The BS Ma and BS/M AMF Curricula

Loyola Schools Mathematics Department
Ateneo de Manila University
Program Descriptions
The BS Math Program

• a solid foundation in pure mathematics
• extensive exposure to the applications of mathematics
• sharpens the students’ analytic ability and develops certain distinctive habits of mind
The BS/M AMF Program

- rigorous foundation in mathematical modeling and economics of financial markets
- worked out jointly with leading practitioners
The Core Curriculum
Eloquentia, Sapientia, et Humanitas

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<th>HUMANITIES and SOCIAL SCIENCES</th>
<th>MANDATED SUBJECTS</th>
<th>MATHEMATICS and NATURAL SCIENCES</th>
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<td>12 Philosophy</td>
<td>3 Life and Works of Rizal</td>
<td>6/9/15 Math</td>
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<td>9 Filipino</td>
<td>12 Theology</td>
<td>3 Western or Asian History</td>
<td>11/11/15 Natural Science</td>
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<td>3 Foreign Language</td>
<td>3 Psychology</td>
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<td>3 Sociology and Anthropology</td>
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<td>3 Economics</td>
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<td>3 Political Science</td>
<td>6 Free Elective</td>
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Total = 92/95/105 units
The BS Math Curriculum
Solid Foundation in Pure Mathematics

**Algebra:**
- \text{Ma 121 (Fundamental Concepts of Algebra)}
- \text{Ma 122 (Linear Algebra)}
- \text{Ma 151 (Elementary Probability Theory)}

**Calculus:**
- \text{Ma 18, Ma 21, Ma 22, Ma 101}
- \text{Ma 185 (Modern Geometry)}
- \text{Ma 189 (Elementary Number Theory)}
- \text{Ma 161 (Differential Equations)}

**Analysis:**
- \text{Ma 171 (Advanced Calculus I)}
- \text{Ma 186 (Complex Analysis)}
Mathematics Applications

Physics:
Ps 31, 31.1,
Ps 32, 32.1

Statistics:
Stat 109
(Introduction to Statistical Theory)

Economics:
Ec 102 (Basic Economics, Agrarian Reform, and Taxation)

Applied Math
Electives

4 Math Electives
- Actuarial Science
- Operations Research
- Numerical Analysis
- Etc.

2 Free Electives
- Economics
- Finance
- Computer Science
- Etc.
Undergraduate Research

Ma 196.1: 3rd yr, 2nd Sem
Ma 196.2: 4th yr, 2nd Sem

In research, the students explore and study a particular topic in much greater depth.
The BS/M AMF Curriculum
Math Fundamentals

Calculus:
Ma 18, Ma 21, Ma 22, Ma 101

Ma 124 (Discrete Mathematics I)
Ma 122 (Linear Algebra)
AMC 21 (Fundamentals of Computing I)

Analysis:
Ma 171 (Advanced Calculus)
Ma 187 (Real Analysis)
Major Math Courses

**Probability and Statistics:**
- Ma 151 (Elementary Probability Theory)
- Stat 109 (Introduction to Statistical Theory)
- AMF 131 (Time Series and Forecasting)

**Computing Methods:**
- Ma 165 (Scientific Computing I)
- Ma 166 (Scientific Computing II)

**Operations Research:**
- Ma 195j.14 (Seminar in Topics on Operations Research)

**Differential Equations:**
- Ma 161 (Differential Equations)
- Ma 195a.6 (Seminar on Partial Differential Equations)
Finance and Economics Courses

- Acc 20 (Financial Accounting)
- Acc 35 (Managerial Accounting)
- Ec 102 (Basic Economics, Agrarian Reform, and Taxation)
- Ec 112 (Intermediate Macroeconomic Theory)
- Fin 105 (Financial Management)
- Fin 121 (Investment Management)
Electives

2 Math Electives
- Operations Research
- Statistics
- Etc.

2 Free Electives
- Economics
- Foreign Language
- Etc.
Fifth Year: Masters in Mathematical Finance

**Stochastic Calculus**
- AMF 280 (Advanced Probability and Martingales)
- AMF 240 (Stochastic Calculus I)
- AMF 241 (Stochastic Calculus II)

**Financial Derivatives**
- AMF 270 (Introduction to Options)
- AMF 271 (Financial Derivatives)

**Statistics and Risk**
- AMF 235 (Advanced Statistical Methods)
- AMF 272 (Risk Management)

**Electives**
- Three AMF Electives
Fifth Year: Masters in Mathematical Finance

**AMF 290 (Practitioner’s Seminar)**
- A 3-unit course taught by a real finance practitioner with the content focused on current practices in banks and financial institutions

**AMF 291 (Mathematical Finance Project)**
- A 3-unit course where the students work on and solve a real math finance problem given by a bank or financial institution
Mathematical Finance Project
Linkages
Linkages with Other Universities

1. University of Philippines – Open University, Diliman and Baguio
2. Philippine Normal University – Manila
3. University of Bielefeld – Germany
4. Sophia University – Japan
5. Department of Mathematics, Pusan National University (PNU) – Korea
6. Nanyang Technological University, Singapore
7. National Institute of Education – Singapore
8. Juniata College - Pennsylvania, USA
Linkages with Organizations

1. Mathematical Society of the Philippines (MSP)
2. Philippine Council of Mathematics Teacher Educators (MATHTED, Inc)
3. National Research Council of the Philippines (NRCP)
4. EMMA : Erasmus Mundus Mobilization with Asia
Alumni
Banking

Derivatives Analyst
UnionBank

Financial Services
Deutsche Bank Group

Assistant Manager
BPI

Business Development
Union Bank

Treasury Group
Union Bank

Cards Portfolio Manager
HSBC
Banking
Financial Math

Director of Research, D5Advisors, USA

Risk Analyst, RCBC

Risk Management, East West Bank
Actuarial Science
Computer Programming

Programmer/Analyst
Safeway Philtech, Inc.

Programmer/Analyst
Atos Origin, Malaysia

Software Test Engineer
Azeus
Law

Aquilino Pimentel III
Senator

Alpheus Macalalad
Lawyer

Aison Garcia
SALIGAN
Academe
Our Students
PSQ-NCR Regional Champion (2011)
2nd Place, 14th ICFC (2012)
PSQ National Finals, 2nd Place (2012)
Champion, 5th CFA Institute Investment Research Challenge (IRC) National Finals (2013)
40th Annual Nationwide Search for the Math Wizard (Champion and Runners-up, 2013)
PSQ-NCR Regional Champion (2013)
Second Place, 15th ICFC (2013)
Temasek Foundation LEaRN Program
Thank you! 😊