Statistics and Data Science Stream (SDS19, E1a)

Year 1

1st Semester / 2nd Semester — Total Credit: 32

- MATH1001 (3) Linear Algebra I
- MATH1002 (3) Linear Algebra II
- GEST1004 (3) Quantitative Reasoning for Science and Technology
- MATH1003 (3) Intermediate Calculus
- EELC1011 (3) University English 1
- EELC1012 (3) University English 2
- CHLL1000 (3)* University Chinese OR PORT1000 (3)* Portuguese Language I
- CISC1000 (3) Information Technology Fundamentals and Practices
- CPED1001 (0.5) Physical Education I
- CPED1002 (0.5) Physical Education II
- CPED1000 (1) Residential College Experiential Learning
- EELC1008 (3) Grammar and Writing
- GELH1000 (3) Chinese Language and Culture

Year 2

1st Semester / 2nd Semester — Total Credit: 34

- CISC1001 (3) Programming Science
- CISC1002 (3) Discrete Structures
- MATH2005 (3) Probability
- MATH2006 (3) Applied Statistics
- MATH2002 (3) Multivariable Calculus
- MATH2003 (3) Mathematical Analysis I
- MATH2004 (3) Mathematical Analysis II
- EELC1013 (3) University English 3
- GESB1001, GESB1002, GESB1003 (3) Ethics, Values, Law
- GEGA1000 (3) Macau and Chinese Civilization
- CPED2000 (1) Communication Skills and Leadership
- Free Elective Course (3)

Year 3

1st Semester / 2nd Semester — Total Credit: 33

- MATH3000 (3) Ordinary Differential Equations
- CISC3000 (3) Introduction to Database Systems
- MATH3002 (3) Introduction to Stochastic
- MATH3017 (3) Data-driven Sampling
- MATH2009 (3) Linear Statistical Analysis
- NATH3018 (3) Multivariate Data Analysis
- Required Elective Course (3)**
- Required Elective Course (3)**
- Required Elective Course (3)**
- GE Course (3) (Area of Society and Behaviour)
- GE Course (3) (Area of Literature and Humanities)

Year 4

1st Semester / 2nd Semester — Total Credit: 21

- MATH2010 (3) Computational Statistics
- MATH4003 (3) Nonparametric Statistics
- MATH4004 (3) Graduation Project
- Required Elective Course (3)**
- GE Course (3) (Area of Global Awareness)
- GE Course (3) (Area of Science and Technology)
- Free Elective Course (3)

Legend

- Compulsory Course
- General Education Course
- Mathematics Elective Course
- Free Elective Course
- Community and Peer Education Course
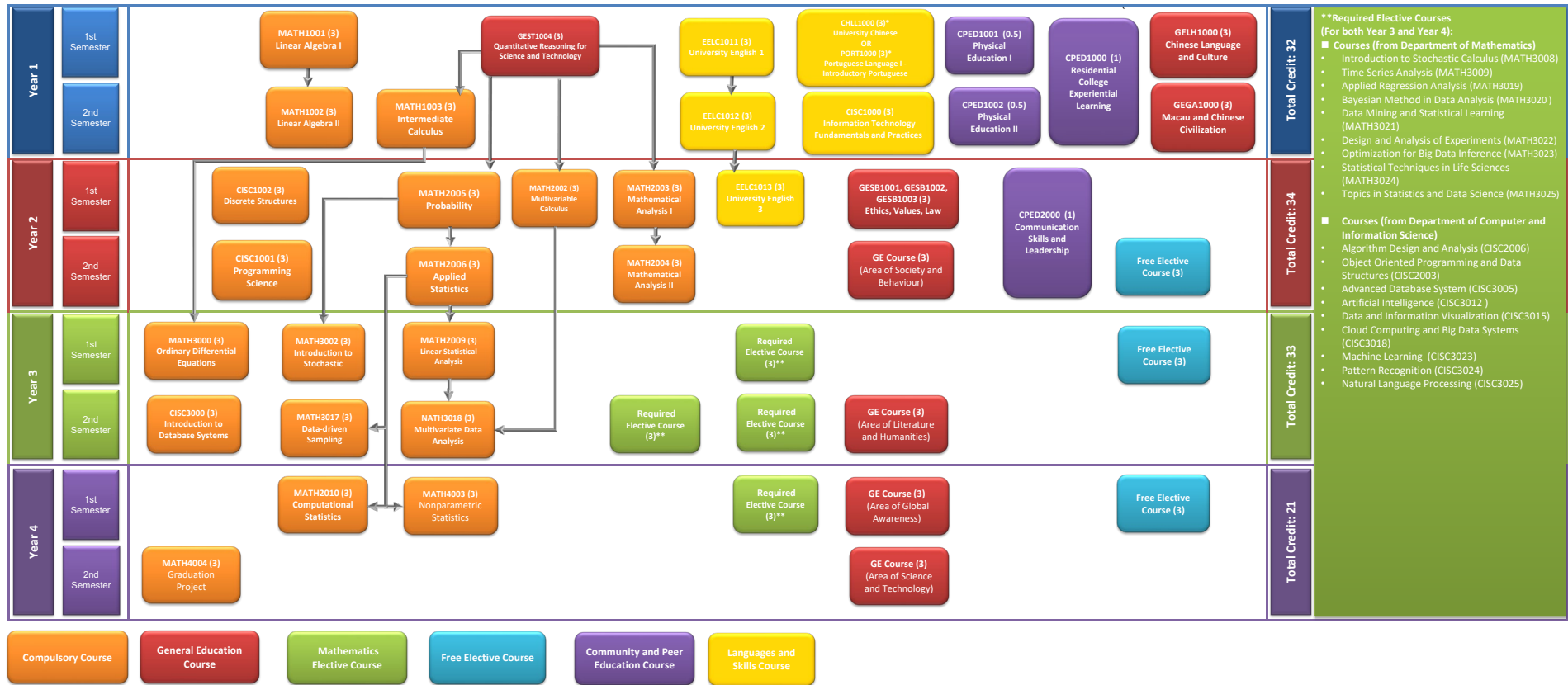- Languages and Skills Course

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**Required Elective Courses (For both Year 3 and Year 4):

■ Courses (from Department of Mathematics)
- Introduction to Stochastic Calculus (MATH3008)
- Time Series Analysis (MATH3009)
- Applied Regression Analysis (MATH3019)
- Bayesian Method in Data Analysis (MATH3020)
- Data Mining and Statistical Learning (MATH3021)
- Design and Analysis of Experiments (MATH3022)
- Optimization for Big Data Inference (MATH3023)
- Statistical Techniques in Life Sciences (MATH3024)
- Topics in Statistics and Data Science (MATH3025)

■ Courses (from Department of Computer and Information Science)
- Algorithm Design and Analysis (CISC2006)
- Object Oriented Programming and Data Structures (CISC2003)
- Advanced Database System (CISC3005)
- Artificial Intelligence (CISC3012)
- Data and Information Visualization (CISC3015)
- Cloud Computing and Big Data Systems (CISC3018)
- Machine Learning (CISC3023)
- Pattern Recognition (CISC3024)
- Natural Language Processing (CISC3025)

Remark:

* Students who test out this course should take GEGA1000 in this semester. They are required to make up the credits by taking additional Free Elective(s) later.
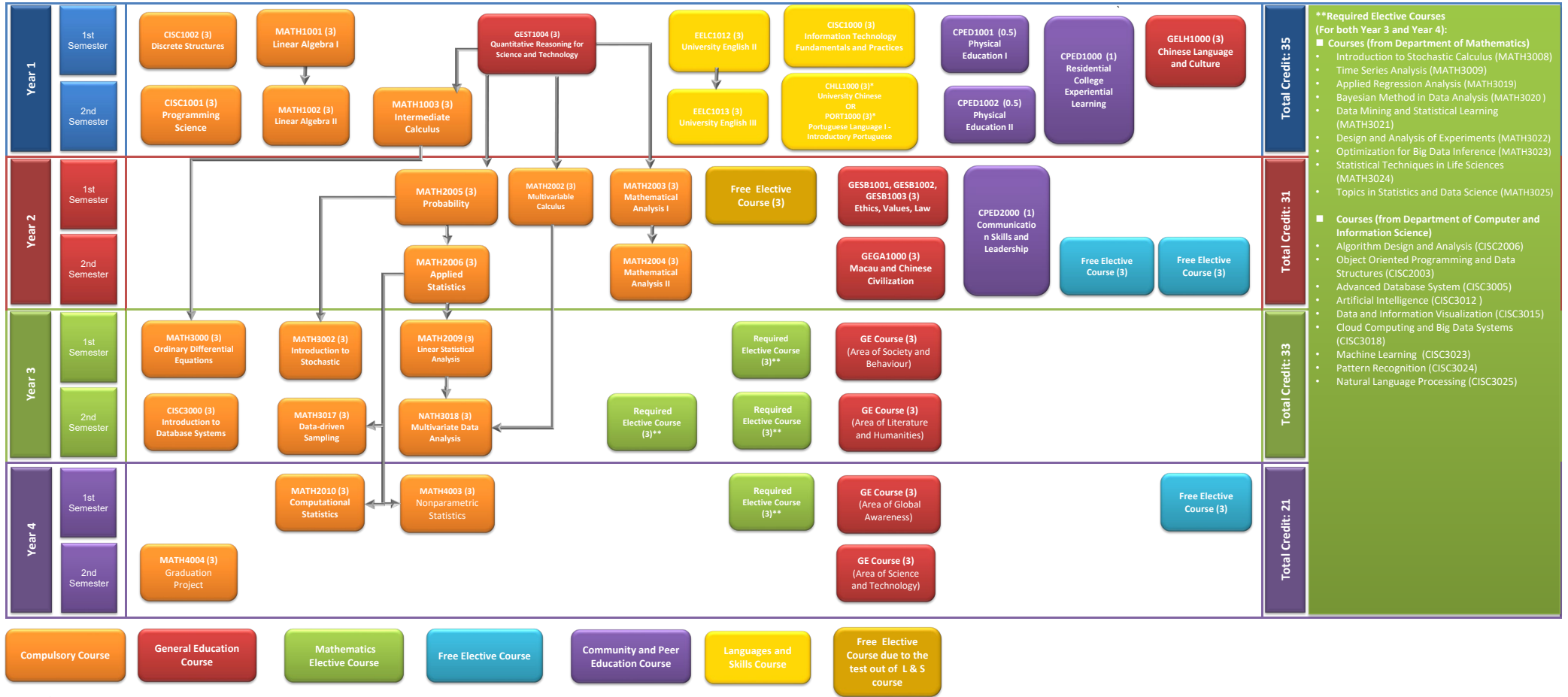
Statistics and Data Science Stream (SDS19, E1b)

Year 1

1st Semester / 2nd Semester

- MATH1001 (3) Linear Algebra I
- MATH1002 (3) Linear Algebra II
- GEST1004 (3) Quantitative Reasoning for Science and Technology
- MATH1003 (3) Intermediate Calculus
- EELC1011 (3) University English 1
- EELC1012 (3) University English 2
- CHLL1000 (3)* University Chinese OR PORT1000 (3)* Portuguese Language I - Introductory Portuguese
- CISC1000 (3) Information Technology Fundamentals and Practices
- CPED1001 (0.5) Physical Education I
- CPED1002 (0.5) Physical Education II
- CPED1000 (1) Residential College Experiential Learning
- GELH1000 (3) Chinese Language and Culture
- GEGA1000 (3) Macau and Chinese Civilization

Total Credit: 32

Year 2

1st Semester / 2nd Semester

- CISC1002 (3) Discrete Structures
- CISC1001 (3) Programming Science
- MATH2005 (3) Probability
- MATH2006 (3) Applied Statistics
- MATH2002 (3) Multivariable Calculus
- MATH2003 (3) Mathematical Analysis I
- MATH2004 (3) Mathematical Analysis II
- EELC1013 (3) University English 3
- GESB1001, GESB1002, GESB1003 (3) Ethics, Values, Law
- GE Course (3) (Area of Society and Behaviour)
- CPED2000 (1) Communication Skills and Leadership
- Free Elective Course (3)

Total Credit: 34

Year 3

1st Semester / 2nd Semester

- MATH3000 (3) Ordinary Differential Equations
- CISC3000 (3) Introduction to Database Systems
- MATH3002 (3) Introduction to Stochastic
- MATH3017 (3) Data-driven Sampling
- MATH2009 (3) Linear Statistical Analysis
- NATH3018 (3) Multivariate Data Analysis
- Required Elective Course (3)**
- Required Elective Course (3)**
- Required Elective Course (3)**
- GE Course (3) (Area of Literature and Humanities)
- Free Elective Course (3)

Total Credit: 33

Year 4

1st Semester / 2nd Semester

- MATH2010 (3) Computational Statistics
- MATH4003 (3) Nonparametric Statistics
- MATH4004 (3) Graduation Project
- Required Elective Course (3)**
- GE Course (3) (Area of Global Awareness)
- GE Course (3) (Area of Science and Technology)
- Free Elective Course (3)

Total Credit: 21

Legend:
- Compulsory Course
- General Education Course
- Mathematics Elective Course
- Free Elective Course
- Community and Peer Education Course
- Languages and Skills Course

**Required Elective Courses (For both Year 3 and Year 4):

■ **Courses (from Department of Mathematics)**
- Introduction to Stochastic Calculus (MATH3008)
- Time Series Analysis (MATH3009)
- Applied Regression Analysis (MATH3019)
- Bayesian Method in Data Analysis (MATH3020)
- Data Mining and Statistical Learning (MATH3021)
- Design and Analysis of Experiments (MATH3022)
- Optimization for Big Data Inference (MATH3023)
- Statistical Techniques in Life Sciences (MATH3024)
- Topics in Statistics and Data Science (MATH3025)

■ **Courses (from Department of Computer and Information Science)**
- Algorithm Design and Analysis (CISC2006)
- Object Oriented Programming and Data Structures (CISC2003)
- Advanced Database System (CISC3005)
- Artificial Intelligence (CISC3012)
- Data and Information Visualization (CISC3015)
- Cloud Computing and Big Data Systems (CISC3018)
- Machine Learning (CISC3023)
- Pattern Recognition (CISC3024)
- Natural Language Processing (CISC3025)

Remark:

* Students who test out this course should take GEGA1000 in this semester. They are required to make up the credits by taking additional Free Elective(s) later.
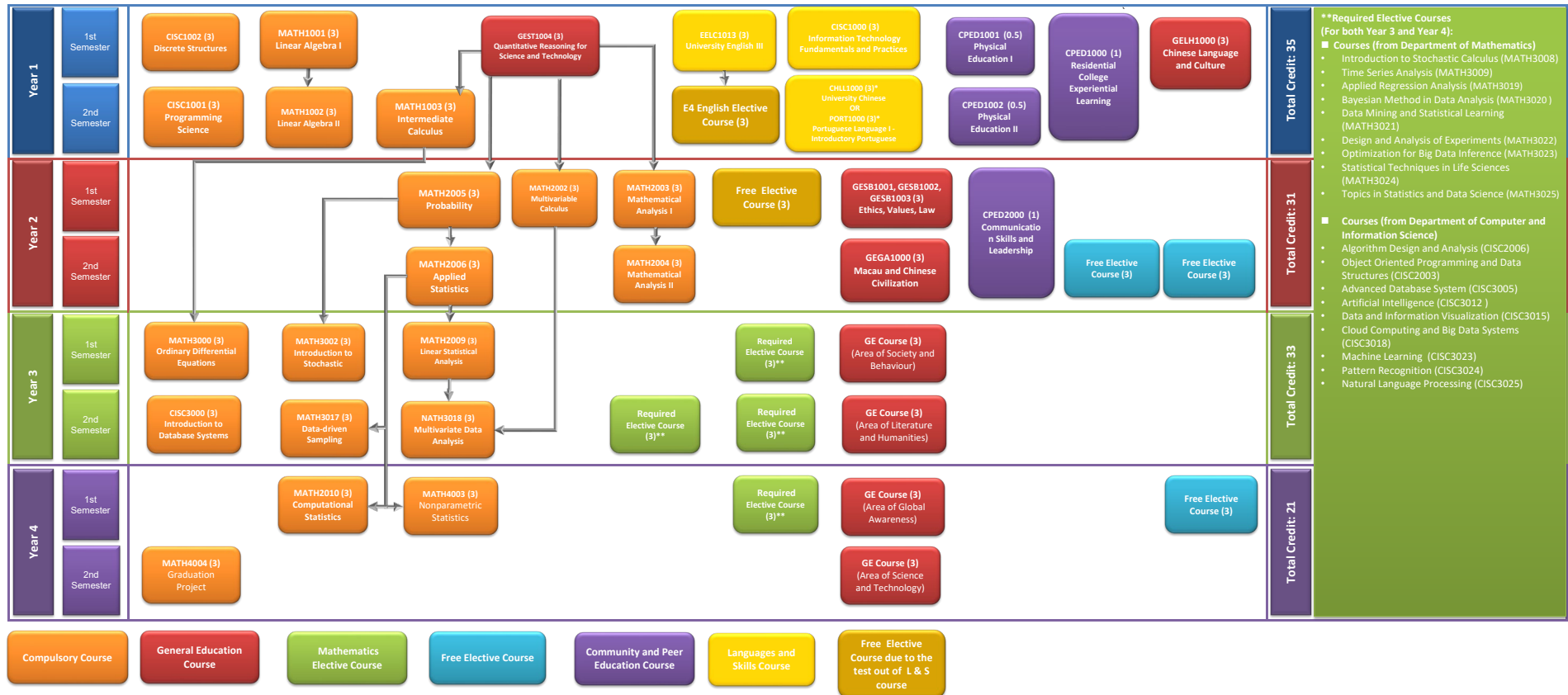
Statistics and Data Science Stream (SDS19, E2)

Year 1

1st Semester / 2nd Semester — Total Credit: 35

- CISC1002 (3) Discrete Structures
- MATH1001 (3) Linear Algebra I
- GEST1004 (3) Quantitative Reasoning for Science and Technology
- EELC1012 (3) University English II
- CISC1000 (3) Information Technology Fundamentals and Practices
- CPED1001 (0.5) Physical Education I
- CPED1000 (1) Residential College Experiential Learning
- GELH1000 (3) Chinese Language and Culture
- CISC1001 (3) Programming Science
- MATH1002 (3) Linear Algebra II
- MATH1003 (3) Intermediate Calculus
- EELC1013 (3) University English III
- CHL11000 (3)* University Chinese OR PORT1000 (3)* Portuguese Language I - Introductory Portuguese
- CPED1002 (0.5) Physical Education II

Year 2

1st Semester / 2nd Semester — Total Credit: 31

- MATH2005 (3) Probability
- MATH2002 (3) Multivariable Calculus
- MATH2003 (3) Mathematical Analysis I
- Free Elective Course (3)
- GESB1001, GESB1002, GESB1003 (3) Ethics, Values, Law
- CPED2000 (1) Communication Skills and Leadership
- MATH2006 (3) Applied Statistics
- MATH2004 (3) Mathematical Analysis II
- GEGA1000 (3) Macau and Chinese Civilization
- Free Elective Course (3)
- Free Elective Course (3)

Year 3

1st Semester / 2nd Semester — Total Credit: 33

- MATH3000 (3) Ordinary Differential Equations
- MATH3002 (3) Introduction to Stochastic
- MATH2009 (3) Linear Statistical Analysis
- Required Elective Course (3)**
- GE Course (3) (Area of Society and Behaviour)
- CISC3000 (3) Introduction to Database Systems
- MATH3017 (3) Data-driven Sampling
- NATH3018 (3) Multivariate Data Analysis
- Required Elective Course (3)**
- Required Elective Course (3)**
- GE Course (3) (Area of Literature and Humanities)

Year 4

1st Semester / 2nd Semester — Total Credit: 21

- MATH2010 (3) Computational Statistics
- MATH4003 (3) Nonparametric Statistics
- Required Elective Course (3)**
- GE Course (3) (Area of Global Awareness)
- Free Elective Course (3)
- MATH4004 (3) Graduation Project
- GE Course (3) (Area of Science and Technology)

Required Elective Courses (For both Year 3 and Year 4):

■ Courses (from Department of Mathematics)
- Introduction to Stochastic Calculus (MATH3008)
- Time Series Analysis (MATH3009)
- Applied Regression Analysis (MATH3019)
- Bayesian Method in Data Analysis (MATH3020)
- Data Mining and Statistical Learning (MATH3021)
- Design and Analysis of Experiments (MATH3022)
- Optimization for Big Data Inference (MATH3023)
- Statistical Techniques in Life Sciences (MATH3024)
- Topics in Statistics and Data Science (MATH3025)

■ Courses (from Department of Computer and Information Science)
- Algorithm Design and Analysis (CISC2006)
- Object Oriented Programming and Data Structures (CISC2003)
- Advanced Database System (CISC3005)
- Artificial Intelligence (CISC3012)
- Data and Information Visualization (CISC3015)
- Cloud Computing and Big Data Systems (CISC3018)
- Machine Learning (CISC3023)
- Pattern Recognition (CISC3024)
- Natural Language Processing (CISC3025)

Legend:
- Compulsory Course
- General Education Course
- Mathematics Elective Course
- Free Elective Course
- Community and Peer Education Course
- Languages and Skills Course
- Free Elective Course due to the test out of L & S course

Remark:
* Students who test out of some or all of the Languages and Skills course(s) are required to make up the credits by taking additional Free Elective(s).
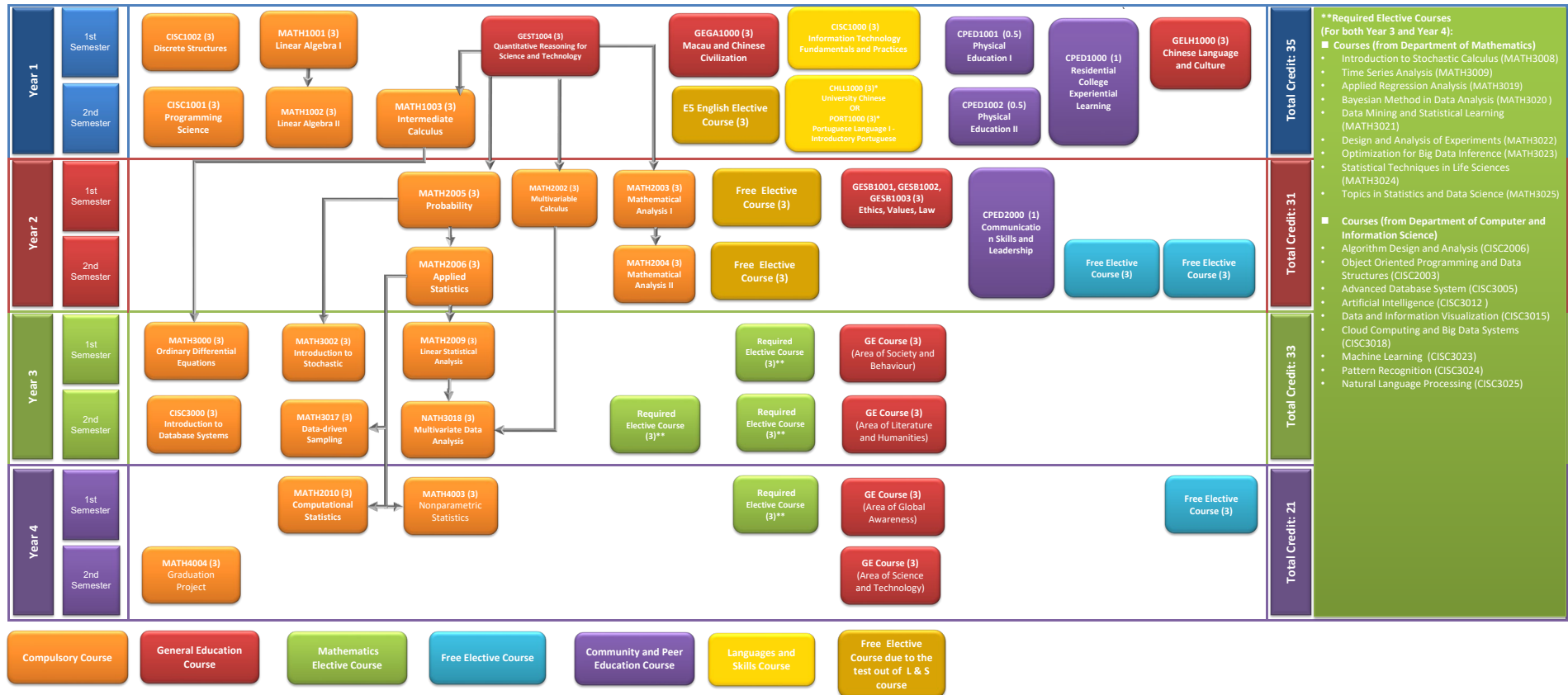
Statistics and Data Science Stream (SDS19, E3)

Year 1

1st Semester / 2nd Semester

- CISC1002 (3) Discrete Structures
- MATH1001 (3) Linear Algebra I
- GEST1004 (3) Quantitative Reasoning for Science and Technology
- EELC1013 (3) University English III
- CISC1000 (3) Information Technology Fundamentals and Practices
- CPED1001 (0.5) Physical Education I
- CPED1000 (1) Residential College Experiential Learning
- GELH1000 (3) Chinese Language and Culture
- CISC1001 (3) Programming Science
- MATH1002 (3) Linear Algebra II
- MATH1003 (3) Intermediate Calculus
- E4 English Elective Course (3)
- CHLL1000 (3)* University Chinese OR PORT1000 (3)* Portuguese Language I – Introductory Portuguese
- CPED1002 (0.5) Physical Education II

Total Credit: 35

Year 2

1st Semester / 2nd Semester

- MATH2005 (3) Probability
- MATH2002 (3) Multivariable Calculus
- MATH2003 (3) Mathematical Analysis I
- Free Elective Course (3)
- GESB1001, GESB1002, GESB1003 (3) Ethics, Values, Law
- CPED2000 (1) Communication Skills and Leadership
- MATH2006 (3) Applied Statistics
- MATH2004 (3) Mathematical Analysis II
- GEGA1000 (3) Macau and Chinese Civilization
- Free Elective Course (3)
- Free Elective Course (3)

Total Credit: 31

Year 3

1st Semester / 2nd Semester

- MATH3000 (3) Ordinary Differential Equations
- MATH3002 (3) Introduction to Stochastic
- MATH2009 (3) Linear Statistical Analysis
- Required Elective Course (3)**
- GE Course (3) (Area of Society and Behaviour)
- CISC3000 (3) Introduction to Database Systems
- MATH3017 (3) Data-driven Sampling
- NATH3018 (3) Multivariate Data Analysis
- Required Elective Course (3)**
- Required Elective Course (3)**
- GE Course (3) (Area of Literature and Humanities)

Total Credit: 33

Year 4

1st Semester / 2nd Semester

- MATH2010 (3) Computational Statistics
- MATH4003 (3) Nonparametric Statistics
- Required Elective Course (3)**
- GE Course (3) (Area of Global Awareness)
- Free Elective Course (3)
- MATH4004 (3) Graduation Project
- GE Course (3) (Area of Science and Technology)

Total Credit: 21

Legend

- Compulsory Course
- General Education Course
- Mathematics Elective Course
- Free Elective Course
- Community and Peer Education Course
- Languages and Skills Course
- Free Elective Course due to the test out of L & S course

**Required Elective Courses (For both Year 3 and Year 4):

- ■ Courses (from Department of Mathematics)
  - Introduction to Stochastic Calculus (MATH3008)
  - Time Series Analysis (MATH3009)
  - Applied Regression Analysis (MATH3019)
  - Bayesian Method in Data Analysis (MATH3020)
  - Data Mining and Statistical Learning (MATH3021)
  - Design and Analysis of Experiments (MATH3022)
  - Optimization for Big Data Inference (MATH3023)
  - Statistical Techniques in Life Sciences (MATH3024)
  - Topics in Statistics and Data Science (MATH3025)

- ■ Courses (from Department of Computer and Information Science)
  - Algorithm Design and Analysis (CISC2006)
  - Object Oriented Programming and Data Structures (CISC2003)
  - Advanced Database System (CISC3005)
  - Artificial Intelligence (CISC3012)
  - Data and Information Visualization (CISC3015)
  - Cloud Computing and Big Data Systems (CISC3018)
  - Machine Learning (CISC3023)
  - Pattern Recognition (CISC3024)
  - Natural Language Processing (CISC3025)

Remark:

* Students who test out of some or all of the Languages and Skills course(s) are required to make up the credits by taking additional Free Elective(s).

Statistics and Data Science Stream (SDS19, E5)

Year 1

1st Semester / 2nd Semester

CISC1002 (3) Discrete Structures	MATH1001 (3) Linear Algebra I	GEST1004 (3) Quantitative Reasoning for Science and Technology
CISC1001 (3) Programming Science	MATH1002 (3) Linear Algebra II	MATH1003 (3) Intermediate Calculus

- GEGA1000 (3) Macau and Chinese Civilization
- CISC1000 (3) Information Technology Fundamentals and Practices
- CPED1001 (0.5) Physical Education I
- CPED1000 (1) Residential College Experiential Learning
- GELH1000 (3) Chinese Language and Culture
- E5 English Elective Course (3)
- CHLL1000 (3)* University Chinese OR PORT1000 (3)* Portuguese Language I – Introductory Portuguese
- CPED1002 (0.5) Physical Education II

Total Credit: 35

Year 2

1st Semester / 2nd Semester

MATH2005 (3) Probability	MATH2002 (3) Multivariable Calculus	MATH2003 (3) Mathematical Analysis I
MATH2006 (3) Applied Statistics		MATH2004 (3) Mathematical Analysis II

- Free Elective Course (3)
- GESB1001, GESB1002, GESB1003 (3) Ethics, Values, Law
- CPED2000 (1) Communication Skills and Leadership
- Free Elective Course (3)
- Free Elective Course (3)
- Free Elective Course (3)

Total Credit: 31

Year 3

1st Semester / 2nd Semester

MATH3000 (3) Ordinary Differential Equations	MATH3002 (3) Introduction to Stochastic	MATH2009 (3) Linear Statistical Analysis
CISC3000 (3) Introduction to Database Systems	MATH3017 (3) Data-driven Sampling	NATH3018 (3) Multivariate Data Analysis

- Required Elective Course (3)**
- GE Course (3) (Area of Society and Behaviour)
- Required Elective Course (3)**
- Required Elective Course (3)**
- GE Course (3) (Area of Literature and Humanities)

Total Credit: 33

Year 4

1st Semester / 2nd Semester

MATH2010 (3) Computational Statistics	MATH4003 (3) Nonparametric Statistics
MATH4004 (3) Graduation Project	

- Required Elective Course (3)**
- GE Course (3) (Area of Global Awareness)
- GE Course (3) (Area of Science and Technology)
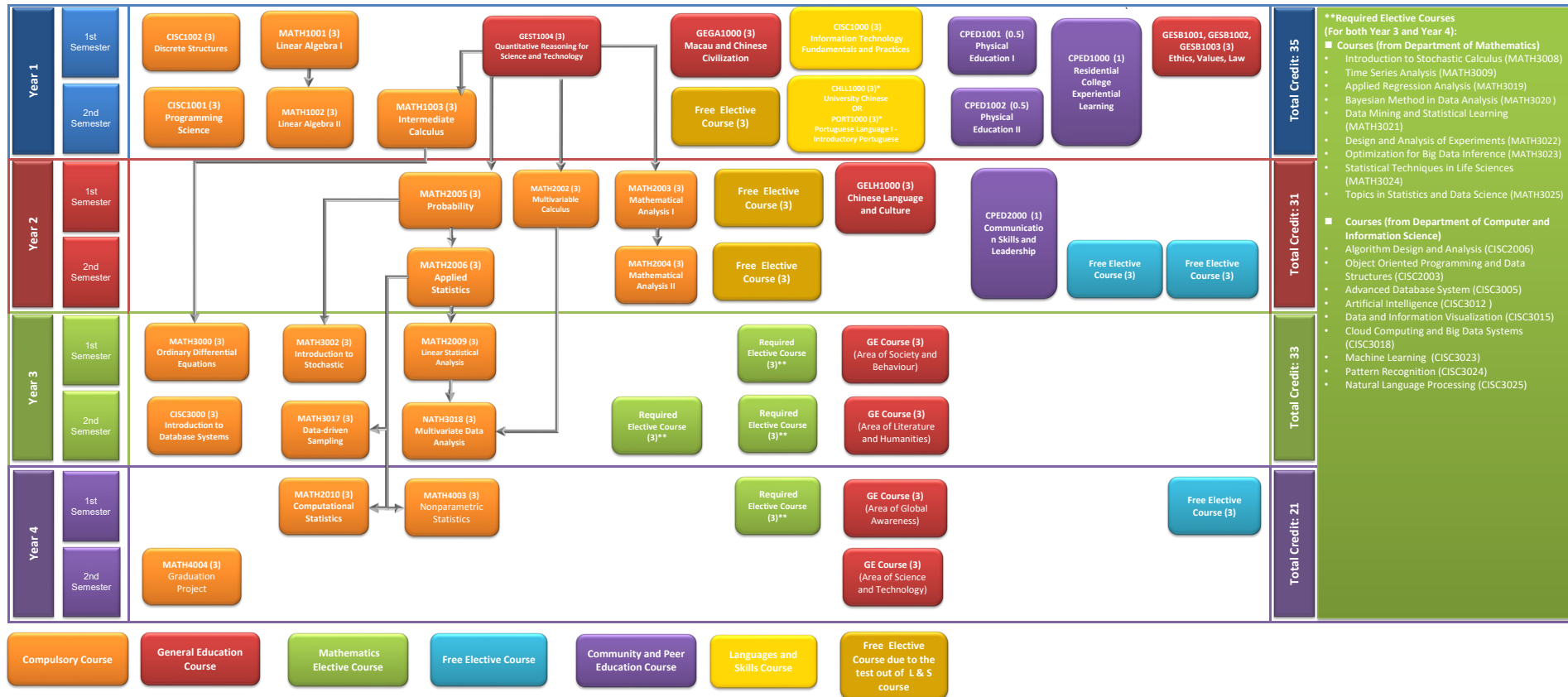- Free Elective Course (3)

Total Credit: 21

Required Elective Courses (For both Year 3 and Year 4):

■ Courses (from Department of Mathematics):
- Introduction to Stochastic Calculus (MATH3008)
- Time Series Analysis (MATH3009)
- Applied Regression Analysis (MATH3019)
- Bayesian Method in Data Analysis (MATH3020)
- Data Mining and Statistical Learning (MATH3021)
- Design and Analysis of Experiments (MATH3022)
- Optimization for Big Data Inference (MATH3023)
- Statistical Techniques in Life Sciences (MATH3024)
- Topics in Statistics and Data Science (MATH3025)

■ Courses (from Department of Computer and Information Science):
- Algorithm Design and Analysis (CISC2006)
- Object Oriented Programming and Data Structures (CISC2003)
- Advanced Database System (CISC3005)
- Artificial Intelligence (CISC3012)
- Data and Information Visualization (CISC3015)
- Cloud Computing and Big Data Systems (CISC3018)
- Machine Learning (CISC3023)
- Pattern Recognition (CISC3024)
- Natural Language Processing (CISC3025)

Legend

Compulsory Course	General Education Course
Mathematics Elective Course	Free Elective Course
Community and Peer Education Course	Languages and Skills Course
Free Elective Course due to the test out of L & S course	

Remark:
* Students who test out of some or all of the Languages and Skills course(s) are required to make up the credits by taking additional Free Elective(s).

Statistics and Data Science Stream (SDS19, EngCW)

Year 1

1st Semester

- CISC1002 (3) Discrete Structures
- MATH1001 (3) Linear Algebra I
- GEST1004 (3) Quantitative Reasoning for Science and Technology
- GEGA1000 (3) Macau and Chinese Civilization
- CISC1000 (3) Information Technology Fundamentals and Practices
- CPED1001 (0.5) Physical Education I
- CPED1000 (1) Residential College Experiential Learning
- GESB1001, GESB1002, GESB1003 (3) Ethics, Values, Law

2nd Semester

- CISC1001 (3) Programming Science
- MATH1002 (3) Linear Algebra II
- MATH1003 (3) Intermediate Calculus
- Free Elective Course (3)
- CHLL1000 (3)* University Chinese OR PORT1000 (3)* Portuguese Language I – Introductory Portuguese
- CPED1002 (0.5) Physical Education II

Total Credit: 35

Year 2

1st Semester

- MATH2005 (3) Probability
- MATH2002 (3) Multivariable Calculus
- MATH2003 (3) Mathematical Analysis I
- Free Elective Course (3)
- GELH1000 (3) Chinese Language and Culture
- CPED2000 (1) Communication Skills and Leadership

2nd Semester

- MATH2006 (3) Applied Statistics
- MATH2004 (3) Mathematical Analysis II
- Free Elective Course (3)
- Free Elective Course (3)
- Free Elective Course (3)

Total Credit: 31

Year 3

1st Semester

- MATH3000 (3) Ordinary Differential Equations
- MATH3002 (3) Introduction to Stochastic
- MATH2009 (3) Linear Statistical Analysis
- Required Elective Course (3)**
- GE Course (3) (Area of Society and Behaviour)

2nd Semester

- CISC3000 (3) Introduction to Database Systems
- MATH3017 (3) Data-driven Sampling
- NATH3018 (3) Multivariate Data Analysis
- Required Elective Course (3)**
- Required Elective Course (3)**
- GE Course (3) (Area of Literature and Humanities)

Total Credit: 33

Year 4

1st Semester

- MATH2010 (3) Computational Statistics
- MATH4003 (3) Nonparametric Statistics
- Required Elective Course (3)**
- GE Course (3) (Area of Global Awareness)
- Free Elective Course (3)

2nd Semester

- MATH4004 (3) Graduation Project
- GE Course (3) (Area of Science and Technology)

Total Credit: 21

**Required Elective Courses (For both Year 3 and Year 4):

■ Courses (from Department of Mathematics)
- Introduction to Stochastic Calculus (MATH3008)
- Time Series Analysis (MATH3009)
- Applied Regression Analysis (MATH3019)
- Bayesian Method in Data Analysis (MATH3020)
- Data Mining and Statistical Learning (MATH3021)
- Design and Analysis of Experiments (MATH3022)
- Optimization for Big Data Inference (MATH3023)
- Statistical Techniques in Life Sciences (MATH3024)
- Topics in Statistics and Data Science (MATH3025)

■ Courses (from Department of Computer and Information Science)
- Algorithm Design and Analysis (CISC2006)
- Object Oriented Programming and Data Structures (CISC2003)
- Advanced Database System (CISC3005)
- Artificial Intelligence (CISC3012)
- Data and Information Visualization (CISC3015)
- Cloud Computing and Big Data Systems (CISC3018)
- Machine Learning (CISC3023)
- Pattern Recognition (CISC3024)
- Natural Language Processing (CISC3025)

Legend

- Compulsory Course
- General Education Course
- Mathematics Elective Course
- Free Elective Course
- Community and Peer Education Course
- Languages and Skills Course
- Free Elective Course due to the test out of L & S course

Remark:

* Students who test out of some or all of the Languages and Skills course(s) are required to make up the credits by taking additional Free Elective(s).