Logistics and Supply chain management research course

Course Name: PhD course in Logistics Management

Subject: Logistics and Supply Chain Management

Marking scale: Pass/failed

Prerequisites:

Admitted as a PhD student in subjects related to value, logistics and supply chain management including waste management.

Objective:

The course deals with logistics management issues in the product supply chain. The focus will be on logistics in food and agricultural chains, and related logistics issues such as biomass logistics chain, and reverse logistics. The logistics management will be viewed from its historical development, state-of-the-art, and its increasing importance in the globalized marketing systems. After completing the course, students should be able to:

- analyse and critically evaluate logistics management and its elements in the context of international scientific literature
- describe and analyse management related issues
- develop effective and efficient logistics chain models for specific chains
- utilize tools such as GIS for logistics management purposes
- carry out independently a logistics management related individual project where tools (eg GIS) will be applied

Content of the course:

The course is structured into three modules as follows.

Module 1: Basic concepts of logistics and supply chain management systems (3 credits)

This part starts with introduction to logistics and supply chain management taking into consideration the historical development (as part of supply chain management) and its importance. It covers different components of logistics management and related costs (packaging and labelling, warehousing, inventory, procurement, transport) as well as designing effective logistics systems (objective based: examples/focus on Food and agricultural logistics, waste management, biomass/bioenergy logistics). Different approaches used for developing effective logistics management (clustering, coordination, integration, optimisation and product traceability/labelling and information flow issues) will be described.

Lecture: 10 hrs

Exercise and individual project: 40 hrs

Module 2: Optimisation (2.5 credits)

This part addresses optimisation analyses applicable during designing and evaluating different logistics chains. These include the analysis of facility location, vehicle fleet management, and optimizing transport routes for cost, travel distance and transport time minimisation. It also includes environmental impact minimization.
To participate in Module 2, participation of Module 1 is prerequisite.

Lecture: 10 hrs

Exercise and individual project: 30 hrs

Module 3: Logistics tools and technologies (4.5 credits)

In this part different software that can be used in developing and/or managing logistics chains will be discussed. Practical exercises will be carried out using some tools (eg. GIS, Route LogiX, Powersim, Arena). Focus will be on application of GIS tools for logistics management. This includes: Introduction to basic GIS and/or introduction to GIS application to logistics management; ArcGIS analyst tools; Road data acquiring and editing; Creating road network data set and its utilization; Utilization of ArcGIS network analyst tools for designing efficient routes; and GIS-based Vehicle Routing Problem solution (optimization). Finally the course will be concluded with individual project work (using ArcGIS and/or other tools such as Route LogiX, Powersim, Arena) with clear objective/s (e.g. Location analysis, Route analysis, Fleet management).

To participate in Module 3, participation of Module 1 and 2 is prerequisite.

Lecture: 10 hrs

Exercise and individual project: 50 hrs

Literature: Recommended literatures include books, published papers and manuals for the selected software. The basic literatures include:

1. Lambert D., Stock J., and Ellram L. 1998. Fundamentals of Logistics Management
2. Bowersok D.J., Closs D.J. 1996. Logistical Management
3. Russell R S., and Taylor B.W. 2009. Operation Management Along the Supply Chain

Examination:

Examination will be given for each module. However, before taking the exam, students should successfully accomplish essay and individual projects. For Module 1, an essay on specific topic addressing logistics issue/s should be prepared, presented orally and submitted in written form. For Modules 2 and 3, a GIS-based individual project will be conducted, presented and submitted. The essay and individual works will be evaluated by the course leader and the scores should be at least B (which corresponds to 85%). Participants will get a certificate for the corresponding credits.

Responsible Department: Department of Energy and Technology, Swedish University of Agricultural Sciences, SLU

Location: Ultuna, Uppsala

Duration: 15 January **– 30 April, 2020**

Course Leader: Prof. Girma Gebresenbet (Girma.Gebresenbet@slu.se; 018-671901; 070-4245032)
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