>
<td>Sedimentation</td>
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<td>Predicting rainfall erosion</td>
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<td>3</td>
<td>JAN 29</td>
<td>Universal Soil Loss Equation</td>
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<td>Modified USLE</td>
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<td>4</td>
<td>FEB 5</td>
<td>Introduction to terraces</td>
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<td>Design of terraces</td>
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<td>5</td>
<td>FEB 12</td>
<td>MARDI GRAS HOLIDAY</td>
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<td>6</td>
<td>FEB 19</td>
<td>Sediment transport</td>
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<td>Energy input to the biosphere</td>
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<td>7</td>
<td>FEB 26</td>
<td>The radiation balance</td>
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<td>Soil heat flux and temperature</td>
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<td>8</td>
<td>MAR 5</td>
<td>MID-TERM EXAMINATION</td>
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<td>9</td>
<td>MAR 12</td>
<td>Sensible heat transfer</td>
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<td>Wind and turbulent transfer</td>
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<td>10</td>
<td>MAR 19</td>
<td>Atmospheric humidity</td>
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<td>Evaporation, Evapotranspiration</td>
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<td>11</td>
<td>MAR 26</td>
<td>Water balance method</td>
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<td>Mass transport method</td>
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<td>14</td>
<td>APR 2</td>
<td>SPRING BREAK</td>
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<td>12</td>
<td>APR 9</td>
<td>Energy balance methods</td>
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<td>APR 16</td>
<td>Van Bavel method</td>
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<td>APR 23</td>
<td>Resistance methods</td>
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<td>16</td>
<td>APR 30</td>
<td>Class presentations</td>
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<td>17</td>
<td>MAY 7</td>
<td>FINAL EXAMINATION TUESDAY 4:30 to 6:30 P.M.</td>
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The above schedule is tentative. Test dates will be confirmed at least one week ahead. Homework will be due one (1) week after date assigned.