<table>
<tr><td colspan="2">Annex No. 3</td><td colspan="5">Second Cycle Studies Course Programme</td></tr>
<tr><td>1.</td><td>Course Title</td><td colspan="5">Data Science</td></tr>
<tr><td>2.</td><td>Code</td><td colspan="5">STM 520</td></tr>
<tr><td>3.</td><td>Study programme</td><td colspan="5">Statistical methods for business and economics</td></tr>
<tr><td>4.</td><td>Organizer of the study programme (university unit i.e. institute, chair, department)</td><td colspan="5">Ss. Cyril and Methodius University in Skopje
Faculty of Economics - Skopje
Chair of Statistical methods for business and economics</td></tr>
<tr><td>5.</td><td>Level (first, second, third cycle)</td><td colspan="5">Second cycle</td></tr>
<tr><td>6.</td><td>Academic year / semester</td><td>(first year/summer semester)</td><td>7. second (summer) semester</td><td>Number of ECTS credits</td><td>6</td></tr>
<tr><td>8.</td><td>Professor</td><td colspan="5">Prof. Violeta Cvetkoska, PhD</td></tr>
<tr><td>9.</td><td>Preconditions for enrolment</td><td colspan="5">Completed the first cycle of studies with at least 240 credits.</td></tr>
<tr><td>10.</td><td colspan="6">Course Objectives (Competencies):
After taking this course, students should be able to:

• To learn what data science is, what a data scientist's role in an organisation is, and why his position is one of the most sought after in the global labor market today.
• Import real data sets and prepare a refined and ready-for-analysis data set.
• Build machine learning models using programming languages.
• Learn how to visualise data using programming languages and the Power BI tool.
• Interpret the results obtained in a broader context of the problem and make recommendations that will enable better decision making.</td></tr>
<tr><td>11.</td><td colspan="6">Course content:
1. What exactly is data science?
2. The Data Scientist's Role in Economics and Business
3. Tools for data science and programming languages
4. Real-world data import and processing
5. Machine learning algorithms
6. Modeling problems in the fields of economics and business by applying machine learning algorithms
7. Use Python and Power BI to visualize data.
8. Creating and presenting a summary report</td></tr>
<tr><td>12.</td><td colspan="6">Learning methods: Lectures with presentations; interactive exercises using programming languages, tools, and real databases; preparation of individual projects and their presentation; guest lecturers; case studies.</td></tr>
<tr><td>13.</td><td>Total hours</td><td colspan="5">6 ECTS x 30 classes = 180 classes</td></tr>
<tr><td>14.</td><td>Allocation of hours per activity</td><td colspan="5">24+16+40+10+90= 180 classes</td></tr>
<tr><td rowspan="2">15.</td><td rowspan="2">Types of teaching activates</td><td>15.1.</td><td colspan="2">Lectures</td><td>24 classes</td></tr>
<tr><td>15.2.</td><td colspan="2">Exercises (Seminars)</td><td>16 classes</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Other types of activities</td><td>16.1.</td><td colspan="2">Seminar / professional paper / project / research (written and oral presentation)</td><td>40 classes</td></tr>
<tr><td>16.2.</td><td colspan="2">Individual tasks</td><td>10 classes</td></tr>
<tr><td>16.3</td><td colspan="2">Homework</td><td>90 classes</td></tr>
<tr><td rowspan="2">17.</td><td colspan="5">Grading method: 50+40+10=100 points</td></tr>
<tr><td>17.1.</td><td colspan="3">Tests (Domain, Essay, Multiple choice exam, Case)</td><td>50%</td></tr>
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	17.2.	Seminar work / project (presentation: written and oral), laboratory exercises		40%
	17.3.	Attendance and class participations		10%
18.	Grading scale		less than 60 points	5 (five) (F)
			from 61 to 68 points	6 (six) (E)
			from 69 to 76 points	7 (seven) (D)
			from 77 to 84 points	8 (eight) (C)
			from 85 to 92 points	9 (nine) (B)
			from 93 to 100 points	10 (ten) (A)
19.	Preconditions for taking the final exam		Realized activities from points 15 and 16	
20.	Language		Macedonian (or English)	
21.	Evaluation method		Internal evaluation and survey	

22. Literature

22.1. Compulsory literature

No.	Author	Title	Publisher	Year
1.	Kelleher, J. D. and Tierney, B.	Data Science	The MIT Press	2018
2.	Provost, F. and Fawcett, T.	Data Science for Business: What you Need to Know about Data Mining and Data-Analytic Thinking	O'Reilly Media	2013
3.	Python programming language and Power BI tool			

22.2. Additional literature

No.	Author	Title	Publisher	Year
1.	Knaflic, C. N.	Storytelling with Data: A Data Visualization Guide for Business Professionals	Wiley	2015
2.	Articles in reputable journals, case studies			