# Studies Plan

**EDIC - Computer and communication sciences 2023-24**

## Core courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Language Code</th>
<th>Section</th>
<th>Teacher</th>
<th>Exam</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced logic synthesis and quantum computing</td>
<td>E CS-724</td>
<td>EDIC</td>
<td>De Micheli Soeken</td>
<td>Project report</td>
<td>2</td>
</tr>
<tr>
<td>Advanced Topics in Information Theory</td>
<td>E COM-621</td>
<td>EDIC</td>
<td>Gastpar Issa</td>
<td>Project report</td>
<td>2</td>
</tr>
<tr>
<td>Algorithmic Toolbox</td>
<td>E CS-627</td>
<td>EDIC</td>
<td>Svensson</td>
<td>Project report</td>
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<tr>
<td>Interactive Theorem Proving CS</td>
<td>E CS-628</td>
<td>EDIC</td>
<td>Barrière Pit-Claudel</td>
<td>During the semester</td>
<td>4</td>
</tr>
<tr>
<td>Privacy at the communication layer</td>
<td>E CS-721</td>
<td>EDIC</td>
<td>González Troncoso</td>
<td>Multiple</td>
<td>2</td>
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<tr>
<td>Project FALL</td>
<td>E CS-698</td>
<td>EDIC</td>
<td>Various lecturers</td>
<td>Project report</td>
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<tr>
<td>Project SPRING</td>
<td>E CS-699</td>
<td>EDIC</td>
<td>Various lecturers</td>
<td>Project report</td>
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<tr>
<td>Quantum Information Theory and Computation</td>
<td>E COM-611</td>
<td>EDIC</td>
<td>Macris</td>
<td>Oral</td>
<td>4</td>
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<tr>
<td>Topics in Computational Social Science (TopiCSS)</td>
<td>E CS-727</td>
<td>EDIC</td>
<td>West</td>
<td>Multiple</td>
<td>2</td>
</tr>
<tr>
<td>Topics in Machine Learning for Education</td>
<td>E CS-702</td>
<td>EDIC</td>
<td>Käser Jacober</td>
<td>Oral</td>
<td>2</td>
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<tr>
<td>Topics in Machine Learning Systems</td>
<td>E CS-723</td>
<td>EDIC</td>
<td>Falsafi Jaggi Kermarrec</td>
<td>Oral presentation</td>
<td>3</td>
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<tr>
<td>Topics in Natural Language Processing</td>
<td>E CS-612</td>
<td>EDIC</td>
<td>Bosselut</td>
<td>Oral</td>
<td>2</td>
</tr>
<tr>
<td>Topics on Datacenter Design</td>
<td>E CS-628</td>
<td>EDIC</td>
<td>Falsafi Kermarrec</td>
<td>Oral</td>
<td>2</td>
</tr>
<tr>
<td>Transfer learning and meta-learning</td>
<td>E CS-625</td>
<td>EDIC</td>
<td>Brbic</td>
<td>Oral</td>
<td>2</td>
</tr>
<tr>
<td>Other doctoral courses (EDOC)</td>
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</tr>
<tr>
<td>Courses</td>
<td>Language Code</td>
<td>Section</td>
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<td>----------------------------------------------</td>
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<tr>
<td>EECS Seminar: Advanced Topics in Machine Learning</td>
<td>ENG-704</td>
<td>EDEE</td>
<td>Bosselut, Cevher, Faltings, Flammarion, Frossard, West</td>
<td>Autre (reprise)</td>
<td>2</td>
</tr>
</tbody>
</table>

| Lecture series on scientific machine learning | PHYS-754       | EDPY    | Carleo, Ceriotti, De Los, Rios, Mathis, Schwaller, Wyart, Zdeborová | Oral presentation | 2      |

| Online learning in games                      | EE-735         | EDEE    | Cevher                       | Oral presentation | 4      |

<p>| Master courses                                |                |         |                              |                      |        |
| Advanced multiprocessor architecture          | CS-471         | IN      | Falsafi                      | During the semester | 6      |
| Advanced probability and applications         | COM-417        | SC      | Shkel                        | Written              | 8      |
| Advanced topics on privacy enhancing technologies | CS-523     | IN      | González, Troncoso           | Written              | 8      |
| Algorithms II                                | CS-450         | IN      | Svensson                     | Written              | 8      |
| Cryptography and security                    | COM-401        | SC      | Vaudenay                     | Written              | 8      |
| Design technologies for integrated systems    | CS-472         | IN      | De Micheli                   | During the semester | 6      |
| Distributed algorithms                        | CS-451         | SC      | Guerraoui                    | Written              | 8      |
| Formal verification                          | CS-550         | IN      | Kuncak                       | During the semester | 6      |
| Foundations of Data Science                  | COM-406        | IN      | Gastpar, Urbanke             | Written              | 8      |
| Information security and privacy             | COM-402        | IN      | Payer                        | Written              | 8      |
| Information theory and coding                | COM-404        | SC      | Telatar                      | Written              | 8      |
| Intelligent agents                           | CS-430         | IN      | Faltings                     | During the semester | 6      |
| Machine learning                             | CS-433         | IN      | Flammarion, Jaggi            | Written              | 8      |
| Mathematical foundations of signal processing | COM-514        | SC      |                              | Written              | 6      |
| Modern natural language processing           | CS-552         | IN      | Bosselut                     | During the semester | 8      |</p>
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Code</th>
<th>Instructor</th>
<th>Delivery</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Principles of computer systems</td>
<td>CS-522</td>
<td>Argyraki Candea</td>
<td>During the semester</td>
<td>8</td>
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<tr>
<td>Systems for data management and data science</td>
<td>CS-460</td>
<td>Ailamaki Kermarrec</td>
<td>Written</td>
<td>8</td>
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