Addendum to the 2016-2017 Undergraduate Catalog

ENGLISH

TOMMY ZURHELLEN, M.F.A., *Chairperson*

MISSION:
The English program offers concentrations in literature, writing, and theatre; the goals and principles underlying these concentrations are the same:
  (1) To increase the student's appreciation and understanding of the literary, pragmatic, rhetorical, and dramatic uses of language.
  (2) To develop the student's ability to write effectively in a variety of situations.
  (3) To help the student become more receptive to the many-sided pleasures of reading, writing, and oral presentation.
  (4) To enable the student to see how literary and nonliterary texts illuminate the complexity of human experience.
  (5) To heighten the student's awareness of the moral and ethical implications of literary and nonliterary texts.
  (6) To foster the student's intellectual, aesthetic, and professional creativity.

The professional goals of the three concentrations are similar:
  (1) To prepare students for careers utilizing analytical writing skills and/or performance skills in such fields as business, industry, education, government, theatre, and media.
  (2) To prepare students for graduate studies in literature and writing and in fields that require analytic, interpretive, and writing skills.
  (3) In conjunction with the Teacher Education Program, to prepare students for careers in secondary education.

THEATRE PROGRAM
The Theatre Program is the production laboratory to the English Department's Concentration in Theatre and Theatre Minor. Open to students of all majors, the Theatre Program produces two mainstage productions per year, professional workshops and student projects. A host of theatre courses are offered each year as well. The Marist Theatre Program also includes the student-theatre organization, MCCTA. MCCTA produces several productions a year, including a musical, a comedy or drama, an original play festival and an improv troupe.

WRITING PROGRAM
The Writing Program includes not only the variety of courses offered by the English Department's Concentration in Writing and Creative Writing Minor, but also the diverse array of student events and activities of interest to writers outside the classroom. This includes regular visits to campus by established writers in all genres, student readings, excursions to places of literary interest, and popular campus-wide events like the Red Fox Poetry slam. All Marist students are welcome to participate in Writing Program events, regardless of major. Student organizations like the Literary Arts Society and Sigma Tau Delta (English Honors Society) are active in planning many of these annual events, and always welcome new members.

CONCENTRATION IN LITERATURE
The literature concentration provides students with a sense of the historical development of the Western literary tradition, especially that of English and American Literature. Students also examine how that tradition is continually re-formed and reshaped as writers from previously excluded cultural traditions and once-marginalized groups are added to the canon. Students in the concentration develop the analytical skills and the critical language to describe, analyze, and evaluate literary texts.
    Internships within the English department offer students the opportunity to gain experience in research and teaching, while internships in the private and public sectors present students with the opportunity to gain work experience that utilizes the analytical, interpretive, and writing skills that the concentration fosters.

CONCENTRATION IN WRITING
The writing concentration develops the student's skills in a number of different forms: literary writing, technical and professional communication, print, and writing on-line. Students also have the opportunity to fulfill requirements for the concentration by taking writing courses offered by other divisions of the College (e.g., Writing for Radio and TV and a variety of Journalism courses).
    Internships with business, media, and civic organizations offer students in the writing concentration the opportunity to gain work experience that utilizes the writing and analytical skills that the concentration develops.

CONCENTRATION IN THEATRE
The concentration in theatre offers the student the opportunity to study theatre as the written and spoken work combined with movement in the art of performance.
    The play is studied for its literary qualities and as a blueprint for production. New, exciting approaches to interrogating the text and describing the complexity of its sign-system come from changes in the nature and function of literary criticism. While some courses include scene studies, others may be tied to on-campus productions.

Internships in the broad arena of theatre-related activities are possible and require significant dedication to skill development related to the specific focus of the individual internship.

HONORS IN ENGLISH

Up to 10% of graduating seniors in English will be awarded honors in the major on the basis of demonstrated excellence and achievement. Departmental faculty will select recipients each spring from among seniors meeting the following criteria:

(a) a minimum of 60 credits earned at Marist College; a minimum of 27 credits earned in English at Marist College;

(b) a minimum cumulative G.P.A. of 3.25 overall;

(c) a minimum G.P.A. of 3.5 in English courses;

(d) distinguished achievement in a senior Capping Course project, which may take as its focus (1) research, (2) analysis, or (3) creative expression.

REQUIREMENTS FOR A BACHELOR OF ARTS IN ENGLISH

Concentration in Literature

Note: A minimum of 60 credits in Liberal Arts is required.

1.0	Major Foundation Courses:	12 cr
	ENG 270 Classics of Western Literature I	
	ENG 271 Classics of Western Literature II	
	ENG 180 Literary Study	
	ENG 222 Introduction to Professional Writing or	
	ENG 280 Introduction to Creative Writing	
1.2	Upper-Level Distribution (all courses at 300 level or higher)	18 cr
	(Must be chosen in consultation with academic advisor)	
	Any six literature courses of 300-level or above, including	
	at least one of each of the following:	
	1 ethnic, global, or foreign language literature course	
	1 junior/senior research seminar	
1.3	Theory Course at the 300 level or higher	3 cr
1.4	Writing Electives	6 cr
	2 writing courses at the 300 level or higher, of which	
	one may be a three-credit internship or a 300 level Theatre course	
1.5	Capping Course	<u>3 cr</u>
	ENG 477	

Credit Requirement for the Concentration in Literature   42 cr

Notes: (a) A student may substitute a maximum of one 3-credit course in Independent Research for a required upper-level course.
         (b) A student may apply a maximum of one literature-in-translation course toward an English major.

2.0	Course Requirements in Related Fields: Foreign Language:	
	Two courses at the elementary level or	
	one course at the intermediate level or above	<u>3-6 cr</u>

Total Credit Requirement for a Major in English   45-48 cr

3.0	Core/Liberal Studies Requirements	
3.1	FOUNDATION	
	FYS 101 First Year Seminar	4 cr
	ENG 120 Writing for College	<u>3 cr</u>
		7 cr

3.2   DISTRIBUTION
      Breadth
          PHIL 101 Philosophical Perspectives   3 cr
          Ethics, Applied Ethics, or Religious Studies   3 cr
          Fine Arts   3 cr
          History   3 cr
          Literature   0 cr   (fulfilled by major field req.)
          Mathematics   3 cr
          Natural Science   3 cr
          Social Science   <u>3 cr</u>
                                                                                  21 cr

      Pathway*   <u>12 cr</u>
          Courses addressing an interdisciplinary topic.

Total Core/Liberal Studies Requirement   40 cr

4.0   Electives   <u>32-35 cr</u>

Total Credit Requirement for Graduation   120 cr

5.0   Students are encouraged to pursue a minor in a different field to give structure and coherence to their programs.

*
Breadth and Pathway courses may overlap, but all students must take a total of 36 distribution credits (including related field requirements). Students majoring in Breadth areas may apply a maximum of 6 credits to their distribution total. If applicable to a Pathway, 3 credits may come from disciplines outside of Core Breadth areas. Although foreign language and culture courses are not required within the Core, some courses in these fields may be used to fulfill distribution requirements. See the Core/LS Program website for a detailed list of all courses that satisfy distribution requirements.

REQUIREMENTS FOR A BACHELOR OF ARTS IN ENGLISH

Concentration in Writing

Note: A minimum of 60 credits in Liberal Arts is required.

1.0   Major Foundation Courses: 12 cr
          ENG 270 Classics of Western Literature I
          ENG 271 Classics of Western Literature II
          ENG 185 Writing as a Discipline
          ENG 222 Introduction to Professional Writing or
              ENG 280 Introduction to Creative Writing

1.1   Writing Foundation Course: 3 cr
          ENG 218 Grammar, Style, and Editing

1.2   Upper-Level Writing Requirement   15 cr
          1 theory course at the 300-level or higher
          4 writing courses at the 300-level or higher, one of which
              may be a three-credit writing internship

1.3   Upper-Level Literature Requirement   9 cr
          Three 300-level literature courses

1.4   Capping Course   <u>3 cr</u>
          ENG 477

Credit Requirement for the Concentration in Writing   42 cr

2.0   Course Requirements in Related Fields: Foreign Language:

Two courses at the elementary level or one course at the intermediate level or above		3-6 cr	

Total Credit Requirement for a Major in English   45-48 cr

3.0   Core/Liberal Studies Requirements

3.1   FOUNDATION
       FYS 101 First Year Seminar   4 cr
       ENG 120 Writing for College   3 cr
                                                                       7 cr

3.2   DISTRIBUTION
       Breadth
       PHIL 101 Philosophical Perspectives   3 cr
       Ethics, Applied Ethics, or Religious Studies   3 cr
       Fine Arts   3 cr
       History   3 cr
       Literature   0 cr   (fulfilled by major field req.)
       Mathematics   3 cr
       Natural Science   3 cr
       Social Science   3 cr
                                                                       21 cr

       Pathway*   12 cr
          Courses addressing an interdisciplinary topic.

Total Core/Liberal Studies Requirement   40 cr

4.0   Electives   32-35 cr

Total Credit Requirement for Graduation   120 cr

5.0   Students are encouraged to pursue a minor in a different field to give structure and coherence to their programs.

*
Breadth and Pathway courses may overlap, but all students must take a total of 36 distribution credits (including related field requirements). Students majoring in Breadth areas may apply a maximum of 6 credits to their distribution total. If applicable to a Pathway, 3 credits may come from disciplines outside of Core Breadth areas. Although foreign language and culture courses are not required within the Core, some courses in these fields may be used to fulfill distribution requirements. See the Core/LS Program website for a detailed list of all courses that satisfy distribution requirements

REQUIREMENTS FOR A BACHELOR OF ARTS IN ENGLISH

Concentration in Theatre

Note: A minimum of 60 credits in Liberal Arts is required.

1.0   Major Foundation Courses: 12 cr
       ENG 270 Classics of Western Literature
       ENG 150 Introduction to Theatre
       ENG 180 Literary Study
       ENG 185 Writing as a Discipline

1.2   Course Requirements in sophomore, junior, and senior year are:
       Ten courses selected as follows:
       Five Theatre Arts Courses: 15 cr
          ENG 227 Acting I
          ENG 229 Theatre Practicum (one credit, may be taken up to three times
             for a total of three credits)

ENG 241 Acting II
ENG 310 Playwriting Workshop
ENG 349 Acting III
ENG 350 Directing
ENG 451 Theatre Workshop
Appropriate Special-Topics Course

Five Dramatic Literature Courses: 15 cr
ENG 325 Shakespeare
  AND
Four of the following:
ENG 320 English Drama I
ENG 321 English Drama II
ENG 340 American Drama I
ENG 341 American Drama II
ENG 355 History of the Modern Theatre
ENG 363 Modern Drama
Appropriate Special-Topics Course

1.3   Capping Course   3 cr
       ENG 477

Credit Requirement for the Concentration in Theatre   45 cr

Notes: (a) A student may substitute ENG 497 Internship in English Theatre for one upper-level Theatre Arts or Dramatic Literature course.
(b) A student may substitute a maximum of one 3-credit course in Independent Research for a required upper-level course.
(c) A student may apply a maximum of one appropriate literature-in-translation course toward an upper-level Dramatic Literature requirement.

2.0   Courses Required in Related Fields: Foreign Language:
       Two courses at the elementary level or one course
       at the intermediate level or above   3-6 cr

Total Credit Requirement for a Major in English   48-51 cr

3.0   Core/Liberal Studies Requirements

3.1   FOUNDATION
       FYS 101 First Year Seminar   4 cr
       ENG 120 Writing for College   3 cr
                                                                    7 cr

3.2   DISTRIBUTION
       Breadth
       PHIL 101 Philosophical Perspectives   3 cr
       Ethics, Applied Ethics, or Religious Studies   3 cr
       Fine Arts   3 cr
       History   3 cr
       Literature   0 cr   (fulfilled by major field req.)
       Mathematics   3 cr
       Natural Science   3 cr
       Social Science   3 cr
                                                                    21 cr

       Pathway*   12 cr
       Courses addressing an interdisciplinary topic.

Total Core/Liberal Studies Requirement   40 cr

4.0   Electives   29-32 cr

Total Credit Requirement for Graduation   120 cr

*

Breadth and Pathway courses may overlap, but all students must take a total of 36 distribution credits (including related field requirements). Students majoring in Breadth areas may apply a maximum of 6 credits to their distribution total. If applicable to a Pathway, 3 credits may come from disciplines outside of Core Breadth areas. Although foreign language and culture courses are not required within the Core, some courses in these fields may be used to fulfill distribution requirements. See the Core/LS Program website for a detailed list of all courses that satisfy distribution requirements.

REQUIREMENTS FOR NEW YORK STATE TEACHER CERTIFICATION IN ADOLESCENCE EDUCATION: ENGLISH (GRADES 7-12)

Marist College offers a state-approved program leading to initial teacher certification in Adolescence Education: English (Grades 7-12). Students seeking this certification are encouraged to consult with their academic advisor and the Coordinator of Adolescence Education in the Teacher Education Department. Because of the significant number of state certification requirements for this program, it is important that students seek such advisement early in their college careers, during the freshman year if possible. Education and related field requirements for Adolescence Education certification can be found on page 102 of this catalog.

REQUIREMENTS FOR A MINOR IN ENGLISH

1.0   Foundation Courses   6 cr
      ENG 180 Introduction to Literary Study
      ENG 270 Classics of Western Literature

2.0   Any four 300-400 level literature courses   <u>12 cr</u>
      (not to include writing workshops or theatre arts courses)

Total Credit Requirement for a Minor In English Literature   18 cr

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REQUIREMENTS FOR A MINOR IN THEATRE

1.0   Foundation Course   3 cr
      ENG 150 Introduction to Theatre

2.0   Required Course   3 cr
      ENG 325 Shakespeare

Any two of the following sequences: <u>12 cr</u>

3.0   Performance Sequence
Two of the following:
      ENG 227 Acting I
      ENG 241 Acting II
      ENG 349 Acting III (NOTE: This course can also count as part of the Production sequence.)
      Appropriate Special-Topics course

4.0   Production Sequence
Two of the following:
      ENG 229 Theatre Practicum (one credit, may be taken up to three times for a total of three credits)
      ENG 310 Workshop in Playwriting
      ENG 349 Acting III
      ENG 350 Directing
      ENG 451 Theatre Workshop
      Appropriate Special-Topics course

5.0   Dramatic Literature Sequence
Two of the following:
      ENG 320 English Drama I

ENG 321 English Drama II
ENG 340 American Drama I
ENG 341 American Drama II
ENG 355 History of Modern Theatre
ENG 363 Modern Drama
Appropriate Special-Topics course

Total Credit Requirement for a Minor in Theatre 18 cr

REQUIREMENTS FOR A MINOR IN PROFESSIONAL WRITING

1.0 Foundation Courses 9 cr
ENG 185 Writing as a Discipline
ENG 218 Grammar, Style, and Editing
ENG 230 Workshop in Editing and Revision

2.0 Upper-Level Writing Requirements 9 cr
Three 300-level writing courses
(May include Independent Writing Project or Internship)

Total Credit Requirement for a Minor in Writing 18 cr

REQUIREMENTS FOR A MINOR IN CREATIVE WRITING

1.0 Foundation Course
ENG 280 Introduction to Creative Writing 3 cr

2.0 Required Course
ENG 218 Grammar, Style and Editing 3 cr

3.0 Four (4) of the following courses:
ENG 310 Playwriting Workshop
ENG 311 Poetry Workshop
ENG 380 Nonfiction Workshop
ENG 382 Fiction Workshop
ENG 392 Special Topics (in Writing)
ENG 490 Independent Writing Project 12 cr

4.0 Any one (1) Forms (ENG 318) class in Playwriting, Poetry,
Fiction or Nonfiction 1 cr

Total Credit Requirement for a Minor in Creative Writing 19 cr

RECOMMENDED PROGRAM SEQUENCE FOR A BACHELOR OF ARTS IN ENGLISH (LITERATURE)

FRESHMAN YEAR

FALL		**SPRING**	
FYS 101 First Year Seminar	4 cr	Core/LS	3 cr
PHIL 101 Philosophical Perspectives	3 cr	Core/LS	3 cr
ENG 120 Writing for College	3 cr	Elective or minor	3 cr
English Foundation Course	3 cr	English Foundation Course	3 cr
English Foundation Course	3 cr	English Foundation Course	3 cr
	16 cr		15 cr

SOPHOMORE YEAR

FALL		**SPRING**	
Core/LS	3 cr	Core/LS	3 cr

Core/LS	3 cr		Core/LS	3 cr
Foreign Language	3 cr		Foreign Language	3 cr
Upper Level	3 cr		Upper Level	3 cr
Elective or minor	3 cr		Upper Level	3 cr
	15 cr			15 cr

JUNIOR YEAR

FALL			**SPRING**	
Core/LS	3 cr		Core/LS	3 cr
Core/LS	3 cr		Core/LS or elective or minor	3 cr
Upper Level	3 cr		Upper Level	3 cr
Upper Level	3 cr		Upper Level	3 cr
Elective or minor	3 cr		Elective or minor	3 cr
	15 cr			15 cr

SENIOR YEAR

FALL			**SPRING**	
Core/LS or minor	3 cr		ENG 477 English Capping	3 cr
Core/LS or elective or minor	3 cr		Upper Level	3 cr
Elective or minor	3 cr		Core/LS or minor	3 cr
Upper Level	3 cr		Elective or minor	3 cr
English Elective	3 cr		Elective or minor	2 cr
	15 cr			14 cr

RECOMMENDED PROGRAM SEQUENCE FOR A BACHELOR OF ARTS IN ENGLISH (THEATRE)

FRESHMAN YEAR

FALL			**SPRING**	
FYS 101 First Year Seminar	4 cr		Core/LS	3 cr
PHIL 101 Philosophical Perspectives	3 cr		Core/LS	3 cr
ENG 120 Writing for College	3 cr		Core/LS	3 cr
English Foundation Course	3 cr		English Foundation Course	3 cr
English Foundation Course	3 cr		English Foundation Course	3 cr
	16 cr			15 cr

SOPHOMORE YEAR

FALL			**SPRING**	
Core/LS	3 cr		Core/LS	3 cr
Core/LS	3 cr		Core/LS	3 cr
Foreign Language	3 cr		Foreign Language	3 cr
Upper Level Dramatic Literature	3 cr		Upper Level Dramatic Literature	3 cr
Theatre Arts Course	3 cr		Theatre Arts Course	3 cr
	15 cr			15 cr

JUNIOR YEAR

FALL			**SPRING**	
Core/LS	3 cr		Core/LS	3 cr
Core/LS	3 cr		Core/LS or elective or minor	3 cr
Upper Level Dramatic Literature	3 cr		Upper Level Dramatic Literature	3 cr
Theatre Arts Course	3 cr		Theatre Arts Course	3 cr
Elective or minor	3 cr		Elective or minor	3 cr
	15 cr			15 cr

SENIOR YEAR

FALL			**SPRING**	
Core/LS or minor	3 cr		ENG 477 English Capping	3 cr
Core/LS or minor	3 cr		Theatre Arts Course	3 cr
Elective or minor	3 cr		Core/LS or elective or minor	3 cr
Elective or minor	3 cr		Elective or minor	3 cr
Upper Level Dramatic Literature	3 cr		Elective or minor	2 cr
	15 cr			14 cr

RECOMMENDED PROGRAM SEQUENCE FOR A BACHELOR OF ARTS IN ENGLISH (WRITING)

FRESHMAN YEAR

FALL

FYS 101 First Year Seminar	4 cr
PHIL 101 Philosophical Perspectives	3 cr
ENG 120 Writing for College	3 cr
English Foundation Course	3 cr
English Foundation Course	3 cr
	16 cr

SPRING

Core/LS	3 cr
Core/LS	3 cr
Elective or minor	3 cr
English Foundation Course	3 cr
English Foundation Course	3 cr
	15 cr

SOPHOMORE YEAR

FALL

Core/LS	3 cr
Core/LS	3 cr
Foreign Language	3 cr
Upper Level Literature	3 cr
Writing Foundation	3 cr
	15 cr

SPRING

Core/LS	3 cr
Core/LS	3 cr
Foreign Language	3 cr
Upper Level Writing Course	3 cr
Writing Foundation	3 cr
	15 cr

JUNIOR YEAR

FALL

Core/LS	3 cr
Core/LS	3 cr
Upper Level Writing Course	3 cr
Upper Level Literature	3 cr
Elective or minor	3 cr
	15 cr

SPRING

Core/LS	3 cr
Core/LS or elective or minor	3 cr
Upper Level Writing Course	3 cr
ENG 490 or Internship	3 cr
Elective or minor	3cr
	15 cr

SENIOR YEAR

FALL

Core/LS or minor	3 cr
Core/LS or elective or minor	3 cr
Elective or minor	3 cr
Upper Level Literature	3 cr
Upper Level Writing Course	3 cr
	15 cr

SPRING

ENG 477 English Capping	3 cr
Upper Level Theory	3 cr
Core/LS or minor	3 cr
Elective or minor	3 cr
Elective or minor	2 cr
	14 cr

DATA SCIENCE AND ANALYTICS

JOSEPH KIRTLAND, PhD, *Chairperson, Dept. of Mathematics*

MATTHEW JOHNSON, Ms, *Chairperson, Dept. of Computing Technology*

MISSION:

Data Science & Analytics builds on a core of computer science, information technology and systems, mathematics and statistics. Data Science is, in simple terms, the extraction of knowledge from data. Analytics is a sister term, used mostly in business settings to characterize the analysis of business data to describe, predict, and improve business performance. These disciplines include statistical analysis, machine learning, data mining, probabilistic modeling, computer programming, distributed and high performance computing, and database management. Graduates of the data science & analytics program develop a thorough understanding of the field, learn to manage data effectively, are prepared to apply statistical techniques for the analysis of data, and learn to explore data, communicate data analysis findings through visualizations and build models from data to describe phenomena and make predictions on future occurrences and events. Students in this program learn to develop large scale data mining applications, as well as implementing algorithms and designing, building and managing large, distributed data ("big data") systems.

REQUIREMENTS FOR A BACHELOR OF SCIENCE IN DATA SCIENCE AND ANALYTICS

Note: A minimum of 60 credits in Liberal Arts is required.

1.0   Course Requirements in Major Field

CMPT 120	Introduction to Programming	4 cr	
CMPT 220	Software Development I	4 cr	
CMPT 435	Algorithm Analysis & Design	4 cr	
CMPT 308	Database Management	4 cr	
CMPT 428	Data & Information Mgmt	4 cr	
DATA 220	Introduction to Data Analysis	4 cr	
DATA 300	Data Visualization	3 cr	
DATA 440	Machine Learning	4 cr	
DATA 450	Data Mining & Predictive Analytics	3 cr	
DATA 477	Data Science Project (capstone)	3 cr	
MATH 241	Calculus I	4 cr	
MATH 242	Calculus II	4 cr	
MATH 343	Calculus III	4 cr	
MATH 205	Discrete Mathematics	4 cr	
MATH 210	Linear Algebra	4 cr	
MATH 330	Probability & Statistics	3 cr	
MATH 331	Applied Statistics	3 cr	

1.1	Choose two electives from:	6-7 cr	
CMPT 404	Artificial Intelligence	3 cr	
CMPT 460	Decision Support & Business Intelligence Systems	4 cr	
MATH 412	Computational Linear Algebra	3 cr	
MATH 430	Operations Research	3 cr	

Credit Requirement in Major Field   69-70 cr

2.0   Course Requirements in Related Fields   <u>0 cr</u>

Total Credit Requirement for a Major in Data Science & Analytics   69-70 cr

3.0   Core / Liberal Studies Requirements

3.1   FOUNDATION
FYS 101   First Year Seminar   4 cr
ENG 120   Writing for College   3 cr
Credit Requirement in Foundation   7 cr

3.2   DISTRIBUTION
Breadth
PHIL 101 Philosophical Perspectives   3 cr
Ethics, Applied Ethics, or Religious Studies   3 cr
Fine Arts   3 cr
History   3 cr
Literature 3
Mathematics   0 cr   (fulfilled by major req.)
Natural Science   3 cr
Social Science   3 cr
Credit Requirement in Distribution: Breadth   21 cr

Pathway **
  Courses addressing an interdisciplinary topic   <u>12 cr</u>

Total Credit Requirement for Core / Liberal Studies   40 cr

4.0   General electives and/or Internships   11-10 cr

Total Credit Requirement for Graduation   120 cr

RECOMMENDED PROGRAM SEQUENCE FOR A BACHELOR OF SCIENCE IN DATA SCIENCE AND ANALYTICS

FRESHMAN YEAR

FALL

CMPT 120 Introduction to Programming	4 cr
MATH 241 Calculus I	4 cr
DATA 220 Introduction to Data Analysis	4 cr
FYS 101 First-Year Seminar	4 cr
	16 cr

SPRING

MATH 242 Calculus II	4 cr
CMPT 220 Software Development I	4 cr
PHIL 101 Philosophical Perspectives	3 cr
ENG 120 Writing for College	3 cr
	14 cr

SOPHOMORE YEAR

FALL

MATH 243 Calculus III	4 cr
MATH 205 Discrete Mathematics	4 cr
CMPT 308 Database Management	4 cr
Core/LS	3 cr
	15 cr

SPRING

CMPT 435 Algorithm Analysis & Design	4 cr
DATA 300 Data Visualization	3 cr
MATH 210 Linear Algebra	4 cr
Core/LS	3 cr
	14 cr

JUNIOR YEAR

FALL

MATH 330 Probability & Statistics	3 cr
Major elective	3-4 cr
Core/LS	3 cr
Core/LS	3 cr
Core/LS	3 cr
	15-16 cr

SPRING

DATA 450 Machine Learning	4 cr
CMPT 305 Data & Information Mgmt	4 cr
MATH 331 Applied Statistics	3 cr
Core/LS	3 cr
	14 cr

SENIOR YEAR

FALL

DATA 450 Data Mining & Predictive Analytics	3 cr
Major elective	3 cr
Core/LS	3 cr
Core/LS	3 cr
Elective/ Internship	4 cr
	16 cr

SPRING

DATA 477 Data Science Project (caps)	3 cr
Core/LS	3 cr
Core/LS	3 cr
Elective/ Internship	7-6 cr
	16-15 cr

REQUIREMENTS FOR A MINOR IN SCIENCE IN DATA SCIENCE AND ANALYTICS

CMPT 120 Introduction to Programming	4 cr
MATH 241 Calculus I	4 cr
DATA 220 Introduction to Data Analysis	4 cr
DATA 300 Data Visualization	3 cr
DATA 450 Data Mining & Predictive Analytics	3 cr

Total Credit Requirement for a Minor in Data Science   18 cr

COURSE DESCRIPTIONS

New or updated:

CMPT 120
Introduction to Programming
Four Credits LA
This course introduces students to problem solving with computer programming. Students will study some historical context for problem solving with programming while mastering introductory programming skills including but not limited to user interaction design, procedures, functions, scope, alternation, repetition, collections, and real-world modeling.

CMPT 220
Software Development I
Four Credits LA
This course builds on CMPT 120 to introduce our students to the art and science of software development. Students will study software development history while mastering SD skills including but not limited to real-world modeling and multi-language software development.
Prerequisite: CMPT 120

CMPT 308
Data Management
Three Credits LA
This course examines the theories and concepts employed in database management systems (DBMS). The function of various types of DBMS is described including their purpose, advantages, disadvantages, and applications in business. The course explores the following topics: DBMS architectures, data modeling, the relational model, database normalization, relational algebra, SQL, client/server systems, DB physical design, multiple user environments, database security. The students will work with a major DBMS to develop a database project.
Prerequisites: CMPT 220

CMPT 404
Artificial Intelligence
Three Credits LA
This course is an introduction to the major problems, techniques, and issues of artificial intelligence. Emphasis is placed upon the topics of knowledge representation and problem solving. The languages LISP or PROLOG will be used to illustrate various AI techniques. Offered every fall.
Prerequisite: CMPT 435

CMPT 435
Algorithm Analysis and Design
Three Credits LA
This course continues the study of data abstraction and algorithm complexity from a more mathematically formal viewpoint. Time complexity of algorithms will be examined using Big O notation and worst-, best-, and average-case analyses. The ideas of polynomial-time, NP, exponential, and intractable algorithms will be introduced. Elementary-recurrence relation problems relating to recursive procedures will be solved. Sorting algorithms will be formally analyzed. Strategies of algorithm design such as backtracking, divide and conquer, dynamic programming, and greedy techniques will be emphasized.
Prerequisites: MATH 205, CMPT 220, (CMPT 221 prerequisite waiver for this major)

CMPT 428
Data and Information Management
Four Credits LA
This course aims to introduce the technologies and disciplines responsible for the effective management of data and information in organizations. The course places special focus on those tasks associated with gathering, storing, providing access and analyzing data to help enterprise users make better, faster business decisions. Topics covered include data sourcing, extraction transformation and loading processes, data warehousing architectures, dimensional modeling, online analytical processing, NoSQL and MapReduce / Hadoop architectures for processing of large volumes of (unstructured) data
Prerequisite: CMPT 308

CMPT 460
Decision Support and Business Intelligence Systems
Four Credits LA
This course covers concepts and tools that aid managerial decision making by applying analytic reasoning and computer-based tools to managerial problems. Topics include: mathematical programming, stochastic simulation, decision analysis, data driven decision systems, probabilistic expert systems (Bayesian networks)
Prerequisites: MATH 130 or MATH 2XX (Introduction to Data Analysis)

DATA 220
Introduction to Data Analysis
Four Credits LA
This course introduces the basic ideas and techniques of data science including: exploratory data analysis, experimental design and sampling; relationships between one and several variables including single and multiple regression and two way tables; sampling distributions; inferential statistics for means, proportions, and regression coefficients; simple ANOVA. The course includes a computer lab using an appropriate high level statistical software package such as R. This course is offered every semester.
Prerequisite: Three years of high school mathematics or satisfactory performance on the Mathematics Placement Test

DATA 300
Data Visualization
Three Credits LA
This course provides an introduction to data visualization. Students will learn basic data visualization design and will learn techniques for visualizing multivariate, temporal, text-based, geospatial, hierarchical, and network/graph-based data. Software packages such us R, ggplot2, matplotlib and D3 will be used.
Prerequisite: CMPT 120, DATA 220 (Introduction to Data Analysis)

DATA 440
Machine Learning
Four Credits LA
This course provides a broad introduction to automated learning from data. Machine learning is the name given to the collection of techniques that allow computational systems to adaptively improve their performance by learning from past observed data. The course introduces the theoretical underpinnings of learning from data, the study of learning algorithms, as well as machine learning applications. Topics include: supervised learning (linear models, SVMs, MLPs) and unsupervised learning (K-means, GMMs), learning theory (generalization theory, bias/variance tradeoffs; Vapnik - Chervonenkis dimension); regularization methods, validation and models selection.
Prerequisite: MATH 330, MATH 210, CMPT 435

DATA 450
Data Mining & Predictive Analytics
Three Credits LA
Data Mining & Predictive Analytics is the name given to a group of disciplines, technologies, applications and practices for analyzing data and building models based on data. This course introduces basic concepts, tasks, methods, and techniques in data mining, including data exploration and pre-processing, classification, statistical modeling, association rules, clustering, text mining and web mining, social network analysis. A software package like R or IBM SPSS Modeler will be used.
Prerequisite: DATA 220 (Introduction to Data Analysis)

DATA 477
Data Science Project (CAPSTONE)
Three Credits LA
A project base course for the application of statistical modeling, data mining and machine learning techniques to large data sets. This course is intended only for data science majors.
Prerequisite: DATA 300 (Data Visualization), DATA 440 (Machine Learning), DATA 450 (Data Mining & Predictive Analytics)

ENG 271
Classics of Western Literature II
Three Credits LA
Taken in coordination with ENG 270 Classics of Western Literature I, this course sequence provides students with an overview of the Western literary tradition from classical times to the 21st century. Students will focus on key texts from different chronological periods in order to gain a firm sense of the wider "narrative" underlying the works they will study in upper-level courses. Questions of literary genius, tradition, and adaptation will be central to both courses in the sequence.

ENG 428
Junior/Senior Research Seminar
Three Credits LA
The seminar offers in-depth treatment of topics In genre, historical periods, critical theory, tropes or themes, single authors, and other areas of literary study, with an emphasis on archival and bibliographic research methods. The seminar model allows for greater

classroom participation by each student and more extensive research projects, culminating in a substantial final essay. Topics vary by semester. May be repeated for credit, provided topics are different.

MATH 205
Discrete Mathematics
Four Credits LA
This course introduces the algebraic concepts, methods, and techniques that form the basis of computer science, including the relevant areas of logic, set theory, matrices, graphs, geometric linear algebra, and the theory of relations; functions; bounds; and permutations. Offered every semester.
Prerequisite: Three years of high school mathematics

MATH 210
Linear Algebra
Four Credits LA
This course introduces the theory of vector spaces and linear transformations as abstract systems. Matrices, matrix operations, and determinants are introduced and they are used to study systems of linear equations, characteristic value problems, and various applications. Appropriate technology will be selected by the instructor. This course is offered every semester.
Corequisite: MATH 241 or permission of the instructor

MATH 241
Calculus I
Four Credits
This course introduces the differential and integral calculus of algebraic, trigonometric, exponential, and logarithmic functions on the real line. Limits, continuity, the mean value theorem, and the Fundamental Theorem of Calculus are considered as well as applications using these ideas. Appropriate technology will be selected by the instructor. This course is offered every semester.
Prerequisite: Three years of high school mathematics including trigonometry or MATH 120

MATH 242
Calculus II
Four Credits LA
This course discusses applications of the definite integral as well as techniques of integration. Sequences and series, Taylor's theorem, and polar notation are considered. Appropriate technology will be selected by the instructor.
Prerequisite: MATH 241
Prerequisite: MATH 242

MATH 330
 Probability and Statistics
Three Credits LA
This course is an introduction to probability as a basis for the theory of statistics. The topics covered include sample spaces; conditional probability and independence; discrete and continuous distribution functions; random variables; and joint and marginal probability distributions.
Prerequisite: MATH 343

MATH 331
Applied Statistics
Three Credits LA
This course considers the applications of probability to problems of statistical inference, including correlation, regression, sampling estimation, hypothesis testing, goodness-of-fit tests, and design of experiments. A statistical software package such as R will be used.
Prerequisite: MATH 330.

MATH 343
Calculus III
Four Credits LA
This course introduces multivariate calculus. Topics covered include: vector geometry, functions of several variables, partial derivatives, and multiple integration. As time permits, line and surface integrals, Green's and Stoke's theorems with related topics and their applications, as well as differential equations may be covered. Appropriate technology will be selected by the instructor.

MATH 412
Computational Linear Algebra
Three Credits LA
This course explores some of the computational aspects of linear algebra. It considers both the theoretical and applied mathematical aspects of algorithms and provides the student with opportunities for further development of programming skills.
Prerequisite: MATH 210

MATH 430
Operations Research
Three Credits LA
This course introduces the basic ideas and methods of operations research, considering topics selected from linear programming and the simplex method; transportation problems; sensitivity analysis; graphs and networks; CPM; PERT; dynamic programming; game theory; Markov chains; queueing; birth and death processes; inventory theory; simulation; and computer considerations. Offered biennially in the fall upon sufficient student demand.
Prerequisite: MATH 210