### Recommended Course Package for Computer Science Students

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AP (Advanced Programming)</td>
<td>ML (Machine Learning)</td>
<td>Q-INF MAT</td>
<td>Q-INF FYS</td>
</tr>
<tr>
<td></td>
<td>AADS (Advanced Algorithms and Data Structures)</td>
<td>FYS/MAT</td>
<td>CS (Computer Systems)</td>
<td>CS (Computer Systems)</td>
</tr>
<tr>
<td></td>
<td>Crypto (C)</td>
<td></td>
<td>DifFun (C)</td>
<td>Adv MathNBI (C)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CRYPTO</td>
<td>ACS (Advanced Computer Systems)</td>
<td></td>
<td>Thesis (30 ECTS)</td>
</tr>
<tr>
<td></td>
<td>CS (Computer Systems)</td>
<td>CS (Computer Systems)</td>
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</tr>
</tbody>
</table>

### Recommended Course Package for Physics Students

Physics students should register for the specialization in Quantum Science

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>QM3 (Quantum Mechanics 3)</td>
<td>Begrenset valgfag</td>
<td>IDS (Introduction to Data Science)</td>
<td>Advanced Math Phys</td>
</tr>
<tr>
<td></td>
<td>Begrenset valgfag</td>
<td>ML (Machine Learning)</td>
<td>Q-INF MAT</td>
<td>Q-INF FYS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thesis (60 ECTS)</td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations:**
- AADS: Advanced Algorithms and Data Structures
- ATML: Advanced Topics Machine Learning
- ML: Machine Learning
- ATIA: Advanced Topics Image Analysis
- SIP: Signal Image Processing
- LSDA: Large Scale Data Analysis
- BDA: Big Data Analysis (Offered by NBI)
- RA: Randomized Algorithms
- IDS: Introduction to Data Science
Recommended Study Plans for MATH Students

1. For MATH students with a background in Quantum Mechanics:
   - Year 1:
     - Block 1: AdVec (A)
     - Block 2: FunkAn (A)
     - Block 3: PDE (B) or Geom 2 (B) QIT (B) QI (B)
     - Block 4: Crypto (C) DifFun (C) Adv MathPhys (C)
   - Year 2:
     - Block 1: QuOp (A)
     - Block 2: Thesis (30 ECTS) ExpMath (B)
     - Block 3: Adv Algo (C) Machine Learning (C)

2. For MATH students with no background in Quantum Mechanics:
   - Year 1:
     - Block 1: AdVec (A)
     - Block 2: FunkAn (A)
     - Block 3: Quantum Mechanics 1 (B) QIT (B) QI (B)
     - Block 4: Crypto (C) DifFun (C) Adv MathPhys (C)
   - Year 2:
     - Block 1: Thesis (30 ECTS) PDE (B) Geom2 (B)
     - Block 2: Adv Algo (C) Machine Learning (C)

One block equals nine weeks and 15 ECTS

- Compulsory course
- Long restricted elective course (minimum 4 courses)
- Short restricted elective course (minimum 3 courses)
- Elective course
- Physics course (bachelor or master level)
- Computer Science course (bachelor or master level)
Courses relevant for MATH students offered at the two other departments are:

From DIKU:

BA Courses:
• Algorithms and Data Structures (overlaps with DifFun in MATH)

MA Courses:
• Advanced Algorithms
• Machine Learning

From NBI:

BA Courses
• Quantum Mechanics 1

MA Courses
• Quantum Optics
• Quantum Information

MATH courses relevant for DIKU and NBI students are:

BA Courses:
• Mathematical Physics
• Introduction to Quantum Computing

MA Courses:
• Quantum Information Theory
• Advanced Mathematical Physics
• Riemannian Geometry and General Relativity