MS Program: Proficiencies

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Background

• Some students admitted to the MS program have weak CS preparation.
• Areas of particular weakness are listed as “proficiency requirements” in the admission offer letter.
• These requirements are in addition to the usual MS reqs. and may lengthen the total program time (one more semester common)
• The default way to satisfy the requirements is to take recommended undergraduate courses.
• **BUT**, a graduate student cannot take an undergraduate course and claim graduate credit, nor apply credits to full-time status.
• We have a special graduate “cover” course, **CSE 587**, that can be used as a vehicle for grad students to take UG courses.
The Need for a Proficiency Plan

• A student may have already taken an UG course in an indicated weakness area (perhaps after applying to the MS program)

• A student may have significant work experience in an area; this along with a set of related UG courses may offset an indicated weakness.

• A student may have significant strengths that lead us to believe that he/she will survive in a graduate course instead of having to take an undergraduate course.

• In one-on-one advising sessions (contact Prof. Zadok), we plan out a path (called “Proficiency Plan”) … … considering each student’s preparation, … … to fulfill the requirements in the offer letter.
# Proficiency Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE-215</td>
<td>Foundations of Computer Science (covers “Discrete Math”)</td>
</tr>
<tr>
<td>CSE-219</td>
<td>Computer Science III</td>
</tr>
<tr>
<td>CSE-220</td>
<td>Systems Fundamentals I (covers “Computer Architecture/Organization”)</td>
</tr>
<tr>
<td>CSE-303</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSE-304</td>
<td>Compilers</td>
</tr>
<tr>
<td>CSE-305</td>
<td>Databases</td>
</tr>
<tr>
<td>CSE-306</td>
<td>Operating Systems</td>
</tr>
<tr>
<td><strong>CSE-307, CSE-595</strong></td>
<td>Programming Languages</td>
</tr>
<tr>
<td>CSE-308</td>
<td>Software Engineering</td>
</tr>
<tr>
<td>CSE-310</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSE-320</td>
<td>Systems Fundamentals II (covers “Operating Systems”)</td>
</tr>
<tr>
<td><strong>CSE-373, CSE-582</strong></td>
<td>Algorithms</td>
</tr>
</tbody>
</table>
Proficiencies: Examples and Rules

• “Algorithms or Theory of Computation” means you have to take only one of Alg. or ToC to satisfy this proficiency.
• “Operating Systems” means you can only take the OS course to satisfy the proficiency.
• “Programming Languages” means you can only take the PL course to satisfy the proficiency.
  • Note: “PL” is a course on the theory of programming languages, not a course where you learn how to program. Merely knowing how to program does not satisfy the PL proficiency.
• You cannot take the graduate version of any proficiency course until you satisfy the proficiency first.
• We do not accept online courses in lieu of accredited undergraduate courses.
• Cannot go on internship (i.e., get a CPT) until all proficiencies are passed.
Option 1(a): CSE 587  [3 credits]

• To fulfill a proficiency requirement, a student takes a specified UG course via CSE 587.

• We have one section for each instructor of an UG proficiency course.

• **Example:** Prof. Liu is teaching CSE 307, and she is listed under Section 02 of 587.
  • If you have a “PL” requirement in your offer letter, you may take CSE 587-02. [with permission of GPD/GPA]
  • You will attend CSE 307 lectures, and do same homeworks and take same exams.
  • You will have cleared the “PL” requirement if you get a **B or better** in CSE 587-02.
Option 1(b): CSE 5XX  [3 credits]

- We are moving away from using undergraduate courses for proficiencies
- Instead, students will take special, graduate level “bridge courses”, instead of CSE-587 as a “cover” for some undergraduate CSE-3xx course
- The transition is underway
  - Take any offered Bridge course instead of an undergraduate one
    - C or better to pass
  - Take the undergraduate one (option 1a) otherwise
    - B or better to pass
- Spring 2021 offering
  - Alg: CSE-582 (instead of CSE-373)
  - PL: CSE-595 (instead of CSE-307)
  - Later offering: ToC: CSE-581 (instead of CSE-303)
- No need for special permission to enroll in CSE-5xx: just register directly
Option 2: Graduate Course

[Rare]

- A student may have background in related areas that do not quite remove the weakness, but indicates possible success in a grad course instead.

- Then, the GPD/GPA may permit the student to take a grad course to satisfy a proficiency requirement.

- Note advantages over Option 1:
  1. “C” or better in grad course is sufficient for proficiency
  2. Grad course may count for breadth
Option 3: Waiver

[Very Rare]

• A student’s background may indicate that the weakness is insignificant.
  • E.g., past courses taken plus work experience

• Then we waive the need to satisfy that proficiency requirement.

• Example: you have a “networking” proficiency but you worked for Cisco for 5 years on their IOS software.
Proficiency and Graduation Credits

• **All credits** are counted from all courses taken to satisfy proficiency requirements.

• *This is regardless of whether a grad course, bridge course, or CSE 587 is used to satisfy a requirement.*

• **However:**
  
  • Recall the requirement to take a certain number of lecture courses (e.g., Advanced Project Option: 7 or more lecture courses)
  
  • 587 and Bridge courses **do not count** towards these lecture courses

• Recall the offer letter: these requirements are over and above the usual ones for an MS degree.
Advising Process (Virtual)

• Bring Latest Transcripts
  • May have courses not present at application time

• Bring Syllabus
  • To determine equivalence of courses: must be a very close match.

• Bring Resume
  • To evaluate any relevant work experience

• If you think Options 2 (Grad course) or 3 (Waiver) applies to any of your stated weaknesses, present your rationale.
  • We will make a 2-semester plan to satisfy the requirements considering (a) your rationale for the above, and (b) availability of seats in courses.
# Seats Available in Spring 2020

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Abbrev</th>
<th>Seats</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE-303</td>
<td>Theory of Computation</td>
<td>toc</td>
<td>100+</td>
<td>TR 11:30am</td>
</tr>
<tr>
<td>CSE-306</td>
<td>Operating Systems</td>
<td>os</td>
<td>50+</td>
<td>TR 5:30pm</td>
</tr>
<tr>
<td>CSE-307</td>
<td>Programming Languages (No compilers offered)</td>
<td>pl</td>
<td>100+</td>
<td>TR 5:30pm</td>
</tr>
<tr>
<td>CSE-320</td>
<td>Systems Fundamentals II</td>
<td>sys (os)</td>
<td>50+</td>
<td>TR 10:00am</td>
</tr>
<tr>
<td>CSE-373</td>
<td>Algorithms</td>
<td>alg</td>
<td>50+</td>
<td>TR 5:30pm</td>
</tr>
</tbody>
</table>