"Course Map"

- **Name of Course: Structural Equation modeling analysis using AMOS**
- **Date and place of the course: October 2020, University of Vaasa**
- **Total hours: 5 days (5 hours per day, in total 25 hours)**

Description	outlines	Key points
About SEM; AMOS Structural Equation Modeling (SEM) is a robust multivariate data analysis technique that is widely used in many areas of research such as Economics, Social Sciences, Biology, Psychology, Education, Healthcare, and Business. SEM allows both confirmatory and exploratory modeling, meaning SEM is suited for both theory testing and theory development. Factor analysis, path analysis, and regression all represent special cases of SEM. This course is a brief introduction and overview of SEM using the AMOS (Analysis of Moment Structures) software. Researchers and students by using this program are able to specify, estimate, assess and present models to show hypothesized relationships among variables, also it provides for them build models more accurately than with standard multivariate statistics techniques. **Goals and objectives:** By the end of the course, students should be able to fit structural equation models using AMOS. gain an appreciation for the types of research questions well-suited to SEM and an overview of the assumptions underlying SEM methods understand how to interpret the output from a multiple linear regression analysis. make positive contributions to extant knowledge in their field by enhancing their ability to a) interpret existing research findings, and also b) to conduct structural equation modelling research themselves	**First session: introduction** Lecture handouts and statistical software guidance Prerequisites accessing AMOS Overview of SEM Terminology in SEM Some examples of SEM models **Second session:** SEM assumptions A reasonable sample size Continuously and normally distributed endogenous variables Defining latent and observed variables Model identification (identified equations) Complete data or appropriate handling of incomplete data Theoretical basis for model specification and causality section **Third session:** Building and testing a model using AMOS Illustration of the SEM multiple regression relationship Drawing a model using AMOS graphics Reading data into AMOS Selecting AMOS analysis options and running the model **Fourth session:** interpreting AMOS output Evaluating global model fit Tests of absolute fit Tests of relative fit Modifying the model Viewing path diagram output Significance tests of individual parameters **fifth session:** Nested models Multiple group comparisons Bootstrapping Estimating direct, indirect and total effects Bayesian estimation Analyzing categorical data **Extra**: Putting it all together - a substantive interpretation of the findings Open discussion and feedback --- **Material presented by lecture, slides, video and problem-solving sessions and Moodle Platform.**	**Target group:** Master students and researchers in business studies (preferably marketing, management, and business administration) or other disciplines (social sciences, education, and psychology) who already have collected or accessed the source of data. Note: No prior knowledge about Structural Equation Modelling is required, basic familiarity with SPSS will be helpful, but it is not mandatory. No pre-reading is required. **Admittance:** The maximum number of students will be 10 who are in the process of writing and analyzing their data or researcher are interested in SEM. **Course credit and assessment:** 5 ECTS **divided into:** 3 ECTS: for participating actively in the full five seminar days and finding two articles in the area of your interest, it will be good to consider the data has been analyzed by AMOS. It requires to present and discuss those articles within your small team group. 2 ECTS of additional credits: for passing this assignment you need to develop your hypothesis and analysis your data and submit within 1 month. Please fill in the below form and send it to Email's teacher sghaffar@uwasa.fi by the deadline (15 of August 2020). You will be notified of the course details by (31, August 2020). **Course application form:** **Name:** **Degree:** **E-mail:** **faculty and department :** **Major:** **Research field:** **Subject or title of thesis:** **Main supervisor:** **Brief information of your collected date: (size, context…)** **Phase of the dissertation (do you have own empirical data, have you analyzed it and if yes, how?):** **Summary of the objectives, research questions, and methodologies:** **Your own objectives for participating in the course:**

***Instructor:**
Shaghayegh Ghaffaripour
Business School, University of Vaasa, Finland.
Contact information:
sghaffar[at]uwasa.fi

* Please don't hesitate to contact me if you have further questions or information.

Teaching and learning model for Structural Equation Modeling:

SEM is an extension of the general linear model (GLM) that enables a researcher to test a set of regression equations simultaneously. SEM software can test traditional models, but it also permits examination of more complex relationships and models, such as confirmatory factor analysis and time-series analyses. The researcher first specifies a model based on theory, then determines how to measure constructs, collects data, and then inputs the data into the SEM software package. The package fits the data to the specified model and produces the results, which include overall model fit statistics and parameter estimates. Among various types of teaching and learning styles, I found ASSURE Model of teaching, (Heinich, Molenda, Russell, Smaldino, 1999) and VARK model of learning (Fleming, 2001) effective for this training of this course. The short review of models are explained as follows:

1. Starting with the first step, Analyze Learners. As a teacher it is require to have general information about learners' background. As in the course map it has been mentioned learners fill in the form to provide a short introduction of themselves.

2. The next step is to know what state objective of their course the instructor is going to teach. Learning Amos software will support students and researcher in the process of finalizing their thesis and also will be beneficial for them if they want to continue their career path in academia.

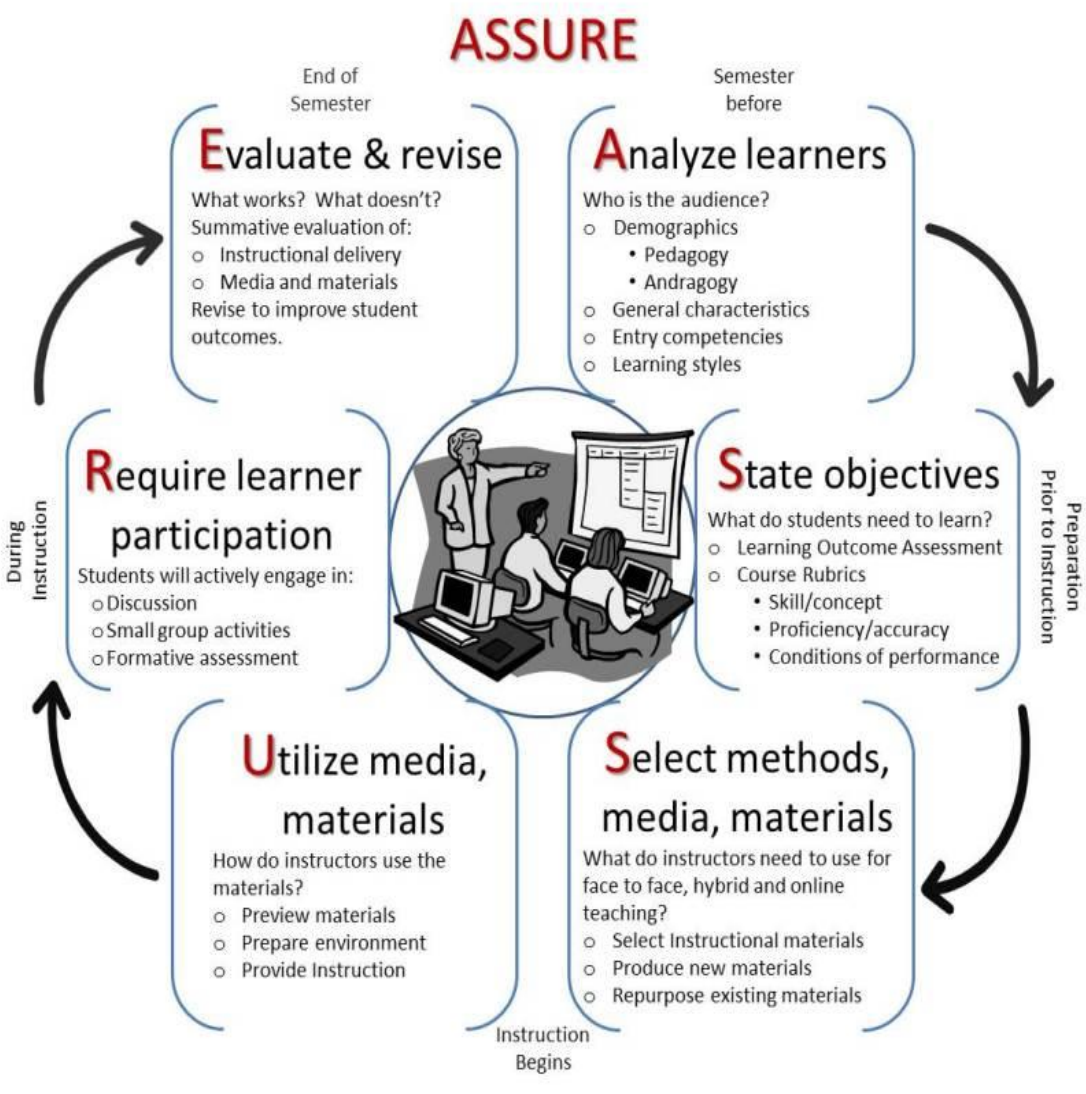
3. Next, selecting instructional methods, media, and materials cannot be overlooked. Preparation of handout like lecture material, slides and also reporting and corresponding with administrative office such as booking the computer lap required to de done beforehand.

4. Applying these media and materials comes next; it is very important to check the material well before the lesson, especially when technology and platforms (Moodel) is a part of teaching. This help to make sure everything works appropriately in the day of teaching.

5. Requiring learners to participate is also an essential part of any lesson. In the introductory of the course, teacher require to clarify the importance role of group activity during the training. In fact the teacher encourages and invites the students to be engage in the collaborative and cooperative learning and be proactive in the learning process.

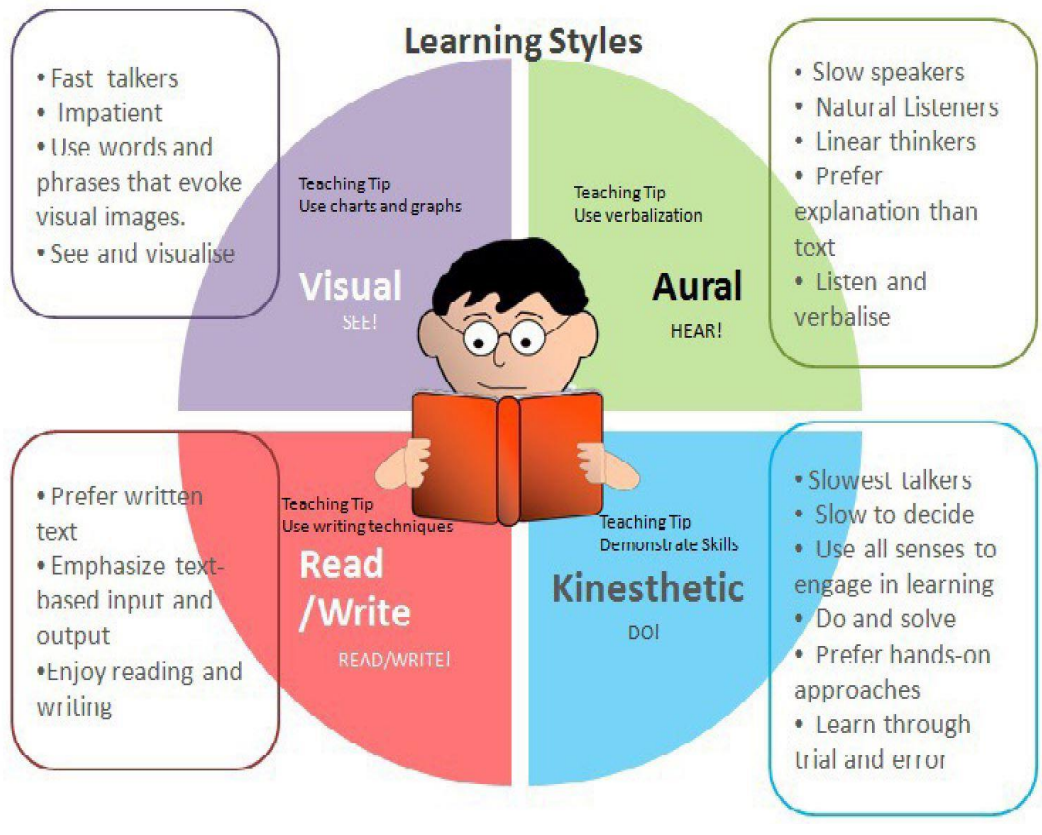
6. Finally, evaluating and revising is a step that cannot be overlooked; reflect upon the course is so vital and help teacher to perceive how much the training satisfy learners and the competency the students have learnt during the training.

Source: The ASSURE Model, Heinich, Molenda, Russell, Smaldino, 1999"



The process of learning and understanding can be different for each person. Learning a software as a skill requires practice exercise after each training session in order to learn the methods of running and analysing the data. Some students can easily learn the material if they listen the information, others use videos presentations and graphs for better learning and there are students who learn through practical examples. In learning the new software VARK (Visual, Aural, Reading or Write and Kinesthetic) model is an effective learning style. In this course Visual and kinaesthetic work well. Using visualization tool, watching training videos are very helpful. Mastery in using SEM can be achieved by practice on data. So, classroom lectures, problem solving exercises and laboratory exercises, all can be to facilitate learning. On laboratory exercises, students use programs for software visualization and have opportunity to run the program. This way of combined learning increases overall study experience and improve student success. Applying platform can be also another effective strategy in this process. Sharing information by teacher and students will be another channel will creates a strong network for cooperative learning. This e-learning procedure can be a new form of learning in digital world.

Source: VARK strategies Fleming, N. D. (2001).



References:

Fleming, N. D. (2001). Teaching and learning styles: VARK strategies. Christchurch , New Zealand : N.D. Fleming

Heinich, R., Molenda, M., Russell, J.D., & Smaldino, S.E. (1999). Instructional media andtechnologies for learning, (6th ed.). Englewood Cliffs, NJ: Merrill/Prentice-Hall.