COURSE HANDOUT

Instructor  Dr. T. Aaron Gulliver
Office:      EOW 323
Phone:       721-6028
Email:       agullive@ece.uvic.ca
Office Hours: Tuesday 1:30–3:30

Lectures

Tuesday 12:30 – 1:20  ECS 130
Wednesday 12:30 – 1:20 ECS 130
Friday 12:30 – 1:20 ECS 130

Course Description

Information theory and its relationship to probability, statistics, and data compression; entropy, relative entropy and mutual information; Huffman coding, arithmetic coding and Lempel-Ziv coding; channel capacity; group codes; generator and parity check matrices; Hamming codes and bound; bounds on the dimension of a linear code; random coding bounds; code construction.

Web Site

http://www.ece.uvic.ca/~agullive/515.html

Course Notes

ELG 5170 Information Theory: Course Notes, Jean-Yves Chouinard

Assessment

Three Assignments  45%
Project            30%
Final Exam         25%

Note: Failure to complete the course requirements will result in a grade of N being awarded for the course.

Assignments

Each assignment is worth 15% of the final grade. Completed assignments can be delivered to EOW 323 or submitted at lecture time.
The final grade obtained from the above marking scheme will be based on the following percentage-to-grade point conversion:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
</tr>
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<tbody>
<tr>
<td>90 ≤</td>
<td>A+</td>
</tr>
<tr>
<td>85 ≤</td>
<td>A</td>
</tr>
<tr>
<td>80 ≤</td>
<td>A-</td>
</tr>
<tr>
<td>77 ≤</td>
<td>B+</td>
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<tr>
<td>73 ≤</td>
<td>B</td>
</tr>
<tr>
<td>70 ≤</td>
<td>B-</td>
</tr>
<tr>
<td>65 ≤</td>
<td>C+</td>
</tr>
<tr>
<td>60 ≤</td>
<td>C</td>
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<tr>
<td>50 ≤</td>
<td>D</td>
</tr>
<tr>
<td>F &lt; 50</td>
<td>Fail</td>
</tr>
<tr>
<td>N</td>
<td>Fail, did not complete course requirements by the end of the term</td>
</tr>
</tbody>
</table>

Learning Outcomes

At the completion of this course, the student should:
1. Understand the fundamentals of information theory.
2. Understand the principles and fundamental limits of data compression, storage and transmission.
3. Know the basic concepts regarding communications over noisy channels.
4. Understand the need for error correcting codes in data communications and storage systems.

Accommodation of Religious Observance

See [http://web.uvic.ca/calendar2014/GI/GUPo.html](http://web.uvic.ca/calendar2014/GI/GUPo.html)

Policy on Inclusivity and Diversity

See [http://web.uvic.ca/calendar2014/GI/GUPo.html](http://web.uvic.ca/calendar2014/GI/GUPo.html)

Standards of Professional Behaviour

You are advised to read the Faculty of Engineering document Standards for Professional Behaviour at [http://www.uvic.ca/engineering/current/undergrad/index.php#section0-25](http://www.uvic.ca/engineering/current/undergrad/index.php#section0-25) which contains important information regarding conduct in courses, labs, and in the general use of facilities.

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult [http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/PoAcI.html](http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/PoAcI.html) for the UVic policy on academic integrity.