Master of Science in Computer Engineering (CPEN-MS)

- This degree is offered in both completely online and face-to-face (at the Stephenville campus) formats. Either format allows a choice between thesis and non-thesis.
- Deadline for admission is 5 days before classes start in fall (August) or spring (January) semesters.
- For a full-time student, taking 3 courses every semester, it is possible to finish the degree in four long semesters. Summer courses are based on availability.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPEN 5341</td>
<td>Advanced Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CPEN 5343</td>
<td>Advanced Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CPEN 5351</td>
<td>Introduction to Convex Optimization</td>
<td>3</td>
</tr>
<tr>
<td>CPEN 5355</td>
<td>VLSI Architectures</td>
<td>3</td>
</tr>
<tr>
<td>CPEN 5378</td>
<td>Advanced Computer Networks</td>
<td>3</td>
</tr>
<tr>
<td>CPEN Electives</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

**Total Hours** 21

### Additional Required Courses for Concentrations

#### Thesis

- Electives at 5XXX: ELEN, COSC, MATH, or BCIS 6
- CPEN 5099 Thesis Research 6

*Final examination and/or thesis defense: Covers the thesis and all work taken on the degree plan. At the option of the advisory committee, it may be written, oral, or both.*

**Total Hours** 12

#### Professional (non-thesis)

- CPEN Electives 6
- Electives at 5XXX: ELEN, COSC, MATH, or BCIS 9

*Final examination: Covers all work taken on the degree plan. At the option of the advisory committee, it may be written, oral, or both.*

**Total Hours** 15

The *thesis* option requires a total of $21 + 12 = 33$ hours (minimum), including 6 hours of thesis research; the *non-thesis/professional* option requires a total of $21 + 15 = 36$ hours (minimum), without research.
List of all CPEN courses available (Fall 2021):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPEN 5099</td>
<td>Thesis Research</td>
</tr>
<tr>
<td>CPEN 5341</td>
<td>Advanced Algorithms</td>
</tr>
<tr>
<td>CPEN 5342</td>
<td>Parallel Computing and Algorithms</td>
</tr>
<tr>
<td>CPEN 5343</td>
<td>Advanced Computer Architecture</td>
</tr>
<tr>
<td>CPEN 5348</td>
<td>Advanced VLSI Circuit Design</td>
</tr>
<tr>
<td>CPEN 5351</td>
<td>Introduction to Convex Optimization</td>
</tr>
<tr>
<td>CPEN 5355</td>
<td>VLSI Architectures</td>
</tr>
<tr>
<td>CPEN 5361</td>
<td>Deep Neural Networks</td>
</tr>
<tr>
<td>CPEN 5366</td>
<td>Robot Vision</td>
</tr>
<tr>
<td>CPEN 5377</td>
<td>Wireless and Mobile Communication Networks</td>
</tr>
<tr>
<td>CPEN 5378</td>
<td>Advanced Computer Networks</td>
</tr>
<tr>
<td>CPEN 5379</td>
<td>Performance of Computer and Communication Networks</td>
</tr>
</tbody>
</table>

List of MATH courses suitable for electives:

- MATH 5301 : Nonparametric Statistics
- MATH 5305 : Statistical Models
- MATH 5306 : Dynamical Systems
- MATH 5311 : Operations Research
- MATH 5330 : Mathematical Modeling
- MATH 5350 : Linear Algebra
- MATH 5360 : Numerical Analysis
- MATH 5362 : Data Warehousing
- MATH 5364 : Data Science I
- MATH 5366 : Data Science II
- MATH 5375 : Statistical Reasoning and Probability

More details:

- Admission to the MSCE program requires a Bachelor’s degree in computer engineering, electrical engineering or computer science from an accredited institution. Students not meeting this requirement will be considered for admission on an individual basis and may be admitted subject to the completion of appropriate undergraduate courses to remove any deficiencies in preparation.
- Upon admission, the department will recommend leveling courses, depending on the student's transcript and experience. Areas in which deficiencies must be removed include logic circuit design, signals and systems, computer architecture, data structures and algorithms, C/C++/Python programming, networks and communication systems.
- There is no GPA threshold required for admission\(^1\), but students must maintain a GPA of 3.0 or better, and make grades of C or better in all courses on the degree plan. Grades for transferring graduate courses completed at other institutions, or at Tarleton before the start of the MSCE degree, are not included in the degree plan GPA, but they are still subject to the requirement of C or better.

\(^1\)
• No undergraduate courses can be counted towards this Master’s degree. A maximum of 12 graduate credit hours may be transferred.

• The candidate may petition the advisory committee to be exempt from the final examination, provided their degree plan GPA is 3.50 or greater.

• Students in their last year before graduating from Tarleton with a Bachelor’s degree, who have an institution GPA of 3.0 or better, can be granted “provisional graduate” status, and then take graduate CPEN courses, thus potentially shortening the time to finish the CPEN-MS degree

• To enroll in the graduate courses prior to earning their Bachelor’s, the student will need to submit a Graduate Student Provisional Enrollment form.

• The number of graduate hours one can take as an undergraduate is at most 12.

Contact:
• Tarleton School of Graduate Studies: https://www.tarleton.edu/graduate/future/masters.html
• Program coordinator, Dr. Mircea Agapie: agapie@tarleton.edu

Fine print:
• After receiving admission to graduate studies, the student will consult with the head of the ENCS department concerning appointment of the chair of their advisory committee. The chair, in consultation with the student, will select the remainder of the committee, which will consist of no fewer than three members of the graduate faculty (including the chair). The chair of the committee must be from the ENCS department, and at least one member must have an appointment to a department other than ENCS. The duties of the committee include responsibility for the proposed degree plan, the research proposal, the thesis and the final examination. In addition, the committee is responsible for advising the student on all academic matters, and, in the case of academic deficiency, initiating recommendations to the Office of Graduate Studies.

• The student’s advisory committee, in consultation with the student, will develop the degree plan, which must specify the thesis or non-thesis option. The degree plan may include additional coursework, a.k.a. leveling courses, if they are deemed necessary by the committee in order to address deficiencies in the student’s preparation. The degree plan must be completed and filed with the Office of Graduate Studies no later than 90 days prior to the date of the final oral examination or thesis defense.

• For the thesis option, the student must prepare a thesis proposal for approval by the advisory committee and the head of the ENCE department. This proposal must be submitted to the Office of Graduate Studies at least 30 days prior to the date of the final oral examination or thesis defense.

• To be eligible to take the final examination, the grade for all courses on the degree plan must be C or better, and the degree plan GPA must be at least 3.00. All coursework on the degree plan must have been completed with the exception of those hours for which the student is currently registered. For the thesis option, an approved thesis proposal must be on file in the Office of Graduate Studies. A request to hold and announce the final examination must be submitted to the Office of Graduate Studies a minimum of 10 days prior to the scheduled date for the examination.

• The Report of the Final Examination form must be submitted to the Office of Graduate Studies with original signatures of all the advisory committee members.

• Courses used toward any degree at Tarleton or another institution may not be applied for graduate credit. If the course to be transferred was taken prior to the conferral of a degree at another institution, a letter from the registrar at that institution, stating that the course was not applied for credit toward the degree, must be submitted to the Office of Graduate Studies. A maximum of 12 graduate credit hours may be transferred.

• If students sit out one or two semesters (less than one calendar year), they can simply submit a reactivation request to get reinstated. If they sit out longer than that, they need to submit a new, full application and fee.

• At the time of graduation, all credits used towards the degree can be no older than 6 years. The advisory
committee may provide exemptions from the 6-year rule on a case-by-case basis, provided that the area covered in the course has not significantly changed in the meantime.