

General Information	
Academic subject	Agricultural Mechanics and Mechanization
Degree course	Agricultural Technologies and Science
Curriculum	all
ECTS credits	6
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Simone Pascuzzi	simone.pascuzzi@uniba.it	AGR09

ECTS credits details			
Basic teaching activities	Agricultural, Forestry and Biosystem Engineering		

Class schedule	
Period	First semester
Year	2019-2020
Type of class	Lecture- workshops

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	07/10/2019
Class ends	24/01/2020

Syllabus	
Prerequisites/requirements	
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>Advanced knowledge of the main agricultural machines and mechanical implements and the main agricultural mechanization concepts.</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>Knowledge and ability to understand the constructive and functional aspects of the agricultural motor machines and implements.</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>Ability to evaluate and choose agricultural machines and its inclusion in the different farms, in agreement with the environment and the operators' health.</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>Ability to explain and motivate the choices made in the field of agricultural mechanization..</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>Ability to learn the operation of different agricultural machines based on the knowledge gained during the course.</li> </ul> <p>The expected learning outcomes in terms of knowledge and abilities are reported in Annex A of the Academic Regulations (expressed through the European descriptors pertinent to the degree program)</p>
Contents	Endothermic engines. Introduction. Spark-ignited and compression-ignited engines. Two-cycle and four-cycle engines. Engine performance

	<p>parameters. The engine system. Engine performance maps. Engine selection.</p> <p>Tractor.</p> <p>Tractor concepts. The structure of a tractor. The transmission members. The clutch. The transmissions: introduction. The change gear; the differential gears; the final reductions. The propulsion and support members: introduction. Tractor mechanics: slip; rolling resistance; traction power. Tyres: for driving wheels, for steering wheels. The tracks. Devices for joining and driving of the implements: introduction. Trailing coupling. Mounting coupling. Power take off.</p> <p>Soil tillage machines.</p> <p>The action driven by the tools during the tillage (shearing, impact, compression, bedding, lifting, turning, levelling). Technologies, working, operational data and choice methods of the different typologies of soil tillage machines: chisels, cultivators, spading machines, harrows, rollers, share-mouldboard ploughs, disc ploughs.</p> <p>Seeders.</p> <p>Physical characteristics of the seeds and sowing methods. Overall structure and classification of the seeders: typologies, technologies, working of the broadcast seeders, of the bulk seeders, of the precision drilling machines. Adjustments, choice methods, operational data.</p> <p>Machines for the pest control.</p> <p>Classification. Liquid pesticide treatments. Methods for breaking up the thin liquid sheet. Methods for carrying the droplets to the target. Technology of the sprayer machines working by means: a) liquid pressure, air-assisted; b) pneumatic atomizing of the mixture; c) centrifugal forces. Adjustments, choice methods, operational data.</p> <p>Fertilizer distributors.</p> <p>Classification. The main qualifications for fertilizer spreader: spread patterns; spread width, working width. Technology connected to the spinning disc spreaders and to the auger spreaders. Spreading systems, characteristics and physical properties of the solid mineral fertilizers.</p> <p>Study of the working time in agriculture.</p> <p>Fuel capacity of the agricultural machines.</p> <p>Employment of the machines in agriculture.</p> <p>Cost analyses of the agricultural mechanization (an outline).</p>
<b>Course program</b>	
Bibliography	<ul style="list-style-type: none"> <li>• Bodria – G. Pellizzi – P. Piccarolo. Meccanica e Meccanizzazione Agricola. Edagricole, Bologna</li> <li>• M.Lazzari - F.Mazzetto Meccanica &amp; Meccanizzazione dei processi produttivi agricoli. REDA, Torino 2016</li> </ul>
Notes	The aforesaid texts are of reference, both for theoretical and practical aspects.
Teaching methods	The course topics will be explained through Power Point presentations.
Assessment methods (indicate at least the type written, oral, other)	A partial check is planned for students ongoing with the course year in which the teaching is carried out. This check consists of an oral test pertinent to topics developed during the theoretical lessons and exercise carried out until the date of the check. The outcome of this check contributes to the evaluation of the final attainment and is valid for one academic year. The evaluation of the students' accomplishment is expressed by a vote of thirty. The partial check is passed with a vote of at least 18/30.

	<p>The final exam consists of an oral test concerning the topics developed during the theoretical and practice lessons. The evaluation of the students' accomplishment is expressed by a vote of thirty. The final exam is passed with a vote of at least 18/30. For students who were undergone the partial check, the final evaluation is expressed by the average of the votes obtained in the two oral tests. A first class degree can be attributed in the case of top vote (30/30).</p> <p>The oral examinations are public.</p> <p>The evaluation of the student's attainment is in agreement with pre-established criteria, as detailed in Annex A of the Academic Regulations for the Agricultural Technologies and Science Degree Course.</p>
<p>Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are.</p>	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ The knowledge and understanding of the concepts concerning the agricultural machines explained during the Course will be the basic elements for the student's assessment..</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ An additional element of assessment will be the ability to understand the constructive and functional aspects of the agricultural motor machines and implements.</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ The ability to choose agricultural machines and its inclusion in the different farms, accordingly to the environment and the operators' health, will be another essential element of evaluation.</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ A further element of assessment will be the student's ability to explain and motivate the choices made in the field of agricultural mechanization.</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ The ability to learn the operation of different agricultural machines on the basis of the knowledge gained during the Course will finally highlight the highest level of learning.</li> </ul>
<p>Further information</p>	