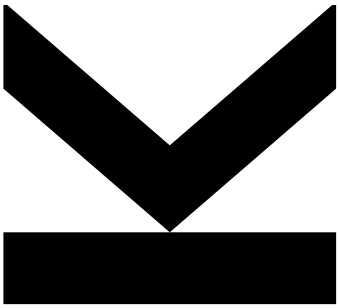
K 066/497

CURRICULUM FOR THE MASTER'S PROGRAM IN **POLYMER CHEMISTRY.**



(in English)

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Contents

§ 1 Qualification Profile

(1) The Master's program in "Polymer Chemistry" at the JKU Linz has been designed to provide a high level of academic and scientific education to qualify polymer chemists to work professionally in fields that include the development and characterization of new kinds of monomers and polymers.

(2) The Master's program provides fundamental academic and scientific knowledge and qualifies graduates to pursue professional careers that require the application of scientific knowledge and methods. Graduates will understand how to transfer new scientific knowledge, theory and methods to the working world, applying their knowledge to demanding activities and operations in various areas of manufacturing and plastics research.

(3) Graduates of the Master's program in "Polymer Chemistry" at the JKU Linz work intensively with the synthesis and characterization of new kinds of monomers and polymer products. Polymer products include plastomers, duromers, and elastomers as well as functional polymers, plastic multifunctional materials, plastic fibers, composites and polymers contained in paints and adhesives.

(4) Graduates are mainly employed in various fields of R&D, as well as chemical synthesis and characterization, in the pharmaceutical and plastics industry, in construction, in the packaging industry, aerospace engineering, sporting goods production, automotive industry, electrical industry and the electronics industry. Skills in interdisciplinary thinking and enterprise are also emphasized.

(5) Graduates of the Master's program "Polymer Chemistry" acquire:
- Broad, solid, top quality education in the disciplines of natural and technical sciences
- Solid base knowledge in a variety of polymer related disciplines including:

- Polymer Chemistry
- Physical Chemistry of Polymers
- Polymerization Techniques and Technologies
- Materials Science and Characterizing Polymers and Synthetic Materials

(6) Graduates of the Master's program in "Polymer Chemistry" will become familiar and comfortable with base concepts in polymer synthesis, polymer modification and characterization: they are familiar with the basics of polymer manufacturing and the latest subject-specific research methods. Graduates have the ability to plan and assess various reactions and procedures in the area of polymer manufacturing and characterization. The comprehensive, hands-on program offered at the JKU Linz enables graduates to reliably handle the raw materials required for polymer manufacturing, as well as effectively use equipment to handle, manufacture and characterize polymer products. Graduates can conduct experiments and testing series, as well as observe and document systematically and thoroughly. Graduates are in a position to professionally interpret experimentally acquired data and view results in a larger context.

(7) The program offers sound, basic education designed to be consistent with the various demands of different occupations in the fields of polymer chemistry. In order to link theory and practice, students participate in lab courses, workshops corresponding to the lectures, and submit a final academic thesis. The scope of education in the context of the Master's program in "Polymer Chemistry" includes conveying modern strategies and methods designed to create, utilize and relay information.

(8) The Master's program in "Polymer Chemistry" at the JKU Linz includes a number of unique and exclusive features:

- Intensive support provided by diverse cooperation efforts with the plastics producing and processing industries
- Internationality by involvement of globally active companies in the degree program

- Access to the latest technical equipment at well-equipped polymer institutes
- Broad compilation of JKU institutes involved in the field of polymer science at the JKU
- Close cooperation with polymer engineering institutes

§ 2 Admissions

(1) In accordance with § 54 (1) UG the Master's program "Polymer Chemistry" belongs to the category of engineering degrees.

(2) The Master's program "Polymer Chemistry" is based on the Bachelor's programs in "Chemistry" (K033/290), "Biological Chemistry" (K033/663) and "Polymer Engineering and Technologies" (K033/220) at JKU. Graduates of these Bachelor's programs are admitted to the Master's program without any restrictions.

(3) Graduates of related programs at Universities, Universities of Applied Sciences and other recognized national or international post-secondary educational institutions can be admitted to the Master's program if their degree programs are equivalent in content and scope to the Bachelor's programs in "Chemistry", "Biological Chemistry" or "Polymer Engineering and Technologies" at JKU. Equivalent programs are those in which the following subjects have been successfully completed in the stated minimum scope, whereby at least 3 ECTS must be in chemical lab/practical courses (chemistry laboratory work with one's own experimental activities):

(a) Equivalent to the Bachelor's program in "Chemistry":

- General and Inorganic Chemistry (20 ECTS)
- Analytical Chemistry (20 ECTS)
- Organic Chemistry and Polymer Chemistry (21 ECTS)
- Physical Chemistry (16 ECTS)
- Chemical Technologies and Process Engineering (15 ECTS)
- Mathematics and Natural Sciences (10 ECTS)

(b) Equivalent to the Bachelor's program in "Biological Chemistry":

- General and Inorganic Chemistry (14 ECTS)
- Analytical Chemistry (16 ECTS)
- Organic Chemistry (10 ECTS)
- Physical Chemistry (9 ECTS)
- Mathematics and Physics (10 ECTS)

(c) Equivalent to the Bachelor's program in "Polymer Engineering and Technologies":

- Chemistry (24 ECTS)
- Polymer Technology (30 ECTS)
- Mathematics and Physics (10 ECTS)

(4) In the event of admission under para. 3, it must be determined during the official admission process whether equivalent standard has been met in accordance to para. 3 lit. a, b or c and/or if the prerequisites for graduates of the Bachelor's degree program in "Chemistry", "Biological Chemistry" or "Polymer Engineering and Technologies" have to be applied.

(5) If the undergraduate degree is considered principally equivalent and requires only individual supplements to be considered equivalent, the Rectorate can approve admission and require the student to successfully pass examinations totalling a maximum of 40 ECTS. The student must pass the examinations during the course of the Master's program.

(6) Graduates of a Diploma program with a longer duration than a Bachelor's program can obtain recognition for examinations of the Master's program (see § 78 UG) to the extent by which the Diploma program (excluding the diploma thesis) exceeds the Bachelor's program.

§ 3 Structure and Outline

(1) The Master's program in "Polymer Chemistry" covers 4 semesters and consists of 120 ECTS, which are distributed among the following subjects:

(a) Subjects for graduates of the Bachelor's program "Chemistry"

Subjects	**ECTS**
Mandatory Subjects	55,7
Elective Subjects	22,3
Master's Thesis (incl. Master's Thesis Seminar)	28
Master's Examination	2
Free Electives	12
Total	120

(b) Subjects for graduates of the Bachelor's program "Biological Chemistry"

Subjects	**ECTS**
Mandatory Subjects	61,7
Elective Subjects	16,3
Master's Thesis (incl. Master's Thesis Seminar)	28
Master's Examination	2
Free Electives	12
Total	120

(c) Subjects for graduates of the Bachelor's program "Polymer Engineering and Technologies"

Subjects	**ECTS**
Mandatory Subjects	63,1
Elective Subjects	14,9
Master's Thesis (incl. Master's Thesis Seminar)	28
Master's Examination	2
Free Electives	12
Total	120

(2) For free electives students have to pass examinations corresponding to 12 ECTS, which can be chosen from any recognized national or international post-secondary educational institution. The free electives shall provide additional skills beyond "Polymer Chemistry" and can be taken anytime during the Master's study.

(3) The recommended free electives courses are further courses taught in the Master's programs "Biological Chemistry", "Technical Chemistry", "Industrial Engineering - Technical Chemistry" or "Polymer Technlogies and Science (PTS)".

(4) The recommended course of study is listed in the annex.

§ 4 Mandatory Subjects/Modules

(1) The following mandatory subjects have to be completed successfully:

Code	Name	ECTS
497ADCH14	Advanced Chemistry for Polymer Chemistry	5
497PHCH14	Physical Chemistry of Polymers	5,2
497POCH14	Polymer Chemistry	12,8
497POTE14	Polymerization Techniques	9
497SOSK16	Soft Skills for Master Polymer Chemistry	6,2

(2) Graduates of the Bachelor's program "Chemistry" have to complete, as well as the mandatory subjects, listed in para. 1, additionally the subject "Bridge subject Polymer Chemistry for Chemists" subject code: 497BRTC18, to the extent of 17,5 ECTS, graduates of the Bachelor's program "Biological Chemistry" additionally the subject "Bridge subject Polymer Chemistry for Biological Chemists", subject code: 497BRBC18, to the extent of 23,5 ECTS and graduates of the Bachelor's program "Polymer Engineering and Technologies" additionally the subject "Bridge subject Polymer Chemistry for Polymer Engineering and Technologies" subject code: 497BRKT18, to the extent of 24,9 ECTS.

§ 5 Elective Subjects/Modules

(1) Elective subjects have to be completed successfully according to sub-para.1 or 2:

1. The subject „Elective Polymer Materials and Synthesis“ or the subject „Elective Polymer Processing“ has to be chosen, whereupon graduates of the Bachelor's program "Chemistry" have to complete the chosen elective subject to an extent of 22,3 ECTS, graduates of the Bachelor's program "Biological Chemistry" to an extent of 16,3 ECTS and graduates of the Bachelor's program "Polymer Engineering and Technologies" to an extent of 14,9 ECTS.

2. Alternatively the subject Gender Studies to an extent of 3 ECTS and one of the two other elective subjects can be chosen. In this case graduates of the Bachelor's program "Chemistry" have to complete the other chosen elective subject to an extent of 19,3 ECTS, graduates of the Bachelor's program "Biological Chemistry" to an extent of 13,3 ECTS and graduates of the Bachelor's program "Polymer Engineering and Technologies" to an extent of 11,9 ECTS.

Code	Name	ECTS
497GEND16	Gender Studies	0-3
497WPMS18	Elective Polymer Materials and Syntheses	11,9-14,9/13,3-16,3/19,3-22,3
497WPOV18	Elective Polymer Processing	11,9-14,9/13,3-16,3/19,3-22,3

(2) Students must select only such courses from the Electives that have not already been completed as part of the Bachelor's program which qualified them for this post-graduate program.

§ 6 Courses

(1) The names and the types of all courses of the mandatory and elective subjects, as well as their ECTS, their duration in hours per week, their codes, their registration requirements, and their admission procedures (in case of limited availability of places) are described in the study handbook of JKU (studienhandbuch.jku.at).

(2) The possible types of courses, as well as the examination regulations are described in §§ 13 and 14 of the JKU statute (section "Studienrecht").

§ 7 Replacement of Subjects and Courses

Mandatory and elective subjects according to §§ 4 and 5, as well as courses according to § 6 (1), may be replaced to a total extent of 18 ECTS by other study specific subjects and courses upon student's request, provided that the purpose of academic professional preparatory training is not affected and the choice of the proposed subjects and courses seems reasonable with regard to the defined aims in the qualification profile, the academic context, as well as to the addition to the professional preparatory training. The application for the replacement of subjects and courses has to be filed by the Vice Rector of Academic Affairs.

§ 8 Master's Thesis

(1) Students of the Master's program "Polymer Chemistry" must complete a Master's thesis according to § 81 UG and § 36 of the JKU statute (Section "Studienrecht").

(2) The Master's thesis usually consists of experimental research, whose results are to be documented in the form of a written paper corresponding to an effort of 25 ECTS.

(3) The Master's thesis serves as a proof that graduates are able to perform scientific work autonomously and correctly in terms of methods and content. The topic of the thesis must be taken from the mandatory subjects listed in § 4 (1) with the exception of the subject "Soft Skills for Master Polymer Chemistry" or from the elective subjects listed in § 5 and must permit completion within a period of 6 months.

(4) The curricular committee may specify guidelines for the formal structure of a Master's thesis.

(5) Subject to agreement with the tutor (academic advisor), the Master's thesis can be submitted in English or German.

(6) In addition to the Master's thesis, students must pass the Master's thesis seminar with 3 ECTS.

§ 9 Examination Regulations

(1) The regulations for subject examinations and course examinations are described in the study handbook of JKU.

(2) The Master's program "Polymer Chemistry" is concluded by a Master's examination.

(3) The Master's examination consists of two parts: The first part is the successful completion of the mandatory and elective subjects according to §§ 4 and 5.

(4) The second part of the Master's examination is a comprehensive oral examination (2 ECTS) conducted by an examination committee. Prior to being admitted to the Master's examination, students must complete the first part of the Master's examination, the Master's thesis, the Master's thesis seminar, and the free electives.

(5) The second part of the Master's examination starts with a presentation and a defense of the Master's thesis, followed by an oral exam that covers the subject which includes the topic of the Master's thesis and as well as a second subject defined by the advisor of the Master's thesis.

(6) The examination committee consists of three members and is formed by the Vice Rector of Academic Affairs. The candidate may submit a proposal for the committee members. In general, the Academic Advisor of the Master's thesis is a member of the examination committee. The head of the committee suggests the assessment of the oral presentation. The other two examiners suggest the assessment of the examinations in their respective subjects.

§ 10 Academic Degree

(1) Graduates of the Master's program "Polymer Chemistry" are awarded the academic degree „Diplom-Ingenieurin/Diplom-Ingenieur" abbreviated "Dipl.-Ing." or "Dipl.-Ing. (JKU) oder "DI" or "DI (JKU)".

(2) The certificate confirming the academic degree is issued in German and in English translation.

§ 11 Legal Validity

(1) This Curriculum comes into effect on October 1, 2014.

(2) The curriculum of the Master's program in "Polymer Chemistry" in the version published in the official newsletter of Johannes Kepler University Linz on June 26, 2013, 25th piece, item 177 expires by the end of September 30th, 2014.

(3) § 5 para. 2 as published in the official newsletter of the Johannes Kepler University on June 10th, 2015, 26th piece, item 203 will take effect on October 1st, 2015.

(4) The amendments in § 3 para. 1, § 4 para. 1, § 5 para. 1 and Annex 1, 2 and 3 will come into effect on October 1st, 2016.

(5) § 2 para. 2, 3 and 4, § 3 para. 1, § 4, § 5 para. 1, § 6 para. 1, § 12 para. 1 and 3 and annex 1, 2 and 3 as published in the official newsletter of the Johannes Kepler University Linz on June 22nd, 2018, 26th piece, item 273 will take effect on October 1st, 2018.

§ 12 Transitional Provisions

(1) For students who have passed examinations within the curriculum of the Master's program in "Polymer Chemistry " in a previous version, the equivalences listed in the study handbook of JKU (studienhandbuch.jku.at) apply.

(2) In addition to the mentioned equivalences given in the study handbook of JKU, the following equivalence table applies:

Course package in the Master's program "Polymer Chemistry" 2012	**Equivalent course package in the Master's program "Polymer Chemistry" 2014**
220CHEMPC1V10 + 220CHEMPC1U10: VL+UE Physikalische Chemie der Polymere 1 (2,5 ECTS + 1,5 ECTS) 220CHEMSTRK11: KV Strukturrheologie für Kunststofftechnik (3 ECTS)	491WPHCPCMV10: VL Physikalische Chemie Makromolekularer Stoffe (3,9 ECTS) 497PHCHSTRV13: VL Structural Rheology for Chemistry (2,6 ECTS)
497PHCHPC3V10: VL Physikalische Chemie der Polymere III (2,6 ECTS) 497PHCHPOAV10: VL Polymerarchitekturen (2,6 ECTS)	479POMTPCSV12: VL Physical Chemistry of Surfaces and Interfaces (1,5 ECTS) 497PHCHESPV13: VL Elements of Structuring in Polymers (1,3 ECTS) 491WPHCPC2P10: PR Praktikum aus Physikalischer Chemie II (2,4 ECTS)

(3) In addition to the mentioned equivalences given in the study handbook of JKU, the following equivalence table applies:

Subject package in the Master's program "Polymer Chemistry" 2016	**Equivalent subject package in the Master's program "Polymer Chemistry" 2018**
497BRTC14: Bridge subject Polymer Chemistry for Chemists (17,1 ECTS) + 497WAFA16: Electives Polymer Chemistry (22,7 ECTS)	497BRTC18: Bridge subject Polymer Chemistry for Chemists (17,5 ECTS) + 497WAFA18: Electives Polymer Chemistry (22,3 ECTS)
497BRBC14: Bridge subject Polymer Chemistry for Biological Chemists (22,3 ECTS) + 497WAFA16: Electives Polymer Chemistry (17,5 ECTS)	497BRBC18: Bridge subject Polymer Chemistry for Biological Chemists (23,5 ECTS) + 497WAFA18: Electives Polymer Chemistry (16,3 ECTS)
497BRKT14: Bridge subject Polymer Chemistry for Polymer Engineering and Technologies (23,5 ECTS) + 497WAFA16: Electives Polymer Chemistry (16,3 ECTS)	497BRKT18: Bridge subject Polymer Chemistry for Polymer Engineering and Technologies (24,9 ECTS) + 497WAFA18: Electives Polymer Chemistry (14,9 ECTS)

Annex 1: Global map of study subjects - Master's Program "Polymer Chemistry" for graduates of the Bachelor's program Chemistry (2018)

1st Semester (WS)		2nd Semester (SS)		3rd Semester (WS)		4th Semester (SS)	
Subject/Module	**ECTS**	**Subject/Module**	**ECTS**	**Subject/Module**	**ECTS**	**Subject/Module**	**ECTS**
Bridge Subject - CH VL Polymerwerkstoffe 1 VL Technologien der Polymerverarbeitung 1A: Einführung VL Technologien der Polymerverarbeitung 1B: Einführung VL Structural Rheology for Chemistry VL Physikalische Chemie Makromolekularer Stoffe	15	**Bridge Subject - CH** VL Charakterisierung und Prüfung der Kunststoffe 1	2,5	**Master's Thesis**	10	**Master's Thesis**	15
		Polymer Chemistry VL Chemical Interactions in Polymers VL Technical Biopolymers PR Laboratory Course of Polymer Chemistry 2	8,6				
		Advanced Chemistry PR Advanced Instrumental Analysis	2,4	**Polymerization Techniques** UE Exercises in Polymerization Techniques PR Lab Course in Polymerization Techniques	6,4	**Electives**	5
Polymer Chemistry VL Polymer Chemistry 2 UE Exercises in Polymer Chemistry 2	4,2	**Soft Skills** VL Excursion Polymer Chemistry VL Patent Law and Intellectual Property SE Global Management and Strategy	6,2				
Advanced Chemistry VL Catalysis by Metal Complexes	2,6			**Electives**	6,6	**Free Electives**	5
Physical Chemistry of Polymers VL Physical Chemistry of Surfaces and Interfaces VL Elements of Structuring in Polymers	2,8	**Polymerization Techniques** VL Polymerization Techniques	2,6				
Electives	5,4	**Physical Chemistry of Polymers** PR Laboratory Course of Physical Chemistry II	2,4	**Free Electives**	7	**Master's Thesis Seminar/ Master's Examination**	5
		Electives	5,3				
	30		**30**		**30**		**30**

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Annex 2: Global map of study subjects - Master's Program "Polymer Chemistry" for graduates of the Bachelor's program Biological Chemistry (2018)

1st Semester (WS)		2nd Semester (SS)		3rd Semester (WS)		4th Semester (SS)	
Subject/Module	**ECTS**	**Subject/Module**	**ECTS**	**Subject/Module**	**ECTS**	**Subject/Module**	**ECTS**
Bridge Subject - BC VL Polymerwerkstoffe 1 VL Technologien der Polymerverarbeitung 1A: Einführung VL Technologien der Polymerverarbeitung 1B: Einführung VL Structural Rheology for Chemistry VL Physikalische Chemie Makromolekularer Stoffe VL Polymer Chemistry VL Chemical Process Engineering	21	**Bridge Subject - BC** VL Charakterisierung und Prüfung der Kunststoffe 1	2,5	**Master's Thesis**	10	**Master's Thesis**	15
		Polymer Chemistry VL Chemical Interactions in Polymers VL Technical Biopolymers PR Laboratory Course of Polymer Chemistry 2	8,6				
		Advanced Chemistry PR Advanced Instrumental Analysis	2,4	**Polymerization Techniques** UE Exercises in Polymerization Techniques PR Lab Course in Polymerization Techniques	6,4	**Electives**	5
		Soft Skills VL Excursion Polymer Chemistry VL Patent Law and Intellectual Property SE Global Management and Strategy	6,2				
Polymer Chemistry VL Polymer Chemistry 2 UE Exercises in Polymer Chemistry 2	4,2	**Polymerization Techniques** VL Polymerization Techniques	2,6	**Electives**	6,6	**Free Electives**	5
Advanced Chemistry VL Catalysis by Metal Complexes	2,6	**Physical Chemistry of Polymers** PR Laboratory Course of Physical Chemistry II	2,4	**Free Electives**	7	**Master's Thesis Seminar/ Master's Examination**	5
Physical Chemistry of Polymers VL Physical Chemistry of Surfaces and Interfaces VL Elements of Structuring in Polymers	2,8	**Electives**	4,7				
	30,6		**29,4**		**30**		**30**

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Annex 3: Global map of study subjects - Master's Program "Polymer Chemistry" for graduates of the Bachelor's program Polymer Engineering and Technologies (2018)

<table>
<tr><th colspan="2">1st Semester (WS)</th><th colspan="2">2nd Semester (SS)</th><th colspan="2">3rd Semester (WS)</th><th colspan="2">4th Semester (SS)</th></tr>
<tr><th>Subject/Module</th><th>ECTS</th><th>Subject/Module</th><th>ECTS</th><th>Subject/Module</th><th>ECTS</th><th>Subject/Module</th><th>ECTS</th></tr>
<tr><td rowspan="3">Bridge Subject - KT
PR Laboratory Course of Analytical, Inorganic and Organic Chemistry
VL Organic Chemistry 2
VL Chemical Process Engineering</td><td rowspan="3">20,4</td><td>Bridge Subject - KT
VL Catalysis
VL Chemical Kinetics</td><td>4,5</td><td rowspan="2">Master's Thesis</td><td rowspan="2">10</td><td rowspan="2">Master's Thesis</td><td rowspan="2">15</td></tr>
<tr><td>Polymer Chemistry
VL Chemical Interactions in Polymers
VL Technical Biopolymers
PR Laboratory Course of Polymer Chemistry 2</td><td>8,6</td></tr>
<tr><td>Advanced Chemistry
PR Advanced Instrumental Analysis</td><td>2,4</td><td rowspan="2">Polymerization Techniques
UE Exercises in Polymerization Techniques
PR Lab Course in Polymerization Techniques</td><td rowspan="2">6,4</td><td rowspan="2">Electives</td><td rowspan="2">5</td></tr>
<tr><td>Soft Skills
VL Excursion Polymer Chemistry
VL Patent Law and Intellectual Property
SE Global Management and Strategy</td><td>6,2</td></tr>
<tr><td>Polymer Chemistry
VL Polymer Chemistry 2
UE Exercises in Polymer Chemistry 2</td><td>4,2</td><td>Polymerization Techniques
VL Polymerization Techniques</td><td>2,6</td><td rowspan="2">Electives</td><td rowspan="2">6,6</td><td rowspan="2">Free Electives</td><td rowspan="2">5</td></tr>
<tr><td>Advanced Chemistry
VL Catalysis by Metal Complexes</td><td>2,6</td><td>Physical Chemistry of Polymers
PR Laboratory Course of Physical Chemistry II</td><td>2,4</td></tr>
<tr><td>Physical Chemistry of Polymers
VL Physical Chemistry of Surfaces and Interfaces
VL Elements of Structuring in Polymers</td><td>2,8</td><td>Electives</td><td>3,3</td><td>Free Electives</td><td>7</td><td>Master's Thesis Seminar/ Master's Examination</td><td>5</td></tr>
<tr><td></td><td>30</td><td></td><td>30</td><td></td><td>30</td><td></td><td>30</td></tr>
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