

UNIVERSITY OF THE PHILIPPINES MINDANAO
BACHELOR OF SCIENCE IN DATA SCIENCE Curriculum (2023)

First Year First Semester

Course	Subject	Units	Pre-requisites
MATH 36	Mathematical Analysis I	5	
AMAT 152	Computer Programming	3	
DS 19	Introduction to Data Science	3	
GE 1		3	
GE 2		3	
NSTP 1		(3)	
PE 1		(2)	
		17	

First Year Second Semester

Course	Subject	Units	Pre-requisites
MATH 37	Mathematical Analysis II	5	MATH 36
DS 29	Methods of Proof	3	
DS 45	Modeling and Simulation	3	AMAT 152 and DS 19
DS 57	Introduction to Algorithms and Data Structures for Data Scientists	3	AMAT 152
GE 3		3	
GE 4		3	
NSTP 2		(3)	
PE 2/3		(2)	
		20	

Second Year First Sem

Course	Subject	Units	Pre-requisites
MATH 38	Mathematical Analysis III	3	MATH 37
AMAT 131	Statistical Methods and Experimental Design	3	
DS 62	Applied Matrix Analysis	3	MATH 37 or COI
DS 120	Introduction to Bayesian Data Analysis	3	MATH 37 and DS 45 or COI
DS 187	Database Management for Data Science	3	DS 57
GE 5 (KAS 1)		3	
PE 2/3/4		(2)	
		18	

Second Year Second Semester

Course	Subject	Units	Pre-requisites
MATH 181	Introduction to Probability Theory	3	MATH 38
AMAT 132	Introductory Forecasting	3	AMAT 131
DS 65	Real Analysis for Data Scientists	3	DS 29 and MATH 38
DS 115	Introduction to Optimization Techniques	3	DS 62
Elective 1		3	
GE 6		3	
PE 2/3/4		(2)	
		18	

Third Year First Semester

Course	Subject	Units	Pre-requisites
MATH 176	Numerical Analysis I	3	MATH 38 and AMAT 152
AMAT 167	Mathematical Models in Operations Research	3	MATH 181
DS 80	Privacy, Ethics and Data Governance	3	Third Year Standing or COI
DS 171	Machine Learning 1 (Supervised)	3	DS 57 and DS 115
NSM 192	Scientific Research Process	3	Junior Standing (Corequisite: DS 200A)
DS 200A	Thesis Proposal	2	Junior Standing (Corequisite: NSM 192)
		17	

Third Year Second Semester

Course	Subject	Units	Pre-requisites
DS 60	Sequential Decision Making	3	DS 45 and MATH 181
DS 71	Data Visualization	3	Second Year Standing or COI
DS 151	Multivariate Analysis	3	DS 62 and MATH 38
DS 175	Deep Learning	3	DS 57 and DS 115
DS 200B	Thesis Implementation	2	DS 200A or COI
GE 7 (MATH 10)		3	
		17	

Third Year Summer

Course	Subject	Units	Pre-requisites
DS 198	Practicum	3	DS 80 or COI

Fourth Year First Semester

Course	Subject	Units	Pre-requisites
DS 89	Business Communication	3	Third Year Standing
DS 95	Analysis of Unstructured Data	3	DS 57
DS 170	Introduction to Artificial Intelligence	3	DS 57
DS 200C	Thesis Manuscript	2	DS 200B or COI
Elective 2		3	
GE 8		3	
		17	

Fourth Year Second Semester

Course	Subject	Units	Pre-requisites
DS 182	Big Data and Cloud Computing	3	DS 19 or COI
DS 199	Undergraduate Seminar	1	COI
Elective 3		3	
Elective 4		3	
PI 100	The Life and Works of Jose Rizal	3	Junior Standing
GE 9		3	
GE 10		3	
		19	

Total Units: 143

Required GE

(18 units): STS 1, MinStud 1, MATH 10, KAS 1, ARTS 1, ETHICS 1

Elective (12 units): COMM 10, PhilArts 1, WIKA 1, SCIENCE 10, SCIENCE 11, SAS 1

Free Electives (12 units) any four 3-unit courses offered by the University provided approved by the Adviser.

The students must take 3 free elective courses (9 units) and 1 qualified elective course (3 units) of their choice.

Qualified Electives:

Course #	Subject	Pre-requisites
MGT 101	Concepts and Dynamics of Management	
CMSC 193	Introduction to Technopreneurship	CMSC 127
Other DS Free Electives:		
DS 172	Machine Learning 2 (Unsupervised)	DS 57 and DS 115
DS 185	Data Warehousing	DS 187

Retention Policy:

In addition to the existing UP code provision on student retention, a student is required to shift or transfer if any of the following is incurred:
 1. failed twice in any of the following: MATH 36, MATH 37, MATH 38, DS 62, AMAT 152, DS 57, DS 45;
 2. failed once in at least three of the following: MATH 36, MATH 37, MATH 38,
 3. failed once in MATH 36, then eventually failed once in DS 62;
 4. failed once in AMAT 152, then eventually failed once in either DS 57 or DS 45.
 A student who incurs any of the above-mentioned cases will no longer graduate under the prescribed Maximum Residency Rule (MRR) which the department will strictly implement. The aforementioned courses are basic to Data Science.

CONFORME:

 Signature over printed name