



EUROPEAN  
MASTER IN  
OFFICIAL  
STATISTICS

**EMOS**



# Certificate

## European Master in Official Statistics

Master in Applied Statistics and Data Science  
Bucharest University of Economic Studies, Romania

has been awarded the EMOS label by the European Statistical System Committee (ESSC).

The "European Master in Official Statistics" (EMOS) label is awarded to European Master programmes which meet the requirements of EMOS. The label is awarded by the European Statistical System Committee (ESSC) based on the recommendations by the EMOS Board. The label is valid until 2028.

Luxembourg, 5 June 2023

eurostat 

A handwritten signature in blue ink, appearing to read "M. Kotzeva".

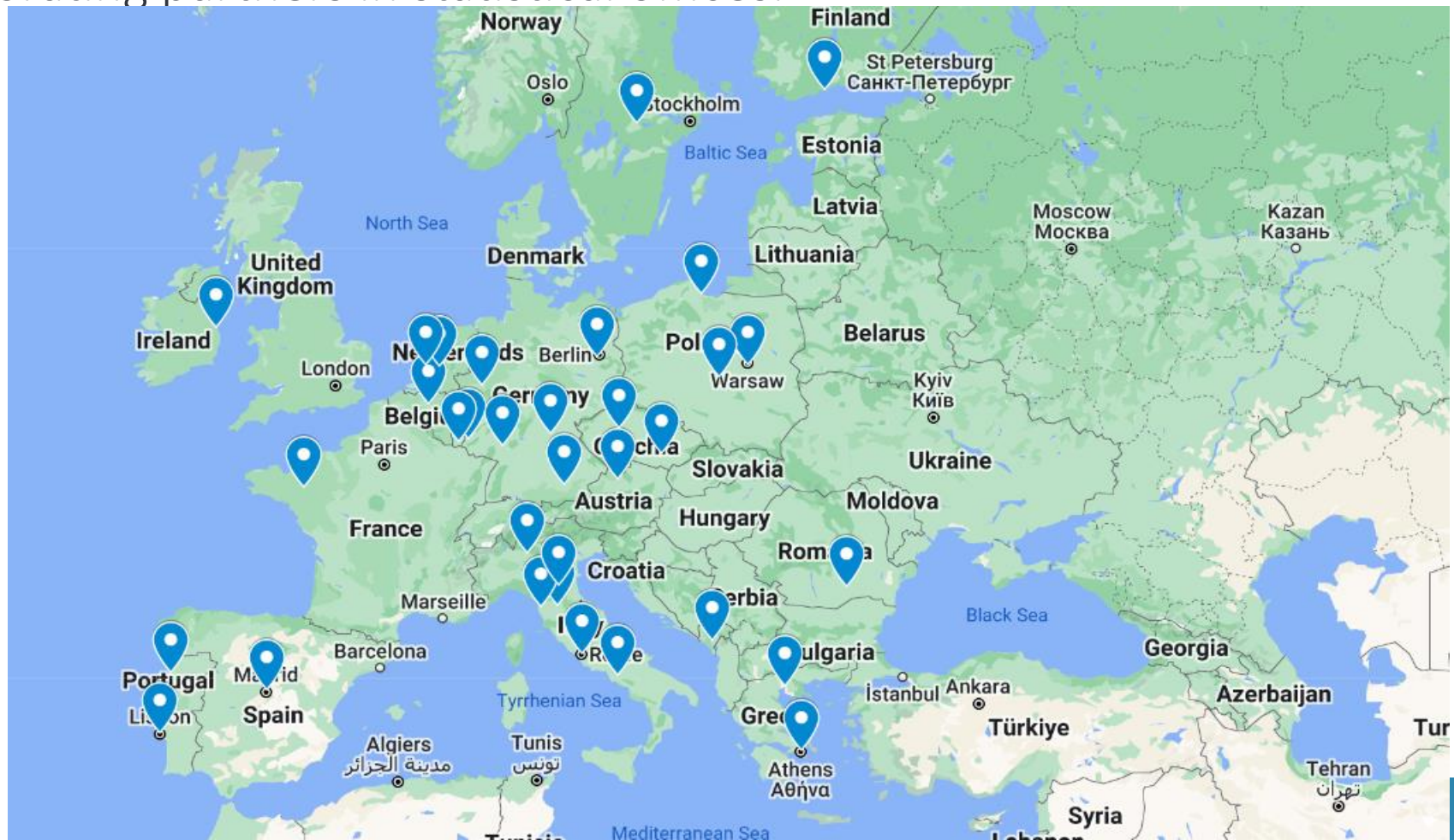
Mariana Kotzeva, Chair of the ESSC



EUROPEAN  
STATISTICAL  
SYSTEM

# European Master in Official Statistics

- The European Master in Official Statistics (EMOS) is a label awarded by the European Statistical System Committee (ESSC). The EMOS network comprises 33 programmes in 17 countries and collaborating partners in statistical offices.



**Successful graduate of the EMOS track can apply for jobs in, among others, national statistics institutes worldwide, EU institutions, WB, national banks, ministries, government and governmental bodies.**

- Statistician.
- Data scientist, data/business analyst, data engineer or machine learning engineer.
- Actuary or actuarial analyst.
- Financial (risk) analyst, investment analyst, financial trader, financial manager or quantitative analyst.
- Business intelligence analyst.
- Operational researcher or quality control analyst.

# Graduates who have successfully completed an EMOS programme will be able to demonstrate knowledge about:

- 1) The system of official statistics

1. To be aware of the importance of official statistics as basis for data-driven policy decision making;
2. To master the organisation and role of the European Statistical System (ESS), the European System of Central Banks (ESCB) and other official data producers and their legal bases, including those referring to data confidentiality;
3. To be aware of the main institutions operating at national and international level and their data sources (e.g. Eurostat, ECB, IMF, ILO, BIS, UN, OECD, World Bank);
4. To understand the principles of the [European Statistics Code of Practice \(for the ESS\)<sup>\[1\]</sup>](#) and the [Public Commitment \(for the ESCB\)](#) and how they apply to the different steps of data production and dissemination.

- 2) Production models and methods

1. To understand and be able to use different kinds of data sources for statistical production, especially censuses, survey data, administrative sources, big data as well as to evaluate pros and cons of each data source (impact on the main quality dimensions of the results);
2. To be able to design and manage data production processes, including the definition of the main dimensions of quality and how to monitor and evaluate them;
3. To be aware of different production models, including the enterprise architecture concepts applied to official statistics (e.g. metadata management, Generic Statistical Business Process Model, data archiving, standard statistical units, mixed-device surveys, statistical classification);

# Learning outcomes – cont.

- 3) Themes in official statistics

1. To be able to understand methodological issues related to the statistical domains such as economy and finance, population and social conditions, industry, trade and services, agriculture and fisheries, international trade, transport, environment and energy, science and technology, general and regional statistics, sustainable development goals;
2. To be able to apply methods suitable to produce and analyse data in these fields;

- 4) Statistical Methods

1. Knowledge of and ability to apply statistical methods such as sampling, small area estimation, non-response adjustments, editing and imputation, validation, treatment of big data, time series analyses, seasonal adjustment, outlier treatment, index theory, multivariate statistics, econometrics, spatial statistics, knowing the concepts of metadata, paradata, data integration, critical capacity of framing analysis of statistical data;
2. Understand statistical confidentiality issues in the production as well as dissemination of official statistics and the main methods to ensure it (i.e. privacy-preserving computation, statistical disclosure control)
3. User experience and programming capacities enabling to find professional solutions to complex data processing tasks, e.g. with tools such as R, Python , SAS, SPSS or STATA;

- 5) Dissemination

1. Ability to present data in an effective way to different kinds of audience using different types of state-of-the-art communication channels including social media;
2. Understanding and actively handling the most important tools available for data and metadata dissemination and presentation of results, such as tables, charts in a static and dynamic web-based environment, data warehouses, advanced visual graphics, etc.
3. To be familiar with different disseminated data e.g. linked open data, infographics and experimental statistics.

# Opportunities

- Master Thesis Competition
- Paid cross-border traineeships
- Sponsorship for participation in statistical conferences
- Labelled Universities
- Learning material
- Coding Labs
- Tools and Software

[https://cros-legacy.ec.europa.eu/content/emos-courses\\_en](https://cros-legacy.ec.europa.eu/content/emos-courses_en)

# EMOS Master Thesis competition, examples

- - University of Trier: Julia Manecke - Regional analysis of business survey: methods and applications in the context of Small Area Statistics
- - University of Rome "La Sapienza": Giovanna Tagliaferri - VAT Tax gap prediction: a 2-steps gradient boosting approach
- - KU Leuven (University of Leuven): Nhu Tho Ngyen\* - Estimation of measurement errors in social survey
- - University of Rennes: Noémie Morenillas - Modelling enterprises responses to the ICT (Information Communication Technology) survey
- - Free University Berlin: Kerstin Erfurth - Application and quality assessment of simulated geo-coordinates for regional analysis of the parliamentary elections to the Bundestag 2017