### LINGI1341

**Computer networks: information transfer**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Hours</th>
<th>Term</th>
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<td>5.0</td>
<td>30.0 + 30.0</td>
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**Teacher(s):**

Bonaventure Olivier;

**Language:**

Anglais

**Place of the course:**

Louvain-la-Neuve

**Inline resources:**

- [http://cnp3book.info.ucl.ac.be](http://cnp3book.info.ucl.ac.be)

**Prerequisites:**

Within SINF1BA: LSINF1252
Within FSA1BA: LFSAB1101, LFSAB1102, LFSAB1201, LFSAB1202, LFSAB1301, FSAB1401

**Main themes:**

- Role, model and requirements of distributed applications
- Reference model used in computer networks
- Reliable transport of information in data networks: mechanisms and protocols
- Interconnection of networks, addressing, routing: mechanisms and protocols
- Local Area, Metropolitan and Wide Area Networks

**Aims:**

Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes:

- AA.1.1, AA.1.2
- AA2.5-7
- AA3.2
- AA4.1-4

Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes:

- S1.1-7
- S2.2-4
- S3
- S4.3
- S5.2-5
- S6.2-3

Students completing successfully this course will be able to:

- explain the main requirements of distributed and multimedia applications
- explain the functions used to fulfill those requirements in the different layers of the networking reference model
- explain how those functions are implemented in the Internet protocols
- select the appropriate solution based on the application's requirement
- estimate the characteristic quantities related to networks

Students will have developed skills and operational methodology. In particular, they have developed their ability to:

- argue in a group to bring out a common solution based on solid foundations;
- write a summary report containing the items you want to highlight.
### Evaluation methods:
The evaluation is composed of four parts:

- a group project on a protocol implementation worth 3 out of 20 points
- an individual review of two group works, worth 1 out of 20 points
- an individual report that explains how a server / application works, worth 3 out of 20 points
- the final exam, worth 13 out of 20 points

In addition, students can obtain a bonus if they actively contribute to the course syllabus.
The group project and associated reviews can only be passed once.
The individual project can be updated by submitting a new version before the start of the second session.

### Teaching methods:
The course combines lectures, supervised exercise sessions, group work and individual work.

### Content:
Basic principles of networks operating (reliable transfer, routing, naming / addressing, resource sharing, security basics, ...)
Analysis of the main protocols used on the Internet (HTTP, DNS, TLS, TCP, UDP, IP, OSPF, BGP, Ethernet, WiFi, ...)

### Bibliography:
- Slides online

### Other infos:
**Background:**
- high-level programming language
- Unix environment

### Cycle and year of study:
- Master [120] in Computer Science and Engineering
- Master [120] in Computer Science
- Master [60] in Computer Science
- Master [120] in Biomedical Engineering
- Master [120] in Electrical Engineering
- Master [120] in Mathematical Engineering
- Bachelor in Engineering
- Bachelor in Economics and Management
- Bachelor in Mathematics
- Preparatory year for Master in Computer science
- Bachelor in Computer Science

### Faculty or entity in charge:
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