Aprobată la Consiliul facultăţii TISE, proces-verbal nr. **1** din **04.09.2018**,

Decan Aureliu Zgureanu, conf. univ., dr._____

Validată la şedinţa departamentului „Informatică și managementul informației”, proces-verbal nr. **1** din **29.08.2018**,
Şef departament Prisăcaru Anatolie, conf. univ., dr._____

Course name	**Economic informatics**
Course holder	**Aureliu Zgureanu,** dr., Assoc. Prof.

Cycle *(L-license, M-master)*	**L**	Course code	**G.01.O.005.63**	Year	**1**	Semester	**1**
No of credits	**5**	Language of instruct.	**English**	Final evaluation form *(E – exam)*			**E**
Hours of direct contact	**60**	Hours of individual study	**90**	Total hours per semester			**150**

Faculty	**International Economic Relations**
Specialty	**World Economy and International Economic Relations**
Department	**Informatics and Information Management**

Total number of hours (per semester) of direct contact
(*C- theoretical course, S-seminar, L-laboratory activities, P-project or practical works*)

Total	C	S	L	P
60	**14**		**46**	

The formative category of the course (*F-fundamental, G-general, S-specialty, U-socio-humanistic, M- targeting another field*)	**G**
Optional course class (*O-obligatory, A- optional, L- free choice*)	**O**
The maximum number of students who can enroll in the course	**100**

Access conditions	Required	Windows user experience and skills
	Recommended	Knowledge of computer science at the level of the high school program

Substantiation	The course "Economic Informatics" is designed to provide the students with theoretical knowledge and practical skills in the field of modern IT tools with application in the economic branch.
Objectives / learning outcomes	**Objectives:** • Acquiring the main concepts, methods and forms of collecting, processing and presenting economic, financial, accounting, etc. data; • Developing the skills of applying modern IT technologies to solving economic and business problems, economic data analysis models.

<table>
<tr><td></td><td colspan="5">Skills forming

a) application level:
• using of efficient tools for economic data collecting and storing;
• applying of modern IT methodologies for processing and presenting information related to Economy;
• developing of models and schemes to obtain results using specific features of modern IT applications in order to automate data processing and analysis;
• using of various algorithms and/or known and/or efficient convenient ways for extracting, processing and presenting economic information.
b) integration/creative level:
• proposing and using of new, more convenient and/or more efficient data collection and presentation schemes;
• efficient use of IT tools related to different Economy branches in order to develop models, universal algorithms for automation of the data processing and presentation.
• applying of classical software in assessing economic operations in order to obtain the opportune information to be proposed as support for decision-making.
• using of knowledge and skills gained in "Economic Informatics" and in the economic disciplines of the specialty EMREI to organize some case study processes.</td></tr>
<tr><td rowspan="3">Course Content</td><td rowspan="2">Denumirea temelor şi subiectelor</td><td rowspan="2">Total</td><td colspan="3">Inclusiv</td></tr>
<tr><td>Prel.</td><td>Pr./ Sem.</td><td>Lab.</td></tr>
<tr><td>Chapter 1. Economic informatics. Microsoft Excel - spreadsheet software.

1.1. Economic informatics (data, information, knowledge).
1.2. Basic concepts of the MS Excel spreadsheet.
1.3. Data types and formats in Excel. Data validation.
1.4. Formulas and functions in Excel.</td><td>12</td><td>2</td><td></td><td>10</td></tr>
<tr><td>Chapter 2. Lists in MS Excel

2.1. Lists making in Excel. Forms.
2.2. Data sorting and filtering.
2.3. Totals and subtotals.
2.4. Pivot tables and diagrams. Slicers.
2.5. Optimization tools.</td><td>8</td><td>2</td><td></td><td>6</td></tr>
</table>

	Chapter 3. Graphical representation of data in EXCEL. 3.1. Charts in Excel. Chart types. Sparklines. 3.2. Diagram making and edition. 3.3. Document printing.	4	2		2
	Chapter 4. Database Management Systems (DBMS). Basic database techniques. 4.1. Database models. 4.2. Designing a relational database. Designing steps. 4.3. Database (and its objects) management.	4	2		2
	Chapter 5. Storing data in a relational DB. 5.1. Storing data in a database table. 5.2. Tables relationships in a DB. 5.3. The control and verification of information stored in tables. Ensuring the integrity of data stored in database tables.	8	2		6
	Chapter 6. Processing data stored in a relational database. 6.1. Queries creating: select query, sorting queries, calculation queries, parameter queries. 6.2. Summary and crosstab queries. 6.3. Action queries.	12	2		10
	Chapter 7. Presenting data stored in a relational database. 7.1. Creating and managing Forms. Forms and SubForms. 7.2. Creating and managing Reports. SubReports. 7.3. Using of Graphic elements.	12	2		10
	TOTAL	**60**	**14**		**46**
The minimal bibliography	1. **V. Ţapcov**. *Excel and access*, Chişinău, ASEM, 2018, 182 p. 2. **Curtis Frye**, *MS Excel 2010, Microsoft Press, Washington*, 2010, 480 p. 3. **Ron McFadyen,** *Relational Databases and Microsoft Access*, University of Winnipeg, Version 3.0, September 2016, (available on http://www.acs.uwinnipeg.ca/rmcfadyen/CreativeCommons/Relational%20Databases%20and%20Microsoft%20Access%20V3.0.pdf)				

Additional bibliography	1. **V. Capaţina, M. Moraru**. *Informatica economică*, *MS EXCEL & MS ACCESS*; Manual, Chişinău, ASEM, 2016, 300 p. 2. **V. Capaţina, M. Moraru**. *Informatica economică*, MS EXCEL 2010 (Note de curs, laborator, teste), Chişinău, 2013, 232 p. 3. **Бурлаку Мануела**, *Экономическая информатика: MS Excel*. Учебное пособие, Chişinău: ASEM, 2013, 187 p. 4. **Бурлаку Мануела**, *Экономическая информатика: MS Access*. Учебное пособие, Chişinău: ASEM, 2013, 287 p.**Moraru Maria,**		
Teaching technologies	• *the dominant forms of organization*: frontal / group / individual; • *methods of teaching*-learning-research-evaluation: exposure, interactive course, group work, application learning, etc., reports prepared by students, case studies; exercises, examples, algorithmization, problematization, demonstration, brainstorming, feed-back. • *didactic means*: multimedia projector, cards, computer, Moodle.		
Final evaluation mode	***Written/oral exam*** *based on descriptive exposure of subjects and computer-based work and/or problem-solving using the computer.*		
Determination of final score (weight expressed in %)	Two tests during the semester	**30%**	
	Current performance (formative assessment)	**20%**	
	Individual study	**10%**	
	Exam (final evaluation)	**40%**	

Total time (semester hours) of the individual study activities claimed to the student				
1. Deciphering and studying course notes	8		8. Oral presentations preparation	10
2. Studying course notes	10		9. Preparation for the final examination	6
3. Minimal bibliography studying	2		10. Consultations	2
4. Additional documentation in the library	4		11. On-site documentation	10
5. Specific training for seminar and/or laboratory activity	8		12. Internet documentation	4
6. Essays realizing, translations, etc.	4		13. Other activities	16
7. Test preparation, control work	6			
TOTAL hours of individual study (per semester) = **90**				

The content of the analytical program, laboratory

Chapter 1. Economic informatics. Microsoft Excel - spreadsheet application (10 hours).

1.1. Economic Informatics (data, information, knowledge).

1.2. Basic concepts of the MS Excel spreadsheet.

General concepts of spreadsheets; creating a spreadsheet; the components of the MS Excel window; working with spreadsheets; saving Excel files; save for automatic recovery; protect and unprotect of records, data, sheets, and cell contents; ways to view spreadsheets; blocking columns and rows; screen splitting; hiding rows, columns, and spreadsheets.

1.3. Data types and formats in Excel.

Data types; data input (text, numbers, calendar dates and hours, formulas and functions); data editing and formatting; custom lists creating; conditional formatting (using color scales, data bars, icon sets, comparison operators, etc.); conditional formatting removing; data validation.

1.4. Formulas and functions in MS Excel.

Using formulas in Excel (in cells in the same spreadsheet, from different spreadsheets, from different computing workbooks); comments inserting; relative and absolute cell references; sheet and spreadsheet references; standard functions using (mathematical, statistical, logical, financial, etc.).

Chapter 2. Excel tables (lists) (6 hours).

2.1. Lists creation in Excel. Forms. Data sorting and filtering.

Making lists in MS Excel; forms (adding, excluding, finding and editing records using forms); data sorting; automatic data filtering; custom filter; advanced filter; using database functions in economic problems solving.

2.2. Totals and subtotals.

Subtotals creating; hierarchical subtotals creating.

2.3. Pivot tables and diagrams. Slicers.

Pivot tables creating; data filtering in the pivot table; calculations types in a pivot table (Sum, Count, Average, Max, Min, etc.); PivotChart creating from an existing PivotTable report; slicers (creating, formatting, disconnecting and excluding a slicer in an existing PivotTable).

2.4. Optimization tools.

Using of the Goal Seek analysis tool; using of the Solver Option Tool (which uses multiple variables and restrictions to find the best solution for an economic problem).

Chapter 3. Graphical representation of data in Excel (2 hours).

3.1. Types of charts. Sparklines charts.

Chart types; using charts (as part of a spreadsheet or independently); the specific elements of a chart; Sparklines charts creating and customizing (Line; Column; Win / Loss).

3.2. Charts creating and editing in MS Excel.

Charts creating; switching between displaying of rows or columns in the chart; chart editing: changing the data source, style, location; selection and formatting of the various components of the chart, axes information adding/removing, positioning, scaling, formatting; adding/removing gridlines on the chart; changing the look of the background elements of the chart; using text effects (WordArt); chart area resizing.

3.1. Printing of MS Excel workbooks.

Specifying page margins, page orientation, paper size, print area setup, setting rows and/or columns to be repeated on each printed page; spreadsheet background, scaling sheet content, printing row and column titles, focusing content on the page; creating and modifying header and footer; partial or full printing of a sheet or of the entire worksheet, of several spreadsheets, of the whole list; print preview using.

Chapter 4. Database Management Systems (DBMS). General concepts (2 hours)

4.1. Database models.

Database models: hierarchical (arborescent), network and relational; BD objects (tables, queries, forms, reports).

4.2. Designing a relational database. Design steps.

Designing of a relational database; main components of the User Access Interface 2010 (ribbon, backstage View, navigation Pane); design steps.

4.3. Database (and its objects) management.

Database (and its objects) management (renaming, deleting, copying, moving, opening, encryption and decryption).

Chapter 5. Storing data in a relational DBMS (6 hours).

5.1. Data storing in tables.

Tables creating (in a new database, in an existing database, importing or linking to external data); table structure (Field name, Data type, Field Properties, Comments); primary key defining; entering deleting and modifying of records in tables.

5.2. Relationships between database tables.

Defining relationships between database tables; relationships window.

5.3. Control and verification mechanisms for the information stored in the tables.

Input Mask, Validation Rule, Validation Text, Default value.

Chapter 6. Using queries for processing of data stored in a database (10 hours).

6.1. Creating queries for selecting, sorting, making calculations. Parameter queries.

Query window in MS Access 2010; Query Display Modes (Design View, Datasheet, SQL, PivotTable View, PivotChart View, Design Grid; selection criteria; queries sorting; applying, saving and removing filters; using calculus in queries; parameter queries.

6.2. Query totalizations and cross queries.

Summary and synthesis queries creating.

6.3. Action Queries.

Make table queries, update table queries, append table queries, delete table queries.

Chapter 7. Presenting data stored in a relational database. (10 hours)

7.1. Designing and managing forms. SubForms.

Forms creating and modifying; elements of a form; forms classification; forms properties; forms controls; SubForms.

7.2. Reports creating and managing. SubReports.

Reports creating using ReportWizard assistants, Design View option; data sorting and grouping in reports; report properties; subreports creating; tags types; reports printing.

7.3. Graphical elements in MS ACCESS.

Grouping data into reports; inserting graphics.

PROPOSED SUBJECTS FOR INDIVIDUAL STUDY (CASE STUDY)

Nr. p.	Subject
1.	Sales record in a fish commercial base
2.	The gym activities record
3.	Sales record in a butchery
4.	Sales record in a car shop
5.	The flower shop daily sales record
6.	The shoes storehouse activity record
7.	Record of the Human Resources in a company
8.	The cosmetics shop activity record
9.	Pizza deliveries record
10.	Tickets booking record (flights, cinema, theatre, buses, etc.)
11.	Activity of a mobile phones shop record
12.	The rooms booking record in a hotel
13.	Record of the room service dining in a hotel
14.	Record of furniture manufacture to order
15.	Books lending record in a library
16.	The TV sales record
17.	The computer storehouse activity record
18.	Car rent record
19.	"Tea and coffee" shop activity record
20.	The car wash activity record

Note: ***1. These subjects are for both MS Excel and MS Access.***

2. Students can also propose other subjects to the teacher.

EXAM QUESTIONS

1. Main categories in economic informatics (data, information, knowledge)
2. General concepts about spreadsheets
3. Spreadsheet creating
4. Components of the MS Excel window
5. Working with spreadsheets and worksheets
6. Saving MS Excel files. Saving for automatic recovery
7. Protecting and unprotecting workbooks, data, sheets and cell contents
8. Modes for workbooks viewing
9. Types and formats of data in MS Excel
10. Data input (text, numbers, calendar dates and hours, formulas and functions)
11. Data editing and formatting
12. Conditional formatting
13. Data validation
14. Creating a custom data series and lists in MS Excel
15. Simple calculations using formulas in MS Excel
16. Complex calculations using functions in MS Excel
17. Inserting and editing comments
18. References of cells, sheets and computational registers
19. Mathematical and statistical functions
20. Logical Functions
21. Financial functions
22. Searching Functions
23. Functions for working with calendar data and hours
24. Working with databases in Excel
25. Charts creating and editing. Elements of a chart
26. Creating and customizing Sparklines
27. Printing sheets and workbooks
28. Creating data lists. Forms
29. Data sorting and filtering
30. Custom Filtering in Excel
31. Using Advanced Filters in Excel
32. Data synthesis with pivot tables
33. Calculation of totals and subtotals
34. Types of calculations in a pivot table
35. PivotChart diagrams creating
36. Working with slicers in an existing PivotTable
37. GoalSeek Analysis Tool
38. Optimizing the solution of an economic problem using the Solver analysis tool
39. Databases. General notions
40. Designing and creating a database
41. Tables creating. Primary key fields
42. Database tables relationships
43. Data entering and editing
44. Data types and formats in MS Access
45. Queries selection and sorting
46. Using parameters in queries
47. Action Queries
48. Queries for tables creating and data modifying
49. Queries for records deleting/adding
50. Grouping queries; summary queries

51. Synthesis queries
52. Forms creating. SubForms
53. Calculated control creating in the MS Access form
54. Linked/unrelated controls creating in the MS Access forms
55. Creating reports. SubReports
56. Sorting and grouping data in reports
57. Charts creating and objects inserting into forms/reports

Date of completion: _____ Signature _____