

# INTO MASON: ENGINEERING GRADUATE PATHWAYS

Banner Code: IN-MS-P012

## Requirements

### Graduate International Pathways to master's degrees in the College of Engineering and Computing

INTO Mason provides sixteen Graduate International Pathways for international students to enter various graduate degrees in the College of Engineering and Computing (CEC) (<http://catalog.gmu.edu/colleges-schools/engineering-computing/>) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the College of Engineering and Computing at GMU:

- Applied Information Technology
- Bioengineering
- Biostatistics
- Civil and Infrastructure Engineering
- Computer Engineering
- Computer Science
- Cyber Security Engineering
- Data Analytics Engineering
- Digital Forensics
- Electrical Engineering
- Information Security and Assurance
- Information Systems
- Operations Research
- Software Engineering
- Statistical Science
- Systems Engineering
- Telecommunications

The following are the types of pathways available:

- **One Term pathways (Accelerated):** These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All VSE pathways have one-term pathway options available.
- **Two Term pathways (Standard):** These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All VSE pathways have two-term pathway options available.
- **Bridge pathways:** These pathways provide foundational coursework designed to substitute for an additional year of undergraduate

academic coursework, to render students with three-year baccalaureate degrees eligible to move on to their graduate degree programs. Students will often move on to those degree-seeking programs with several graduate credits completed as determined by the graduate degree program. Almost all (14) of the sixteen (16) VSE pathways have Bridge pathway options available (all except Operations Research and Systems Engineering).

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available Graduate International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason (<http://catalog.gmu.edu/international-programs-resources/into-mason/#text>) in partnership with the academic units across the university, the courses in the Graduate International Pathways are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

## Program Requirements

The following Graduate International Pathways are offered by INTO Mason in collaboration with the College of Engineering and Computing:

### Applied Information Technology Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Applied Information Technology degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Applied Information Technology degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
Required Major Courses (student will take two of the following): <sup>1</sup>		6
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

<sup>1</sup> AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them.

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Applied Information Technology degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
Required Major Courses (student will take two of the following): <sup>1</sup>		6
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

<sup>1</sup> AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them.

**The following grid is for the first semester of the Bridge, 2-semester pathway into the Master of Science in Applied Information Technology degree for students with certain 3-year degrees:**

Code	Title	Credits
<b>Bridge semester 1 of 2</b>		
Required Major Courses (student will take one or two of the following):		3-6

AIT 512	Algorithms and Data Structures Essentials (Required Major Courses (student will take one or two of the following): )	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
Upper-level Undergraduate Mason Core Course <sup>1</sup>		3
Total Credits		13-16

<sup>1</sup> Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

**The following grid is for the second semester of the Bridge, 2-semester pathway into the Master of Science in Applied Information Technology degree for students with certain 3-year degrees:**

Code	Title	Credits
<b>Bridge semester 2 of 2</b>		
Upper-level Undergraduate Mason Core Course <sup>1</sup>		3
Required Major Courses (student will take one or two of the following): <sup>2</sup>		3-6
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12-15

<sup>1</sup> Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

<sup>2</sup> AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them.

## Bioengineering Graduate Pathway

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Bioengineering degree:**

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4

INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Bioengineering degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
BENG 521 or BENG 526 or BENG 541	Cell and Tissue Engineering Neural Engineering Biomaterials	3
BENG 520 or BENG 537 or BENG 538	Biomedical Data Analytics Medical Image Processing Medical Imaging	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Bioengineering degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
BENG 520 or BENG 537 or BENG 538	Biomedical Data Analytics Medical Image Processing Medical Imaging	3
BENG 521 or BENG 526 or BENG 541	Cell and Tissue Engineering Neural Engineering Biomaterials	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the first semester of the Bridge, 2-semester pathway into the Master of Science in Bioengineering degree for students with certain 3-year degrees:

Code	Title	Credits
<b>Bridge semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3

INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Upper-level Undergraduate Mason Core Course <sup>1</sup>		3
Total Credits		12

<sup>1</sup> Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

The following grid is for the second semester of the Bridge, 2-semester pathway into the Master of Science in Bioengineering degree for students with certain 3-year degrees:

Code	Title	Credits
<b>Bridge semester 2 of 2</b>		
Required Major Courses (student will take one or two of the following):		3-6
BENG 541	Biomaterials	
BENG 520	Biomedical Data Analytics	
BENG 521	Cell and Tissue Engineering	
BENG 526	Neural Engineering	
BENG 537	Medical Image Processing	
BENG 538	Medical Imaging	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Upper-level Undergraduate Mason Core Course <sup>1</sup>		3
Total Credits		12-15

<sup>1</sup> Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

### Biostatistics Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Biostatistics degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Biostatistics degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
STAT 554	Applied Statistics I	3
STAT 544	Applied Probability	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Biostatistics degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
INYO 504	Transitions for International Graduate Students	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**Civil and Infrastructure Engineering Graduate Pathway**

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Civil and Infrastructure Engineering degree:**

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Civil and Infrastructure Engineering degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
CEIE 601 or CEIE 605	Infrastructure Modeling Risk and Uncertainty in Civil Engineering	3
CEIE Elective		3
EAP 507	Advanced Graduate Communication Across the Disciplines	4

INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Civil and Infrastructure Engineering degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
CEIE 601 or CEIE 605	Infrastructure Modeling Risk and Uncertainty in Civil Engineering	3
CEIE Elective		3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**Computer Engineering Graduate Pathway**

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Computer Engineering degree:**

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Computer Engineering degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
Required Major Courses (student will take two of the following):		6
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 511	Computer Architecture	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1

EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Computer Engineering degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
Required Major Courses (student will take two of the following):		6
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 511	Computer Architecture	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**Computer Science Graduate Pathway**

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Computer Science degree:**

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Computer Science degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
CS 530	Mathematical Foundations of Computer Science	3
CS 531	Computer Systems and Fundamentals of Systems Programming	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Computer Science degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
CS 530	Mathematical Foundations of Computer Science	3
CS 531	Computer Systems and Fundamentals of Systems Programming	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**Cyber Security Engineering Graduate Pathway**

**The following grid is for the first semester for the standard, 2-semester pathway into the Master of Science in Cyber Security Engineering:**

Code	Title	Credits
<b>Semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Cyber Security Engineering:**

Code	Title	Credits
<b>Semester 2 of 2</b>		
CYSE 570	Fundamentals of Operating Systems	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
CYSE 587	Cyber Security Systems Engineering	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Cyber Security Engineering:**

Code	Title	Credits
CYSE 570	Fundamentals of Operating Systems	3
CYSE 587	Cyber Security Systems Engineering	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3



EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**The following grid is for the first semester of the 2-semester Bridge pathway into the Master of Science in Cyber Security Engineering:**

Code	Title	Credits
Semester 1 of 2		
CYSE 570	Fundamentals of Operating Systems	3
INYO 504	Transitions for International Graduate Students	3
EAP 506	Graduate Communication in the Disciplines I	4
Upper Level Undergraduate Course		3
Total Credits		13

**The following grid is for the second semester of the 2-semester Bridge pathway into the Master of Science in Cyber Security Engineering:**

Code	Title	Credits
Semester 2 of 2		
CYSE 587	Cyber Security Systems Engineering	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Upper Level Undergraduate Course		3
Total Credits		14

### Data Analytics Engineering Graduate Pathway

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Data Analytics Engineering degree:**

Code	Title	Credits
Standard semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Data Analytics Engineering degree:**

Code	Title	Credits
Standard semester 2 of 2		
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 531	Introduction to Analytics and Modeling	3
or OR 541	Operations Research: Deterministic Models	

EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1

EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Data Analytics Engineering degree:**

Code	Title	Credits
Accelerated semester 1 of 1		
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 531	Introduction to Analytics and Modeling	3
or OR 541	Operations Research: Deterministic Models	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

### Digital Forensics Graduate Pathway

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Digital Forensics degree:**

Code	Title	Credits
Standard semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Digital Forensics degree:**

Code	Title	Credits
Standard semester 2 of 2		
DFOR 660	Network Forensics	3
DFOR 510	Digital Forensics Analysis	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Digital Forensics degree:

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
DFOR 660	Network Forensics	3
DFOR 510	Digital Forensics Analysis	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

### Electrical Engineering Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Electrical Engineering degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Electrical Engineering degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
Required Major Courses (student will take two of the following):		6
ECE 511	Computer Architecture	
ECE 521	Linear Systems and Control	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 584	Semiconductor Device Fundamentals	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Electrical Engineering degree:

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
Required Major Courses (student will take two of the following):		6
ECE 511	Computer Architecture	
ECE 521	Linear Systems and Control	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 584	Semiconductor Device Fundamentals	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

### Information Security and Assurance Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Information Security and Assurance degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Information Security and Assurance degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
CS 530	Mathematical Foundations of Computer Science	3
CS 531	Computer Systems and Fundamentals of Systems Programming	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Information Security and Assurance degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
CS 531	Computer Systems and Fundamentals of Systems Programming	3
CS 530	Mathematical Foundations of Computer Science	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**Information Systems Graduate Pathway**

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Information Systems degree:**

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Information Systems degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
INFS 612	Principles and Practices of Communication Networks	3
CS 530	Mathematical Foundations of Computer Science	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Information Systems degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
CS 530	Mathematical Foundations of Computer Science	3

INFS 612	Principles and Practices of Communication Networks	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

**Operations Research Graduate Pathway**

**The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Operations Research degree:**

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

**The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Operations Research degree:**

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
OR 541	Operations Research: Deterministic Models	3
or OR 542	Operations Research: Stochastic Models	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		9

**The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Operations Research degree:**

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
SYST 500	Quantitative Foundations for Systems Engineering	3
OR 541	Operations Research: Deterministic Models	3
or OR 542	Operations Research: Stochastic Models	
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3



EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

### Software Engineering Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Software Engineering degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Software Engineering degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
CS 530	Mathematical Foundations of Computer Science	3
SWE 621	Software Design and Architecture	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Software Engineering degree:

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
CS 530	Mathematical Foundations of Computer Science	3
SWE 621	Software Design and Architecture	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

### Statistical Science Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Statistical Science degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Statistical Science degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Statistical Science degree:

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
EAP 507	Advanced Graduate Communication Across the Disciplines	3-4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		13-14

### Systems Engineering Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Systems Engineering degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3

EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Systems Engineering degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
SYST 500	Quantitative Foundations for Systems Engineering	3
SYST 505	Systems Engineering Principles	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Systems Engineering degree:

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
SYST 500	Quantitative Foundations for Systems Engineering	3
SYST 505	Systems Engineering Principles	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

## Telecommunications Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Science in Telecommunications degree:

Code	Title	Credits
<b>Standard semester 1 of 2</b>		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 504	Transitions for International Graduate Students	3
EAP 410	Language Support for International Students	2
Total Credits		9

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Science in Telecommunications degree:

Code	Title	Credits
<b>Standard semester 2 of 2</b>		
TCOM 500	Modern Telecommunications	3

TCOM 570	Network Automation	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 505	Intercultural Competence and Professional Development for Multilingual Graduate Students	1
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		12

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Science in Telecommunications degree:

Code	Title	Credits
<b>Accelerated semester 1 of 1</b>		
TCOM 500	Modern Telecommunications	3
TCOM 570	Network Automation	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		14

## Data Analytics Graduate Certificate Pathway

Code	Title	Credits
STAT 515	Applied Statistics and Visualization for Analytics	3
EAP 507	Advanced Graduate Communication Across the Disciplines	4
INYO 504	Transitions for International Graduate Students	3
EAP 401	Advanced English Grammar for Multilingual Students	1
Total Credits		11