BENG401 – Bioinstrumentation and Design

Week 1  The engineering design process (fundamentals): short example, applications in Biomedical Engineering.

Week 2  Biomedical Devices: case studies – successful and failed products

Week 3  LabView tutorial, examples of data acquisition. (First project due: design of an ECG circuit / accelerometer / body temperature)

Week 4  Introduction to tools: software, hardware, wetware.

Week 5  The virtual machine shop. The real machine shop: what can we accomplish, how to do it, who to ask.

Week 6  Intellectual property issues. Patenting original, non-obvious ideas. Development of a business plan. (Second project due: team website with project description, first report uploaded, flash presentation)

Week 7  Literature review, implementation of projects, team work, project management issues and how to solve them.

Week 8  Midterm (1 class) ; First project review (individual with each group)

Week 9  Evaluation of results, experimental design, statistical analysis, presentation of data, publication.

Week 10  Case studies: good and bad project designs (literature/web)

Week 11  Project development: second review (each group presents their status, all evaluate, then individual meetings with instructor).

Week 12  Biomedical Engineering: currently available technology

Week 13  Prosthetic devices: neurophysiology and biomechanics.

Week 14  Ethics and professionalism in Biomedical Engineering. Societal impacts; prediction and analysis of impact.

Week 15  Final project presentations and discussion.

Week 16  Final exam (exam week)

(a) Required Reading and Reference Material

(c) Student Evaluation Criteria

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<th>Component</th>
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<tr>
<td>Mid-term:</td>
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<td>Homework:</td>
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