

## COURSE SYLLABUS

Academic year 2024 - 2025

### 1. Programme Information

1.1. Higher education institution	Lucian Blaga University of Sibiu
1.2. Faculty	Faculty of Science
1.3. Department	Mathematics and Informatics
1.4. Field of study	Informatics
1.5. Level of study <sup>1</sup>	Master
1.6. Programme of study/qualification	Cybersecurity

### 2. Course Information

2.1. Name of course	Open Source Intelligence	Code	FSTI.MAI.CS.M.SO .1.1020.E-7.3
2.2. Course coordinator	Lecture PhD. Daniel Hunyadi		
2.3. Seminar/laboratory coordinator	Lecture PhD. Daniel Hunyadi		
2.4. Year of study <sup>2</sup>	1	2.5. Semester <sup>3</sup>	1
2.6. Evaluation form <sup>4</sup>			E
2.7. Course type <sup>5</sup>	R	2.8. The formative category of the course <sup>6</sup>	S

### 3. Estimated Total Time

3.1. Course Extension within the Curriculum – Number of Hours per Week				
3.1.a. Lecture	3.1.b. Seminar	3.1.c. Laboratory	3.1.d. Project	Total
1		2		3
3.2. Course Extension within the Curriculum – Total Number of Hours within the Curriculum				
3.2.a. Lecture	3.2.b. Seminar	3.2.c. Laboratory	3.2.d. Project	Total <sup>7</sup>
14		28		42
<b>Time Distribution for Individual Study<sup>8</sup></b>				<b>Hours</b>
Learning by using course materials, references and personal notes				33
Additional learning by using library facilities, electronic databases and on-site information				28
Preparing seminars / laboratories, homework, portfolios and essays				56
Tutorial activities <sup>9</sup>				14
Exams <sup>10</sup>				2
<b>3.3. Total Individual Study Hours<sup>11</sup> (NOSI<sub>sem</sub>)</b>				<b>133</b>
<b>3.4. Total Hours in the Curriculum (NOAD<sub>sem</sub>)</b>				<b>42</b>
<b>3.5. Total Hours per Semester<sup>12</sup> (NOAD<sub>sem</sub> + NOSI<sub>sem</sub>)</b>				<b>175</b>
<b>3.6. No. of Hours / ECTS</b>				<b>25</b>
<b>3.7. Number of credits<sup>13</sup></b>				<b>7</b>

#### 4. Prerequisites (if needed)

4.1. Courses that must be successfully completed first (from the curriculum) <sup>14</sup>	-
4.2. Competencies	-

#### 5. Conditions (where applicable)

5.1. For course/lectures <sup>15</sup>	Classroom, equipped with blackboard, computer, video projector and software
5.2. For practical activities (lab/sem/pr/app) <sup>16</sup>	Laboratory room equipped with computers

#### 6. Specific competencies acquired<sup>17</sup>

Number of credits assigned to the discipline <sup>18</sup>			7	Credits distribution by competencies <sup>19</sup>
<b>6.1. Professional competencies</b>	PC1	Identify, locate, retrieve, store, organise and analyse digital information, judging its relevance and purpose		1
	PC2	Explain and understand different methods to collect intel		1
	PC3	Be able to conduct a OSINT intelligence information analysis and gather information from open sources on the internet		1
	PC4	Classify, organize and create a OSINT report with the information gathered, present the information in a structured and comprehensive way		1
	PC5	Solve conceptual problems through digital means, creatively use technologies, solve technical problems		1
<b>26.2. Transversal competencies</b>	TC1	Developing a positive attitude towards work and responsibility for one's own professional training.		1
	TC2	Developing the teamwork spirit.		0.5
	TC3	Ability to interpret the results obtained		0.5

#### 7. Course objectives (resulted from developed competencies)

7.1. Main course objective	Learn how to capture, organise and process open source data, collect and disseminate the information for analysis and reporting purposes
1.1. Specific course objectives	Understand the fundamentals of OSINT, identify sources of open source intelligence, conduct effective searches, evaluate sources for reliability and credibility, analyze and synthesize information, conduct investigations, protect privacy and confidentiality, present findings

#### 8. Content

8.1. Lectures <sup>20</sup>	Teaching methods <sup>21</sup>	Hours
Definition of OSINT, Importance of OSINT in intelligence gathering and decision-making, Basic principles of OSINT	Lecture, use of video projector, discussions with students	2
Types of open source intelligence sources, Accessing open source intelligence sources, Evaluating the reliability and credibility of sources	Lecture, use of video projector, discussions with students	2
Conducting Effective Searches: Search engine techniques, Advanced search techniques.	Lecture, use of video projector, discussions with students	2
Advanced Search Strategies for Google: Mining the web with advanced queries, Working with URL conventions, Working with search parameters, Working with dork and exploit databases, Searching in foreign languages,	Lecture, use of video projector, discussions with students	2

Managing and manipulating your results, Developing a custom search cookbook		
Searching Beyond Google: The varieties of search engines, Choosing the right search engine, Working with Bing, DuckDuckGo and Yandex, Layering and comparing results, Working with foreign-language and specialist search engines	Lecture, use of video projector, discussions with students	2
Analyzing and Synthesizing Information : Techniques for analyzing and synthesizing information, Identifying patterns, trends, and insights, Critical thinking in OSINT	Lecture, use of video projector, discussions with students	2
Protecting oneself during online investigations: OSINT security measures such as VPNs, virtual operating systems, and ethical guidelines.	Lecture, use of video projector, discussions with students	2
<b>Total lecture hours:</b>		<b>14</b>

<b>8.2. Practical activities (8.2.a. Seminar<sup>22</sup>/ 8.2.b. Laboratory<sup>23</sup>/ 8.2.c. Project<sup>24</sup>)</b>	<b>Teaching methods</b>	<b>Hours</b>
Open source software and tools for OSINT: This course could cover the use of open source software and tools for OSINT investigations, such as Maltego, Spiderfoot, and FOCA	Use of video projector, discussions with students	4
Search engine and social media investigations, how to use social media platforms such as Twitter, Facebook, and LinkedIn for OSINT investigations, Hashtag analysis	Use of video projector, discussions with students	4
Searching for Documents (Document search strategies, Advanced search queries, Document search tools, Searching cloud-based repositories, Research and academic resources, FTP search tools and resources)	Use of video projector, discussions with students	4
Searching for Images (Image search strategies and resources, Reverse image search tools, Investigating image metadata, Processing images, Validating images)	Use of video projector, discussions with students	4
Searching for Video (Video search strategies and resources, Working with video hosting platforms, Investigating video metadata, Reverse video search, Downloading videos, Video editing for analysis and reporting, Validating videos)	Use of video projector, discussions with students	4
Searching for Audio (Working with online radio, Working with podcasts, Podcast directories, Generating transcripts, Audio recording and editing)	Use of video projector, discussions with students	2
Web Scraping (Working with data scrapers, Scraping data via Google Sheets)	Use of video projector, discussions with students	2
Use a virtual operating system to conduct research, setup your environment and secure your system.	Use of video projector, discussions with students	2
Create a comprehensive OSINT report about a target or topic.	Use of video projector, discussions with students	2
<b>Total seminar/laboratory hours:</b>		<b>28</b>

## 9. Bibliography

9.1. Recommended Bibliography	<ol style="list-style-type: none"> <li>1. ATP 2-22.9 - Open-Source Intelligence - Washington D.C. , Department of the Army – 2012, <a href="https://irp.fas.org/doddir/army/atp2-22-9.pdf">https://irp.fas.org/doddir/army/atp2-22-9.pdf</a></li> <li>2. NATO OSINT Handbook V 1.2 – 2001, <a href="https://archive.org/details/NATOOSINTHandbookV1.2/mode/2up">https://archive.org/details/NATOOSINTHandbookV1.2/mode/2up</a></li> <li>3. FMI 2-22.9 - OPEN SOURCE INTELLIGENCE - US Army Intelligence and Security Command – 2006, <a href="https://irp.fas.org/doddir/army/fmi2-22-9.pdf">https://irp.fas.org/doddir/army/fmi2-22-9.pdf</a></li> <li>4. OSINT for Analyzing Fake News, U.S. Embassy in Romania, Romanian Association for Information Security Assurance <a href="https://www.cyberlearning.ro/osint-for-analyzing-fake-news/">https://www.cyberlearning.ro/osint-for-analyzing-fake-news/</a> <a href="https://cyberlearning.ro/documents/OSINT-for-fake-news.pdf">https://cyberlearning.ro/documents/OSINT-for-fake-news.pdf</a></li> <li>5. Elementary... the Art and Science of Finding Information: Achieving More "Knowledge Advantage" through OSINT – Miguel Fernandez, Alan Millington, 2019</li> </ol>
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9.2. Additional Bibliography	<ol style="list-style-type: none"> <li>1. Open Source Intelligence (OSINT) - 2oolKit On The Go - E. Ben Benavides – 2015 <a href="https://www.pdfdrive.com/open-source-intelligence-osint-2oolkit-on-the-go-e18777001.html">https://www.pdfdrive.com/open-source-intelligence-osint-2oolkit-on-the-go-e18777001.html</a></li> <li>2. INSECOM Open Source Intelligence Operations Handbook - US Army Intelligence and Security Command Office – 2017, <a href="https://irp.fas.org/doddir/army/atp2-22-9-2017.pdf">https://irp.fas.org/doddir/army/atp2-22-9-2017.pdf</a></li> <li>3. GITHUB - A curated list of amazingly awesome open source intelligence tools and resources <a href="https://github.com/jivoi/awesome-osint">https://github.com/jivoi/awesome-osint</a></li> </ol>
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**10. Conjunction of the discipline’s content with the expectations of the epistemic community, professional associations and significant employers of the specific study program<sup>25</sup>**

It is done through regular contacts with the representatives of the companies. Open source intelligence topic is actual and is of great interest in existing software companies on the local, national and global market.

**11. Evaluation**

Activity Type	11.1 Evaluation Criteria	11.2 Evaluation Methods		11.3 Percentage in the Final Grade	Obs. <sup>26</sup>
11.4a Exam / Colloquy	<ul style="list-style-type: none"> <li>• Theoretical and practical knowledge acquired (quantity, correctness, accuracy)</li> </ul>	Tests during the semester <sup>27</sup> :	%	50% (minimum 5)	CEF
		Homework:	%		
		Other activities <sup>28</sup> :	%		
		Final evaluation:	50%		
11.4b Seminar	<ul style="list-style-type: none"> <li>• Frequency/relevance of participation or responses</li> </ul>	Evidence of participation, portfolio of papers (reports, scientific summaries)		5% (minimum 5)	nCPE
11.4c Laboratory	<ul style="list-style-type: none"> <li>• Knowledge of the equipment, how to use specific tools; evaluation of tools, processing and interpretation of results</li> </ul>	<ul style="list-style-type: none"> <li>• Written questionnaire</li> <li>• Oral response</li> <li>• Laboratory notebook, experimental works, reports, etc.</li> <li>• Practical demonstration</li> </ul>		5% (minimum 5)	nCPE
11.4d Project	<ul style="list-style-type: none"> <li>• The quality of the project, the correctness of the project documentation, the appropriate justification of the chosen solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Self-evaluation, project presentation</li> <li>• Critical evaluation of a project</li> </ul>		40% (minimum 5)	nCPE
11.5 Minimum performance standard <sup>29</sup> To pass the exam, the candidate must have a basic knowledge of the open source intelligence.					

***The Course Syllabus will encompass components adapted to persons with special educational needs (SEN – people with disabilities and people with high potential), depending on their type and degree, at the level of all curricular elements (skills, objectives, contents, teaching methods, alternative assessment), in order to ensure fair opportunities in the academic training of all students, paying close attention to individual learning needs.***



Filling Date: |\_0\_|\_5\_| / |\_0\_|\_9\_| / |\_2\_|\_0\_|\_2\_|\_4\_|

Department Acceptance Date: |\_0\_|\_6\_| / |\_0\_|\_9\_| / |\_2\_|\_0\_|\_2\_|\_4\_|

	<b>Academic Rank, Title, First Name, Last Name</b>	<b>Signature</b>
<b>Course Teacher</b>	Lecture PhD. Daniel Hunyadi	
<b>Study Program Coordinator</b>	Lecturer PhD. Daniel Hunyadi	
<b>Department Head</b>	Professor PhD. Mugur Acu	

<sup>1</sup> Bachelor / Master

<sup>2</sup> 1-4 for bachelor, 1-2 for master

<sup>3</sup> 1-8 for bachelor, 1-3 for master

<sup>4</sup> Exam, colloquium or VP A/R - from the curriculum

<sup>5</sup> Course type: R = Compulsory course; E = Elective course; O = Optional course

<sup>6</sup> Formative category: S = Specialty; F = Fundamental; C = Complementary; I = Fully assisted; P = Partially assisted; N = Unassisted

<sup>7</sup> Equal to 14 weeks x number of hours from point 3.1 (similar to 3.2.a.b.c.)

<sup>8</sup> The following lines refer to individual study; the total is completed at point 3.37.

<sup>9</sup> Between 7 and 14 hours

<sup>10</sup> Between 2 and 6 hours

<sup>11</sup> The sum of the values from the previous lines, which refer to individual study.

<sup>12</sup> The sum (3.5.) between the number of hours of direct teaching activity (NOAD) and the number of hours of individual study (NOSI) must be equal to the number of credits assigned to the discipline (point 3.7) x no. hours per credit (3.6.)

<sup>13</sup> The credit number is computed according to the following formula, being rounded to whole neighbouring values (either by subtraction or addition

$$\text{No. credits} = \frac{\text{NOCpSpD} \times C_C + \text{NOApSpD} \times C_A}{\text{TOCpSdP} \times C_C + \text{TOApSdP} \times C_A} \times 30 \text{ credits}$$

Where:

- NOCpSpD = Number of lecture hours / week / discipline for which the credits are calculated
- NOApSpD = Number of application hours (sem./lab./pro.) / week / discipline for which the credits are calculated
- TOCpSdP = Total number of course hours / week in the Curriculum
- TOApSdP = Total number of application hours (sem./lab./pro.) / week in the Curriculum
- C<sub>C</sub>/C<sub>A</sub> = Course coefficients / applications calculated according to the table

Coefficients	Course	Applications (S/L/P)
Bachelor	2	1
Master	2,5	1,5
Bachelor - foreign language	2,5	1,25

<sup>14</sup> The courses that should have been previously completed or equivalent will be mentioned

<sup>15</sup> Board, video projector, flipchart, specific teaching materials, online platforms, etc.

<sup>16</sup> Computing technology, software packages, experimental stands, online platforms, etc.

<sup>17</sup> Competences from the Grids related to the description of the study program, adapted to the specifics of the discipline

<sup>18</sup> From the curriculum

<sup>19</sup> The credits allocated to the course are distributed across professional and transversal competences according to the specifics of the discipline

<sup>20</sup> Chapter and paragraph titles

<sup>21</sup> Exposition, lecture, board presentation of the studied topic, use of video projector, discussions with students (for each chapter, if applicable)

<sup>22</sup> Discussions, debates, presentations and/or analyses of papers, solving exercises and problems

<sup>23</sup> Practical demonstration, exercise, experiment

<sup>24</sup> Case study, demonstration, exercise, error analysis, etc.

<sup>25</sup> The relationship with other disciplines, the usefulness of the discipline on the labour market

<sup>26</sup> CPE – Conditions Exam Participation; nCPE – Does Not Condition Exam Participation; CEF - Conditions Final Evaluation; N/A – not applicable

<sup>27</sup> The number of tests and the weeks in which they will be taken will be specified

<sup>28</sup> Scientific circles, professional competitions, etc.

<sup>29</sup> The minimum performance standard in the competence grid of the study program is customized to the specifics of the discipline, if applicable