Program Structure

Master of Science (Mathematics) Type A2

1. Program Structure

Items	Type A2 (Credits)
1. **Course Work**	24
1.1 Required Courses	3
1.2 Elective required courses	6
1.3 Elective Courses	15
2. **Thesis**	12
3. **Required Non-Credits Courses**	5
Total Credits	**36**

2. Courses

Course work	24 Credits
- Required courses	3 Credits
252523 Linear Algebra and Matrix Theory	3(2-2-5)
- Elective required courses	6 Credits

Choose courses in the following subject group at least 6 credits approving by the committee of the Master of Science Program Mathematics:

252502 Geometry	3(2-2-5)
252504 Mathematical Analysis	3(2-2-5)
252515 Functional Analysis	3(2-2-5)
252561 Topology	3(2-2-5)

- Elective courses   15 Credits

Choose courses in the following subject group at least 15 credits approving by the committee of the Master of Science Program Mathematics:

<u>Analysis</u>

252511	Convex Optimization	3(2-2-5)
252512	Fuzzy Optimization	3(2-2-5)
252513	Measure Theory	3(2-2-5)
252516	Set-Valued Analysis	3(2-2-5)
252517	Fixed Point Theory and Applications	3(2-2-5)
252519	Optimization Algorithms	3(2-2-5)
252583	Special Topics in Analysis	3(2-2-5)

<u>Algebra</u>

252520	Representation Theory of Finite Groups	3(2-2-5)
252521	Multilinear Algebra	3(2-2-5)
252522	Fuzzy Semigroups	3(2-2-5)
252524	Matrix Analysis	3(2-2-5)
252525	Advanced Abstract Algebra	3(2-2-5)
252526	Algebraic Semigroup Theory	3(2-2-5)
252527	Ring and Module Theory	3(2-2-5)
252528	Finite Fields	3(2-2-5)
252529	Advanced Group Theory	3(2-2-5)
252530	Algebraic Coding Theory	3(2-2-5)
252531	Combinatorial Theory	3(2-2-5)
252532	Cryptography	3(2-2-5)
252534	Graph Theory and Applications	3(2-2-5)
252582	Special Topics in Algebra	3(2-2-5)

<u>Applied Mathematics</u>

252540	Foundations of Machine Learning	3(2-2-5)
252541	Machine Learning for Data Science	3(2-2-5)
252542	Statistics for Machine Learning	3(2-2-5)
252552	Computational Mathematics	3(2-2-5)
252553	Design and Analysis of Algorithms	3(2-2-5)

252574	Principles of Ordinary Differential Equations	3(2-2-5)
252575	Principles of Partial Differential Equations	3(2-2-5)
252576	Mathematical Modeling	3(2-2-5)
252577	Information Theory and Coding Design	3(2-2-5)
252579	Numerical Analysis	3(2-2-5)
252585	Special Topics in Computational Mathematics	3(2-2-5)
252586	Special Topics in Applied Mathematics	3(2-2-5)
	<u>Statistics</u>	
255523	Applied Multivariate Analysis	3(2-2-5)
255571	Computational Statistics and Applications	3(2-2-5)
255573	Big Data Analytics	3(2-2-5)
	Thesis	**12** Credits
252590	Thesis 1, Type A2	3 Credits
252591	Thesis 2, Type A2	3 Credits
252592	Thesis 3, Type A2	6 Credits
	Required non-credit courses	**5** Credits
252580	Seminar 1	1(0-2-1)
252581	Seminar 2	1(0-2-1)
252589	Research Methodology in Mathematics	3(2-2-5)

3. Study Plan

First Year
First semester

252523	Linear Algebra and Matrix Theory	3(2-2-5)
252589	Research Methodology in Mathematics (Non- credit)	3(2-2-5)
252xxx	Elective Required Course	3(2-2-5)
252xxx	Elective Required Course	3(2-2-5)
	Total	**9** Credits

Second semester

252xxx	Elective Course	3(2-2-5)
252xxx	Elective Course	3(2-2-5)
252xxx	Elective Course	3(2-2-5)
252580	Seminar 1 (Non- credit)	1(0-2-1)
252590	Thesis 1, Type A2	3 Credits
	Total	**12** Credits

Second Year
First semester

252xxx	Elective Course	3(2-2-5)
252xxx	Elective Course	3(2-2-5)
252581	Seminar 2 (Non- credit)	1(0-2-1)
252591	Thesis 2, Type A2	3 Credits
	Total	**9** Credits

Second semester

252592	Thesis 3, Type A2	6 Credits
	Total	**6** Credits
	Total	**36** Credits