

**Appendix A to the Addendum for Double Master's Degrees between Universidade Federal do Paraná (UFPR) and Universität Stuttgart (USTUTT)**

**Double Master's Degree Scheme**

The attached MACROPLAN depicts the 2-year MSc double degree structure in **Meio Ambiente Urbano e Industrial (MAUI) at UFPR** and in **Air Quality Control, Solid Waste and Waste Water Process Engineering (WASTE) at the UStuttgart**. It shows the compulsory and elective modules in each semester as well as the prerequisites for students wishing to spend their 2<sup>nd</sup> year at the partner institution.

**Macroplan for Double Master's Degree (MAUI - WASTE)**

**between Universidade Federal do Paraná (UFPR) and University of Stuttgart (USTUTT)**

**V6 (21.03.2017)**  
**SWS  $\triangleq$  créditos**

1st SEMESTER		2nd SEMESTER		3rd SEMESTER		4th SEMESTER	
MAUI student in UFPR (01.08. - 20.12.)	WASTE student in USTUTT (WS 15.10. - 15.02.)	MAUI student in UFPR (15.02 - 15.07.)	WASTE student in USTUTT (SS 15.04. - 30.07)	MAUI student in USTUTT (WS 15.10. - 15.02.)	WASTE student in UFPR (01.08. - 20.12.)	MAUI student in USTUTT (SS 15.04. - 30.07.)	WASTE student in UFPR (15.02 - 15.07.)
Thermodynamics (3SWS/3ECTS)	Thermo- and Fluid Dynamics (5,5SWS/6ECTS)	Reactor Kinetics (3SWS/3,5ECTS)	Process Engineering (5SWS/6ECTS)	Firing Systems and Flue Gas Cleaning (4SWS/6ECTS) <i>Core Module</i>	Combustion Processes (1SWS/1,5ECTS) <i>Core Module</i> ST: Treatment of Air Pollutants (3SWS/4,5ECTS) <i>Core Module</i>		
Transport Phenomena (3SWS/ 3ECTS)		*2 Multiphase Processes (3SWS/4ECTS)		Elective Module in Air Quality Control (6ECTS)			
Air Quality and Monitoring of Air Pollution (2SWS/3ECTS)	Pollutant Formation and Air Quality Control (5SWS/6ECTS)	Practical Work in Air Quality Control (2SWS/3ECTS)	Practical Work in Air Quality Control (2SWS/3ECTS)	Elective Module in Air Quality Control (3ECTS)	Carbon Dioxide Compensation Points Pollutants (2SWS/3ECTS)		
ST: Chemistry and Physics of Combustion (2SWS/3ECTS)							
Environmental Chemistry (2SWS/3ECTS)	Chemistry and Biology for Environmental Engineers (6SWS/6ECTS)	Emissions of Waste Treatment Plants (1SWS/1,5ECTS) <i>Core Module</i>	Mechanical, Biological and Thermal Waste Treatment (4SWS/6ECTS) <i>Core Module</i>	Elective Module in Air Quality Control (3ECTS)			
ST: Biology for Environmental Engineers (2SWS/3ECTS)		Biological Treatment of Solid Waste (2SWS/3ECTS) <i>Core Module</i>					
		*2 Thermal Waste Treatment" (1SWS/1,5ECTS) <i>Core Module</i>					
Industrial Wastewater I (2CSWS/3ECTS)	Sanitary Engineering (4SWS/6ECTS)		Elective Module in Solid Waste (6ECTS)	Elective Module in Solid Waste (6ECTS)			
*5							
Seminar Requirements for a presentation (2SWS/3ECTS)	Technology Assessment and Presentation Techniques (4,5SWS/6ECTS)	ST: Presentation of Research (3ECTS)	Elective Module (3ECTS)	Practical Work in Solid Waste (3ECTS) and Elective Module in Solid Waste (3ECTS) or Industrial Internship in Solid Waste (6 weeks) (6 ECTS)	Industrial Internship in Solid Waste (6 weeks/ 6ECTS)		
*1		Industrial Engineering and Management Systems (1SWS/1,5ECTS)	Elective Module (3ECTS)				
		Treatment of Sludge and Industrial Waste (1SWS/ 1,5ECTS)					
*4 Mathematics (3SWS/3ECTS)	*4	*5 Management of Urban and Industrial Waste (2SWS/3ECTS)		*1 Technology Assessment and Environmental Economics (2SWS/3ECTS) (Friedrichs)	ST: Presentation of Research (3ECTS)		
*3 Environmental Law (2SWS/3ECTS)					*3 Environmental Law (2SWS/3ECTS)		
German Course I (2SWS/3ECTS)	German Course I (2SWS/3ECTS)	German Course II (2SWS/3ECTS)	German Course II (2SWS/3ECTS)	German Course I	Portuguese I	German Course II	Portuguese II
<b>33 ECTS</b>	<b>33 ECTS</b>	<b>27 ECTS</b>	<b>30 ECTS</b>	<b>30 ECTS</b>	<b>27 ECTS</b>	<b>30 ECTS</b>	<b>30 ECTS</b>

\*1 Der Teil "Technology Assessment and Environmental Economics" muss von den MAUI Studenten in Deutschland gehört werden / "Technology Assessment and Environmental Economics" has to be followed by MAUI students in USTUTT.

\*2 "Multiphase Processes" beinhaltet "Thermal Waste Treatment" mit (1SWS/1,5ECTS) / "Multiphase Processes" includes "Thermal Waste Treatment" with

\*3 "Environmental Law" ist Pflichtfach in MAUI / "Environmental Law" is a compulsory course in MAUI.

\*4 "Mathematics" ist Pflichtfach in MAUI - kann WASTE Student anerkannt werden, wenn bereits im Bachelor die Prüfungsleistung erbracht wurde. / "Mathematics" is a compulsory course in MAUI - if WASTE students have done this during their Bachelor degree, this achievement can be transferred

\*5 "Management of Urban and Industrial Waste" wird im 2. Semester gelehrt ist Teil von "Sanitary Engineering" / "Management of Urban and Industrial Waste", taught in the 2nd semester is part of "Sanitary Engineering"

Advances Modules 36 ECTS
Specialized Area I (Air Quality Control) - 18 ECTS
Specialized Area II (Solid Waste) - 18 ECTS
Elective Modules - 12 ECTS
German Course OR Key Qualifications - 6 ECTS
Master Theses - 30 ECTS