Spatial science methods are increasingly prominent in economics, geography, planning, regional science, political science, health sciences, and beyond. Spatial statistical and econometric techniques are shedding new light on critical research for which solutions are crucial for effective public and private sector policy. Through the coordinated efforts of a diverse faculty, West Virginia University has emerged as a leader in applied and theoretical spatial statistics and econometrics. Our faculty and students are conducting path-breaking research in this rapidly advancing field. We offer classes, workshops, and individual collaboration with scholars on campus and around the world.

Faculty expertise in applied geographical information systems, spatial statistics, and spatial econometrics is disseminated through formal classroom instruction, in workshops, through working papers, and through collaborations with an international network of scholars. Graduate students across campus are applying knowledge of spatial statistics and spatial econometrics in their thesis research, building a new generation of scholars who use spatial analytic techniques to bring fresh insight into many of today’s most critical research questions.

Regional Economic Analysis at WVU

Much of the regional economic analysis at WVU is centered in the Regional Research Institute and the Bureau of Business and Economic Research. WVU researchers have received external support from agencies such as the National Science Foundation, the Economic Development Administration, the US Departments of Agriculture, Energy, Defense, and Justice, the IRS, the Small Business Administration, the Appalachian Regional Commission, and the State of West Virginia.

Recent project topics include: sustainable industrial systems in urban areas, emphasizing the role of recycling and remanufacturing, regional innovation systems, business incubator performance in rural regions, new water quality, quantity and accessibility measures and an accompanying database for the Appalachian region, regional and national impacts of the introduction of new energy technologies and the substitution of domestic oil and gas for imports, regional impacts of cap-and-trade legislation, the American Recovery and Reinvestment Act, and the Marcellus Shale Play.

The Regional Research Institute (RRI)

The RRI is the only university-wide center for social science research at WVU, and since 1965 has been an internationally recognized center for the advancement of regional science. The RRI coordinates interdisciplinary research proposals and projects, sponsors scholarly seminars and workshops, provides seed grants to WVU faculty, and publishes a Working Paper Series and the Web Book of Regional Science, which is used worldwide by academics and professionals alike. The RRI brings together faculty and students with regional and spatial interests to engage in inter- and multi-disciplinary research. RRI visitors have included many of the world’s most distinguished regional and spatial scientists.

Spatial Econometrics at WVU

Spatial econometrics is a subfield of econometrics that incorporates geographic space in regression models for cross-sectional and panel data. Spatial econometric techniques are increasingly being used in many areas of research, and WVU is rapidly becoming one of the leading institutions in applied and theoretical spatial econometric research.

The RRI is fortunate to have two researchers on staff who are among the acknowledged leaders in both Bayesian and classical spatial econometrics, Donald Lacombe and Gianfranco Piras.

The RRI is planning a series of summer spatial econometrics workshops suitable for both graduate students and practicing professionals interested in emerging applications in the field. These annual workshops are expected to include:

- Introduction to Spatial Econometrics I
- Introduction to Spatial Econometrics II
- Spatial Panel Data Models
- Introduction to Bayesian Inference in Spatial Econometrics

Workshops participants will be exposed to both theoretical and practical aspects of spatial econometric modeling using software packages such as R and MATLAB.

Details regarding the summer workshops will be available on the RRI website (http://www.rri.wvu.edu).

Geographic Information Science

WVU has strengths in both theoretical and applied Geographic Information Science (GISc). The Department of Geology and Geography has five specialized GISc research and teaching labs and maintains a CAVE for 3D and visual ‘immersion’ studies. Five geography faculty members focus on GISc, including geocomputation, geo-visualization, crime, GISc and the humanities, environmental modeling and remote sensing; and the department houses the West Virginia GIS Technical Center (WVGISTC) providing statewide GIS research and development. In cooperation with federal and state energy partners, faculty and WVGISTC staff are mapping databases and modeling to locate sites for carbon sequestration in oil, gas, and coal fields.
Advanced Spatial Sciences

West Virginia University offers a wide range of courses related to spatial statistics, spatial econometrics, and regional economic analysis.

Davis College of Agriculture, Natural Resources and Design
Agricultural and Resource Economics
693L Special Topics Spatial Econometrics (PhD Level)
703 Advanced Natural Resource Economic Theory
710 Advanced Environmental Economics

Resource Management
440 Foundations of Applied GIS
442 Applied GIS - Natural Science
441 Applied GIS - Social Science
443 GPS Use and Applications
575 Advanced Spatial Analysis
640 GIS for Aquatic Resource Management

Forestry
326 Remote Sensing of the Environment
443 GPS Use and Applications
Recreation, Parks, and Tourism Resources
570 Meanings of Place

Eberly College of Arts and Sciences
Geography
452 Geographical Information Science: Applications
456 Remote Sensing Applications
550 Geographic Information Science
594 Geographical Data Analysis
651 Geographical Information Systems: Technical Issues
655 Remote Sensing Principles
752 Advanced Geographic Information Science
753 Exploratory spatial data analysis
755 Advanced Remote Sensing

Business and Economics
Economics
761 Advanced Regional Economics
762 Advanced Urban Economics

For additional information about the programs offered and opportunities for students and faculty, please contact:

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