American University of Central Asia
Liberal Arts and Sciences Department
Mathematical Modeling in Natural Sciences Concentration
CHECKLIST FOR ADMITS 2022

General Education Courses						
Course Name	**Course abbr.**	**Course ID**	**Credits**	**Semester**	**Prerequisites**	**Comments**
Academic Orientation program: August 22- September 2, 2022			**2***			**Outside of 240**
First Year Seminar I			4			
First Year Seminar II			4			
Introduction to Philosophy I (part of FYS)			2			
Introduction to Philosophy II (part of FYS)			2			
English Composition I			6			
English Composition II			6			
Kyrgyz Language and Literature I			4			
Kyrgyz Language and Literature II			4			
Russian Language I			2			
Russian Language II			2			
History of Kyrgyzstan			4			
Geography of Kyrgyzstan			2			
Manas Studies			2			
Mathematics and Quantitative Reasoning			6			
Natural Sciences/Second Year Seminar**			6			
Arts/Second Year Seminar**			12			
Humanities/Second Year Seminar**			12			
Social Sciences/Second Year Seminar**			12			
Sports			400 hours/0 credits			
Total GenEd credits			**92 [2] credits**			

* Credits earned for the Academic Orientation program are not included into 240 credits for graduation.

**All students in their 2nd year must take one Second Year Seminar. This seminar substitutes for one required 6-credit course in either Humanities, Social Sciences, Arts or Natural Science.

***One 6-credit course in Major requirements could be counted towards General Education requirements.

Major Requirements						

LAS Core Courses – 24 credits

Course Name	Course abbr.	Course ID	Credits	Semester	Prerequisites	Comments
Concepts of Modern Art/Arts	LAS/ ART 230	4257	6	1	-	Can be counted towards Arts requirement in the General Education program
World Literature/Humanities	LAS/ HUM 220	4977	6	2	-	Can be counted towards Humanities requirement in the General Education program
Concepts of Modern Sciences/Natural Sciences	LAS/ NTR 100	3110	6	1	-	Can be counted towards Natural Sciences requirement in the General Education program
Globalization and Social Sciences/Social Sciences	LAS/ SS 102	3314	6	2	-	Can be counted towards Social Sciences requirement in the General Education program

Concentration Required Courses – 48 credits

Course Name	Course abbr.	Course ID	Credits	Semester	Prerequisites	Comments
Discrete mathematics and mathematical logic	COM 227	3129	6			
Introduction to object oriented programming	COM 119	4357	6			
The theory of probabilities and mathematical statistics	MAT 307	3215	6			
Computer architecture	COM 410.1	3268	6			
Database principles	COM-210.1	3326	6			
Senior Project/Thesis I			6			
Senior Project/Thesis II			6			
Research Methods			6			
Internship			6			out of 240 credits

Elective Courses in the Concentration - 30 credits from the following list:

Course Name	Course abbr.	Course ID	Credits	Semester	Prerequisites	Comments
Physics. Computer Modeling	COM 202.1	4243	6			

Ordinary differential equations			6			
Operating systems	MAT 407.1	3879	3			
Numerical methods of algebra, analysis and ordinary differential equations	MAT 410 3	3968	6			
Mathematical models in natural and social sciences			6			
Math Modeling in Economics	MAT 333	3701	6			
Mathematical Modeling in Geophysics	MAT-420	4118	12			
Game Theory	MAT/ ECO	3453	6			
One 300 or 400 level elective course			6			
Other courses outside of major = 70 credits.						
Total Number of Credits			**240**			

Order of study for 2022 admits

Academic Orientation Program [2 credits]			
1st semester (30 credits)		**2nd semester (30 credits)**	
First Year Seminar I English Composition for Liberal Arts I Introduction to Philosophy I (part of FYS I) – 2 credits	12	First Year Seminar II English Composition for Liberal Arts II Introduction to Philosophy II (part of FYS II) – 2 credits	12
Linear Algebra and Analytic Geometry for AMI/SFW	6		
Concepts of Modern Sciences	6	Mathematical Analysis I for AMI/SFW	6
Elective Course	6	World Literature	6
Sport	0	Elective Course	6
		Sport	0
3rd semester (30 credits)		**4th semester (30 credits)**	
Concepts of Modern Art	6	Globalization and Social Sciences	6
Mathematical Analysis II	6	Kyrgyz language and literature – 4 cr. Russian Language – 2 cr.	6

Structural Programming	6	History and Geography of Kyrgyzstan	6
Discrete Mathematics and Mathematical Logic I*	6	Physics. Computer Modeling	6
Kyrgyz language and literature – 4 cr. Russian Language – 2 cr.	6	The Theory of Probabilities and Math. Statistics	6
Sport	0	Sport	0

5th semester (30 credits)		6th semester (30 credits)	
Ordinary Differential Equations	6	Numerical Methods of algebra, analysis and ordinary differential equations	6
Operating Systems	6	Research Methods in Applied Mathematics	6
General Education Course	6	General Education Course	6
General Education Course	6	General Education Course	6
Elective Course	6	Elective Course	6

7th semester (30 credits)		8th semester (30 credits)	
Senior thesis seminar I	6	Senior thesis seminar II	6
Gen Edu course	6	Gen Edu course	6
Elective Course	6	Elective Course	6
Elective Course	6	Elective Course	6
Elective Course	6	Elective Course	6

Graduation requirements:

1. Earn at least 240 credits (+credit hours earned for program internships)
   a. Complete all General Education requirements;
   b. Complete all requirements for at least one major;
   c. Earn no more than 102 credits of introductory (100-level) courses;
   d. Complete at least 18 elective credits outside of a student's major and General Education program;
   e. Complete the required number of internship credits (the number of credits is determined by each department);
   f. Pass all state graduation examinations;
   g. Successfully complete and defend a senior thesis/project;
   h. Receive no "F" or "N/p" grades in the final semester;
   To earn an overall GPA of at least 2.0.