



SYLLABUS

1. Study programme

1.1. Higher education institution	„Aurel Vlaicu” University of Arad
1.2. Faculty	of Exact Sciences
1.3. Department	Department of Mathematics and Computer Science
1.4. Field of study	Informatics
1.5. Study level	2024-2025
1.6. Ciclul de studii	Bachelor
1.7. Study programme / Qualification	Computer Science
1.8. Form of education	Full-time study

2. Course details

2.1. Name of the course	GIAF3O03 Database
2.2. Course coordinator	dr. Nagy Mariana
2.3. Seminar/laboratory/project coordinator	specialist Petcuț Lasc Anca Adriana
2.4. Study year	2
2.5. Semester	1
2.6. Evaluation type	ES
2.7. Course type	Ob

3. Estimated total time (hours per semester)

3.1. Hours per week	4
3.2. Lecture hours per week	2
3.3. Seminar/laboratory/project hours per week	2
3.4. Total hours per curriculum	56
3.5. Lecture hours per semester	28
3.6. Seminar/laboratory/project hours per semester	28
Time division [hrs]	
3.4.1. Independent study from textbooks, course support, bibliography and notes	30
3.4.2. Additional reading (libraries, specialized electronic platforms and field research)	30
3.4.3. Preparing of seminars/laboratories/projects, homework, papers, portfolios and essays	25
3.4.4. Tutorial coaching	5
3.4.5. Examinations	4
3.4.6. Other activities	0
3.7. Total individual study hours	94
3.8. Total hours per semester	150
3.9. Number of ECTS credits	6

4. Prerequisites (if applicable)

4.1. Curriculum related	
4.2. Competence related	Basic knowledge of office work

5. Conditions (if applicable)

5.1. for the lecture	Lecture room equipped with laptop, projector and proper software: MS Word, Power Point and Database software
5.2. for the seminar	
5.3. for the laboratory	Laboratory Room, equipped properly with: computers, computer network, Internetconnection, MS Office, Database software
5.4. for the project	

6. Specific educational objectives (competences to be acquired)

6.1. Competențe profesionale	C1.Programming in high level programming languages; C3.Using computer tools in interdisciplinary context; C5.Database design and database management.
6.2. Competențe transversale	CT2.Efficient conduct of the activities organized in an inter-disciplinary group and developing the personal communication skills, networking and collaboration with various groups; CT3.Using of efficient methods and techniques for learning, informing, research and development of the capacity to value knowledge, adapting to the requirements of a dynamic society and communicating in English and in an Internationally widespread language.

7. Course outcomes (resulting from the specific educational objectives to be acquired)

7.1. General outcomes	Training skills for students in order to learn the processing of a big volume of data with the use of computers. Strengthen the cooperation of the specialists in various fields with the computer specialist by an interdisciplinary approach to the databases.
7.2. Specific outcomes	Students will be able to demonstrate that they have acquired knowledge on organizing the data, data analysis and creating data models. Creating and using relational databases. The main methods for automate data processing, queries on databases Programing in a DBMS using VBA Creating a database for a real example: analysis, design, implementation, use.

8. Outline (if applicable)

8.1 Lecture Outline	Teaching methods	Remarks
Fundamental concepts □ Basic concepts: data, information, databases – evolution. Characteristics, examples. □ The advantages of using a database. The independence of data. Architecture of a DB. □ DBMS, Database management □ Database models. Normalizing the data.	□ interactive lecture □ dialog □ proof	4 hrs
MS-Access, a relational DBMS: □ MS-Access – part of MS Office. User interface, most important windows. □ MS-Objects: Presentation, role. Creating, Views. Using: look-up wizard, expression builder, database compacting and repairing.	□ lecture □ web search □ exemplifying	2 hrs
Tables and relationships: □ Table structure, data types, field properties, data validation. □ Relationships: definition, role, classification, creating, deleting, properties. Examples.	□ interactive lecture □ problem solving □ modeling	2 hrs
Creating user interface: □ Forms: data acquisition / data views. Properties. Forms: creating menus. □ Reports: design, creating, properties. Interpreting the data. Examples.	□ interactive lecture □ problem solving □ exemplifying	2 hrs
Queries: □ Select queries: definition, role, views. Sorting, filtering, parameters, aggregate functions, calculate fields. □ Action queries: definition, role, classification, examples. Action queries: application and practicing. □ Macros. Examples □ The basis of SQL.	□ interactive lecture □ questioning □ debate	6 hrs
Object oriented programming using VBA □ Events. Definition, examples, event sequences when using forms □ VBA modules. Role, classification. Commands. Examples of CBF modules. □ Objects. Properties and methods. Classes and instances. Container.	□ interactive lecture □ problem solving □ web search □ exemplifying	8 hrs
Creating an application □ The steps for creating a functional application. Analysis and design, programming, implementing and testing. □ Creating a relational DBMS for the management of a warehouse.	□ interactive lecture □ problem solving □ modeling □ web search	4 hrs
8.2 Lecture References		
1. Nagy M., Suport de laborator, SUMS, 2023 2. Garais E.G., Proiectarea bazelor de date relationale cu Microsoft Access, Ed. Pro Universitaria, 2024		

3. Kovacs S., Implementarea bazelor de date, Ed.Albastră, Cluj-Napoca, 2003 4. Nagy M., Vizental M., Baze de date. Material de studiu pentru învățământul la distanță., UAV, 2010 5. Nagy M., Vizental M., Sisteme de gestiune a bazelor de date, Note de curs și aplicații, Ed. Mirton, Timișoara, 2007 6. Năstase P. și colectivul, Baze de date Microsoft Access 2000, Ed. Teora, București, 2000 7. Sfetcu N., Lucrul cu baze de date, Ed. Multimedia, 2021 8. Ulrich L.A., Cook K., Access 2019 For Dummies, Ed. Wiley, 2019		
8.3 Seminar Outline	Teaching methods	Remarks
8.4 Seminar References		
8.5 Laboratory Outline	Teaching methods	Remarks
Fundamental concepts <input type="checkbox"/> Basic concepts: data, information, databases – evolution. Characteristics, examples. <input type="checkbox"/> The advantages of using a database. The independence of data. Architecture of a DB. <input type="checkbox"/> DBMS, Database management <input type="checkbox"/> Database models. Normalizing the data.	<input type="checkbox"/> interactive lecture <input type="checkbox"/> dialog <input type="checkbox"/> proof	4 hrs
MS-Access, a relational DBMS: <input type="checkbox"/> MS-Access – part of MS Office. User interface, most important windows. <input type="checkbox"/> MS-Objects: Presentation, role. Creating, Views. Using: look-up wizard, expression builder, database compacting and repairing.	<input type="checkbox"/> lecture <input type="checkbox"/> web search <input type="checkbox"/> exemplifying	2 hrs
Tables and relationships: <input type="checkbox"/> Table structure, data types, field properties, data validation. <input type="checkbox"/> Relationships: definition, role, classification, creating, deleting, properties. Examples.	<input type="checkbox"/> interactive lecture <input type="checkbox"/> problem solving <input type="checkbox"/> modeling	2 hrs
Creating user interface: <input type="checkbox"/> Forms: data acquisition / data views. Properties. Forms: creating menus. <input type="checkbox"/> Reports: design, creating, properties. Interpreting the data. Examples.	<input type="checkbox"/> interactive lecture <input type="checkbox"/> problem solving <input type="checkbox"/> exemplifying	2 hrs
Queries: <input type="checkbox"/> Select queries: definition, role, views. Sorting, filtering, parameters, aggregate functions, calculate fields. <input type="checkbox"/> Action queries: definition, role, classification, examples. Action queries: application and practicing. <input type="checkbox"/> Macros. Examples <input type="checkbox"/> The basis of SQL.	<input type="checkbox"/> interactive lecture <input type="checkbox"/> questioning <input type="checkbox"/> debate	6 hrs
Object oriented programming using VBA <input type="checkbox"/> Events. Definition, examples, event sequences when using forms <input type="checkbox"/> VBA modules. Role, classification. Commands. Examples of CBF modules. <input type="checkbox"/> Objects. Properties and methods. Classes and instances. Container.	<input type="checkbox"/> interactive lecture <input type="checkbox"/> problem solving <input type="checkbox"/> web search <input type="checkbox"/> exemplifying	8 hrs
Creating an application <input type="checkbox"/> The steps for creating a functional application. Analysis and design, programming, implementing and testing. <input type="checkbox"/> Creating a relational DBMS for the management of a warehouse.	<input type="checkbox"/> interactive lecture <input type="checkbox"/> problem solving <input type="checkbox"/> modeling <input type="checkbox"/> web search	4 hrs
8.6 Laboratory References		
1. Nagy M., Suport de laborator, SUMS, 2023 2. Garais E.G., Proiectarea bazelor de date relationale cu Microsoft Access, Ed. Pro Universitaria, 2024 3. Kovacs S., Implementarea bazelor de date, Ed.Albastră, Cluj-Napoca, 2003 4. Nagy M., Vizental M., Baze de date. Material de studiu pentru învățământul la distanță., UAV, 2010 5. Nagy M., Vizental M., Sisteme de gestiune a bazelor de date, Note de curs și aplicații, Ed. Mirton, Timișoara, 2007 6. Năstase P. și colectivul, Baze de date Microsoft Access 2000, Ed. Teora, București, 2000 7. Sfetcu N., Lucrul cu baze de date, Ed. Multimedia, 2021 8. Ulrich L.A., Cook K., Access 2019 For Dummies, Ed. Wiley, 2019		
8.7 Project Outline	Teaching methods	Remarks
8.8 Project References		

9. Correlation of course outline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

This course is taught in similar programs at many universities, both in Romania and abroad. For a better matching with the demands of the labor market, meetings with employers' representatives and specialty teachers from the pre-university education system have been organized. Using English brings and added value to the program, raising the graduates chance to be hired by multinational companies (both abroad and in Romania).

10. Evaluation / Grading (if applicable)

Activity type	Evaluation criteria	Evaluation methods	Percentage of the final grade
10.1. Lecture	<input type="checkbox"/> correctness and completeness of knowledge <input type="checkbox"/> logical consistency <input type="checkbox"/> the degree of assimilation <input type="checkbox"/> conscientiousness, interest in study	Oral assessment (final exam): <input type="checkbox"/> presentation of the project <input type="checkbox"/> conversation evaluation <input type="checkbox"/> Free Exposure <input type="checkbox"/> Oral Questioning active participation in courses	30% 10%
10.2. Seminar			
10.3. Laboratory	<input type="checkbox"/> ability to apply the acquired knowledge <input type="checkbox"/> ability to apply the acquired knowledge <input type="checkbox"/> conscientiousness, interest in study	<input type="checkbox"/> finalization of the required project Homework and projects done during the semester active participation in laboratories	30% 10% 20%

10.4. Project			
10.5 Minimal performance standard The appropriate acquirement of basic theoretical concepts and the capability to apply them for building a basic application.			

Course coordinator
Prof. dr. Nagy Mariana

Seminar/laboratory/
project coordinator
dr. Deac Dan-Stelian

Head of the Department
Lecturer dr. Lorena POPA

Dean
Prof. dr. Sorin NĂDĂBAN