SPACE SYSTEMS ENGINEERING, MASTER OF SCIENCE

Admission Requirements

Applicants must meet the general requirements for admission to graduate study, as outlined in the Admission Requirements section. The applicant’s prior education must include an undergraduate or graduate degree in a quantitative discipline (e.g., engineering, computer science, mathematics, physics, or equivalent) from a regionally accredited college or university. Applicants must show competency in (1) calculus, (2) physics, and (3) computer programming, which must be demonstrated through undergraduate or graduate coursework or equivalent work experience. Applicants whose prior education does not include the prerequisites listed above may still enroll under provisional status, followed by full admission status once they have completed the missing prerequisites. Admitted students typically have earned a grade point average of at least 3.0 on a 4.0 scale (B or above) in the latter half of their undergraduate studies. When reviewing an application, the candidate’s academic and professional background will be considered. As part of the admission process, the chair or the program coordinator may interview candidates to better evaluate their application.

Program Requirements

A total of ten courses (at least three at the 700-level) must be completed within five years. The curriculum consists of five core courses and five electives chosen by the student in consultation with their advisor. The curriculum is designed to provide maximum flexibility to students, enabling them to customize their five electives based on their educational needs and career goals. Only one C-range grade (C+, C, or C–) can count toward the master’s degree. All courses in the Space Systems Engineering program may be completed remotely (online or via virtual-live), except for the program capstone EN.675.710 Small Satellite Development and Experimentation, which includes a requirement that students attend a specified residency weekend at the APL campus to complete the laboratory component.

Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.675.600</td>
<td>Systems Engineering for Space</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.601</td>
<td>Fundamentals of Engineering Space Systems I</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.602</td>
<td>Fundamentals of Engineering Space Systems II</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.701</td>
<td>Applications of Space Systems Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.710</td>
<td>Small Satellite Development and Experimentation</td>
<td>3</td>
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ELECTIVES

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<tr>
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<tr>
<td>EN.675.621</td>
<td>Space Environment and Effects</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.622</td>
<td>Spacecraft Hardware Design Considerations</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.650</td>
<td>Mathematics for Space Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.641</td>
<td>Space Systems Cybersecurity</td>
<td>3</td>
</tr>
<tr>
<td>EN.675.691</td>
<td>Electro-Optical Space Systems</td>
<td>3</td>
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</tbody>
</table>

EN.675.711 | Ground System Engineering and Mission Operations | 3       |
EN.675.712 | Space Mission Formulation                      | 3       |
EN.675.713 | Fault Management and Autonomy: Improving Spacecraft Survivability | 3       |
EN.675.723 | Ground System Engineering                      | 3       |
EN.675.731 | Spacecraft Propulsion Systems                  | 3       |
EN.675.751 | Space Weather and Space Systems                | 3       |
EN.675.752 | Attitude Determination and Control of Space Systems | 3       |
EN.675.753 | Spacecraft Avionics Systems                    | 3       |
EN.675.754 | Flight Software for Space Systems              | 3       |
EN.675.756 | Antenna Design for Space Systems               | 3       |
EN.675.761 | Reliability Engineering and Analysis for Space Missions | 3       |
EN.675.768 | Spacecraft Integration and Test                | 3       |
EN.675.771 | Space Mission Design and Navigation            | 3       |
EN.675.772 | Verification and Validation of Space Systems   | 3       |
EN.675.800 | Directed Studies in Space Systems Engineering | 3       |
EN.525.640 | Satellite Communications Systems               | 3       |
EN.525.744 | Passive Emitter Geo-Location                   | 3       |
EN.595.740 | Assuring Success of Aerospace Programs         | 3       |

Please refer to the course schedule (ep.jhu.edu/schedule) published each term for exact dates, times, locations, fees, and instructors.