

DESCRIPTION OF ELECTIVE COURSE

Name of the school : Haute école de gestion de Genève	Academic Year: 2023-2024
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FIRST PART: DESCRIPTION OF MODULE	
1. Domain	Business and Services
2. Department	International Business Management
3. Course name	Digital Tools and Machine Learning Applications
4. Code	31039
5. Type of education	<input checked="" type="checkbox"/> Bachelor <input type="checkbox"/> Master <input type="checkbox"/> MAS <input type="checkbox"/> <input type="checkbox"/> DAS / CAS / single days
6. Number of ECTS Credits	5
7. Prerequisites	<input checked="" type="checkbox"/> Validation of the modules in semesters 1 and 2 <input checked="" type="checkbox"/> Attendance of the modules in semesters 3 and 4 for full-time students, and semesters 5 and 6 for part-time students <input type="checkbox"/>
8. Teaching language	<input type="checkbox"/> French <input type="checkbox"/> German <input checked="" type="checkbox"/> English <input type="checkbox"/> Other:
9. Objectives	<p>This course is structured to prepare students for a job as a data analyst or as a manager/consultant for tech and digital projects. There are three fundamental skills needed to become a data analyst: computer skills, analytical/statistical knowledge and business/communication skills.</p> <p>The first sessions of the course focus on programming skills and the basics of Python.</p> <p>After that, students will be introduced to machine learning and the statistical and analytical part of data analysis. Students will be able to recognize, apply and program the most frequent machine learning techniques and to build a comprehensive understanding of statistical methods. We focus on the logic and the business sense, rather than enlisting statistical formulas.</p> <p>The third and final part puts the emphasis on data visualization. Students learn to select coherent graphics for various data and to create these in Python.</p> <p>Throughout the class, we apply our new knowledge using practical, applied and real-</p>

	<p>life datasets.</p> <p>At the end of this course, students should be able to:</p> <ul style="list-style-type: none"> • Code in Python. • Have an overview and a strong comprehension of machine learning. • Understand algorithms such as decision trees, neural networks, naïve Bayes, and regressions. • Be efficient when cleaning, filtering and ordering datasets. • Source data from various sources such as excel, csv files, pdf's, webscraping, API's and online databases. • Create visualisations and business presentations using Python and Jupyter Notebook.
<p>10. Contents <i>(General themes and descriptions, the accurate content may change)</i></p>	<p>The academic approach for this class is "hands-on". We will explain with the help of slides, but most of the time we will be using online exercises from w3schools.com, video series from Google and a range of other sites. We will solve several case exercises in class.</p> <ul style="list-style-type: none"> • Basic Python Coding I • Working with the Pandas Library • Introduction to Machine Learning and Artificial Intelligence • Data Cleaning • Data Visualization • Machine Learning: Linear and Logistic Regression • Machine Learning: Decision Trees, Naïve Bayes • Machine Learning: Neural Networks • Machine Learning: Support Vector Machines • Natural Language Processing • Assessing Model Performance
<p>11. Evaluation</p>	<p>The grading of the module shall be based on:</p> <ul style="list-style-type: none"> • Mid-term assessments during weeks 1 to 15 according to the decision of the instructor. <p>(The methods and weightings are communicated by the instructor before the evaluations)</p>
<p>12. Remediation/repetition</p>	<p><input checked="" type="checkbox"/> Compulsory remediation if the module grade is between 3.5 and 3.9 / 6. When subject to a remediation, only the grade of the remedial exam will be taken into account (maximum grade 4.0). A repeated module cannot benefit from a remedial exam.</p> <p><input type="checkbox"/> No remediation</p>
<p>13. Coordinator / main instructor</p>	<p>Jan Erik Meidell</p>

SECOND PART: LOCATION OF THE MODULE IN THE STUDY PLAN

14. Level	<input type="checkbox"/> Basic module <input type="checkbox"/> Advanced module <input checked="" type="checkbox"/> Specialized module <input type="checkbox"/> Other:		
15. Characteristics	<input checked="" type="checkbox"/> Module is mandatory (which could lead to final dismissal from the program, cf. art.15, al.1, « Statut des étudiant-e-s bachelor »)		
16. Type	<input checked="" type="checkbox"/> Main module <input type="checkbox"/> Module linked to main module <input type="checkbox"/> Optional module <input type="checkbox"/> Other:		
17. Time organization	<input checked="" type="checkbox"/> Module over 1 semester <input type="checkbox"/> Spring semester	<input type="checkbox"/> Module over 2 semesters <input checked="" type="checkbox"/> Fall semester	<input type="checkbox"/> Other