ANNEX 2 – COURSE DESCRIPTION

Course Title	**Automotive Operations Management**				
Course Code	**AU408**				
Course Type	**Compulsory**				
Level	**BSc (Level 1)**				
Year / Semester	**4th year/ 7th semester**				
Teacher's Name	**Dr. Michalis Menicou**				
ECTS	6	Lectures / week	3	Laboratories/week	1
Course Purpose	Automotive engineering graduates are expected to hold management positions within the organisations to be employed soon after they start their employment OR are expected to setup and run automotive service stations. Thus, apart from their engineering background, they will need management know how to design and organise engineering management systems. Within this context, this course introduces automotive engineering students to the predominant engineering management challenges expected to face in their working environment coupled with appropriate techniques to be employed. Last but not least, students learn how to use Microsoft Excel solver to structure and solve operations management optimization problems.				
Learning Outcomes	1. Describe the main modes of manufacturing (project, job, batch, continuous) and reproduce the product-process matrix. 2. Apply Quality Function Deployment (QFD) procedure for product design exercises and apply Group Technology method in engineering design problems 3. Apply decision analysis techniques to model engineering decisions. 4. Employ simulation principles to model engineering operations management problems. 5. Develop alternative capacity plans with alternative technology requirements 6. Apply Project management principles, and project management tools such as Gantt charts, PERT analysis, and Critical Path Method. 7. Choose layout type (fixed-position, process, cell, product, mixed) and decide which layout design technique to employ, such as line-balancing techniques and relationship charts. 8. Calculate Process Reliability by employing exponential and normal distributions 9. Apply Statistical Process Control and compute Process Capability. 10. Employ commercial software to model Operations Management optimisation problems (Microsoft Excel Solver).				

Prerequisites	AU 210	Corequisites	None
Course Content	• **Design of a Production System**: - **Design of Goods** (Product Life cycle, QFD approach, Make-or-by decisions, Group Technology); - **Selection of Manufacturing Process** (Process types: Project, Job, batch, continuous; The product – process matrix); - **Capacity Planning** (Forecasting demand fluctuations; measuring capacity; alternative capacity plans); - **Location selection** (the location decision, evaluation of alternatives); - **Production Layout** (Types of layout: Fixed – position, Process, Cell, Product, Mixed; selecting a layout type; line balancing; relationship charts); - **Labour planning** (Job classifications and work rules, Work schedules). - **Product reliability** (its estimation using exponential and normal distributions), product availability - **Process Optimisation** (simplex method and use of Microsoft Excel/ Solver to model optimisation problems). - **Product reliability** (its estimation using exponential and normal distributions), product availability - **Process Optimisation** (simplex method and use of Microsoft Excel/ Solver to model optimisation problems). • **Organisation of a production System:** - **Job Design** (motivation theories, job expansion, self – directed teams, ergonomics); - **Work measurement** (Labour standards; Time studies); - **Quality management** (TQM, Cause-and Effect diagrams, SPC) • **Project management** and use of commercial software to model Operations Management optimisation problems (Microsoft Excel Solver).		
Teaching Methodology	The taught part of course is delivered to the students by means of lectures, conducted with the help of computer presentations. Lecture notes and presentations are available through the web for students to use in combination with the textbooks. Lectures are supplemented with laboratory work carried out on Microsoft Excel Solver. During laboratory sessions, students use commercial software to model Operations Management optimisation problems.		
Bibliography	Textbooks: • Operations Management, by William J. Stevenson, McGraw-Hill/ Irwin, ISBN: 0-07-304191-2, 9th edition, 2007. • Operations Management, by Jay Heizer, Barry Render, Prentice Hall, 9th edition, 2007, ISBN-10: 0138128782, ISBN-13: 9780138128784. References:		

	• Managing Engineering and Technology by Dan Babcock, Lucy Morse, Prentice Hall, 2002
Assessment	Students will be assessed through: - Two midterm tests at the 6th and 11th weeks of the course. - A Laboratory Test, and - A final test at the end of the semester, in which all material will be examined. The weights of the course assessment are as follows: Laboratory Test: 12% Midterm Exams: 28% Final Exams: 60%
Language	English