

Course List TUM Chemistry (Master level)

Focus: INORGANIC CHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3000	Instrumental Methods in Inorganic Chemistry (Instrumentelle Methoden der Anorganischen Chemie)	WiSe+SoSe	German, partly English	5+5=10	Seminar 0000002336 Lab 0000000562	Pöthig	Application necessary; one year students only
CH3003	Coordination Chemistry - Structure-Function-Relationships (Koordinationschemie - Struktur-Funktionsbeziehungen)	SoSe	German, partly English	5	Lecture 0000002172	Fischer, Roland	
CH3004	Organometallics: Principles and Applications (Organometallische Verbindungen: Prinzipien und Anwendungen)	SoSe	German, partly English	5	Lecture 0000002236	Casini	
CH3005	Main Group Molecular Chemistry (Hauptgruppen Molekülchemie)	WiSe	German, partly English	5	Lecture 0000000613	Inoue	
CH3006	Main Group Chemistry in Material Science (Hauptgruppenchemie in der Materialwissenschaft)	SoSe	German, partly English	5	Lecture 0000002196	Nilges	
CH3007	Electronic Structure of Inorganic Molecules and Solids (Elektronische Struktur anorganischer Moleküle und Festkörper)	SoSe	German, partly English	5	Lecture 0000002278	Fässler	
CH3008	Hybrid Materials - Structure-Function-Relationships (Hybridmaterialien - Struktur-Funktionsbeziehungen)	WiSe	English	5	Lecture 0000000678 Seminar 0000002396	Fischer, Roland	
CH3009	Solid State Materials: From Design, Chemistry to Functional Devices (Festkörpermateriale: Vom Design über die Chemie bis zu funktionalen Bauelementen)	SoSe	German	5	Lecture 0000000310 Exercises 0000000315	Rupp	
CH0156	Drug Discovery Chemistry (Chemie der Wirkstoffkunde)	SoSe	English	5	Lecture 0000005521	Casini	
Focus: ORGANIC CHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3031	Molecular Life Sciences (Molekulare Lebenswissenschaften)	WiSe or SoSe	English, partly German	5	Lecture 0820345009 Seminar 220055480	Bach, Thorsten	Seminar = speaker series; block lecture SoSe only; oral exam (conditions apply)
CH3034	Quantum Mechanical Basics of NMR-Spectroscopy (Quantenmechanische Grundlagen der NMR-Spektroskopie)	WiSe	English	5	Lecture 0000000698	Glaser	
CH3035	Catalytic Methods in Organic Synthesis (Katalytische Synthesemethoden)	SoSe	German, partly English	5	Lecture 0000002490	Hintermann	
CH3037	Molecular Biotechnology (Molekulare Biotechnologie)	SoSe	German, partly English	5	Lecture 0000000553 Seminar 0000002544	Buchner, Johannes	
CH3038	Organic Photochemistry (Organische Photochemie)	WiSe	English	5	Lecture 0000000919	Bach, Thorsten	
CH3039	Bioorganic Chemistry (Bioorganische Chemie)	WiSe	German, partly English	5	Lecture 0240484761 Seminar 0000001623	Sieber, Stephan	
CH3040	Advanced NMR (Advanced NMR)	WiSe	English	5	Lecture 0000001009	Gemmecker	
CH3043	Heterocyclic Chemistry (Chemie der Heterocyclen)	SoSe	English	5	Lecture 0000003980	Storch	
CH3044	Protein Chemistry (Proteinchemie)	SoSe	English	5	Lecture 0000001445	Zeymer	Exam consists of two parts, one in writing, one involves your own presentation
CH3216	Supramolecular Chemistry (Supramolekulare Chemie)	SoSe	English	5	Lecture 0000001301	Boekhoven	

Focus: PHYSICAL CHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3061 (a+b)	Experimental Methods in Physical Chemistry (Experimentelle Methoden der Physikalischen Chemie)	WiSe+SoSe	German, partly English	5+5=10	WiSe Lab with seminar 0000000978 SoSe Lab with seminar 0000002431	Heiz	Application necessary; one year students only; exam includes own scientific report
CH3063	Applied Electrochemistry (Angewandte Elektrochemie)	SoSe	English	5	Lecture 0000005457	Gasteiger	
CH3065	Fundamental Electrochemistry (Grundlagen der Elektrochemie)	WiSe	English	5	Lecture 0000001632	Gasteiger	
CH3066	Mechanisms in Photocatalysis (Mechanismen in der Photokatalyse)	SoSe	German, partly English	5	Lecture 0000003600	Heiz	
CH3067	Clusters and Nanoparticles: Fundamentals and Applications in Catalysis (Cluster und Nanopartikel: Grundlagen und Anwendung in der Katalyse)	WiSe	German, partly English	5	Lecture 0000002433	Heiz	
CH3068	Surface Spectroscopy and Microscopy (Oberflächenspektroskopie und Mikroskopie)	SoSe	German, partly English	5	Lecture 0000001523	Günther, Sebastian	
CH3070	Time-dependent Spectroscopy (Zeitabhängige Spektroskopie)	WiSe	German, partly English	5	Lecture 0000001555	Hauer	
CH3335	Quantum Dynamics and Spectroscopy (Quantendynamik und Spektroskopie)	SoSe	English	5	Lecture 0000003608	Ortmann	
CH3337	Symmetry and Group Theory (Symmetrie und Gruppentheorie)	WiSe	English	5	Lecture 0000002383	Schulte-Herbrüggen	

Focus: TECHNICAL CHEMISTRY (Chemical Engineering)							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH5139	Design of Chemical Reactors (Reaktordesign)	SoSe	German	5	Lecture 0820581427 Exercises 0000001683	Hinrichsen	
CH3093	Interfaces and Technology of Particles (Grenzflächen und Partikeltechnologie)	SoSe	German	5	Lecture 0000000403 Exercises 0000003027	Hinrichsen	
CH3094	Industrial Chemical Processes 1 - Catalysis for Energy (Industrielle Chemische Prozesse 1 - Katalyse für Energie)	WiSe	German, partly English	5	Lecture 220022816	Lercher; N.N.	
CH3095	Industrial Chemical Processes 2 - Catalysis for Synthesis (Industrielle Chemische Prozesse 2 - Katalyse für Synthese)	SoSe	German, partly English	5	Lecture 0000002829	Khare	
CH3097	Applied Biotechnological Processes (Angewandte biotechnologische Prozesse)	SoSe	German	5	Lecture 0000002638 Seminar 0000003707	Brück, Thomas	
CH3098	High Performance Polymers (Hochleistungspolymere)	SoSe	German	5	Lecture 0000002158	Rieger, Bernhard	
CH3099	Technology of Polymerisation (Polymerisationstechnik)	WiSe	German	5	Lecture 0240298000 Lecture 0000001710	Troll	
CH3100	Technical Biocatalysis (Technische Biokatalyse)	WiSe	German	5	Seminar 0000002452	Brück, Thomas	

Specialization: ANALYTICAL CHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3121	Analytical and Organic Environmental Chemistry (Analytische und Organische Umweltchemie)	SoSe	English	5	Lecture 0000001035	Elsner, Martin	
CH3122	Current Research in the Instrumental Analysis of Trace Components 1 (Aktuelle Forschung in der Instrumentellen Analyse von Spurenkomponenten 1)	WiSe	German, partly English	5+5=10	Lecture 0000002469 Lab 0000001973	Elsner, Martin	Application necessary; time consuming module
CH3123	Current Research in the Instrumental Analysis of Trace Components 2 (Aktuelle Forschung in der Instrumentellen Analyse von Spurenkomponenten 2)	SoSe	German, partly English	5	Lecture 0000002987 Lab data not found	Elsner, Martin	Application necessary; time consuming module
CH4115	Advanced Analytical Techniques (Fortgeschrittene analytische Verfahren)	WiSe	German	5	Lecture 0000004763	Elsner, Martin	Bachelor module!

Specialization: CONSTRUCTION CHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3151	Construction Chemicals and Materials 1 - Inorganic Binders (Bauchemikalien und -materialien 1 - Anorganische Bindemittel)	WiSe	German	5	Lecture 0000001548 Lab 0000002474	Gädt	Lab work subject to availability (lab space and supervision capacity); application necessary
CH3152	Construction Chemicals and Materials 2 - Functional Molecules (Bauchemikalien und -materialien 1 - Funktionelle Moleküle)	SoSe	German	5	Lecture 0000003101 Lab 0000003104	Gädt	Lab work subject to availability (lab space and supervision capacity); application necessary
CH3153	Construction Chemistry 1 (Bauchemie 1)	WiSe	German		Lecture 0240680849 Lab 0000002527	Gädt	Lab work subject to availability (lab space and supervision capacity); application necessary
CH3154	Nano Materials (Nanomaterialien)	SoSe	German	5	Lecture 0000003120 Lab 0000003184	Gädt	Lab work subject to availability (lab space and supervision capacity); application necessary

Specialization: BIOLOGICAL CHEMISTRY							
Specialization: BIOLOGICAL CHEMISTRY				More options see: Organic Chemistry			
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH0226	Molecular Medicine (Molekulare Medizin)	WiSe	German, partly English	5	Lecture 240260911	Groll	
CH3181	Biological Chemistry (Biologische Chemie)	WiSe	German, partly English	5	Lecture 0000002421 Seminar 0000001549	Haslbeck, Martin	
CH3184	Biomolecular NMR-Spectroscopy (Biomolekulare NMR-Spektroskopie)	WiSe+SoSe	English	5	Lecture 0000002669 Lab 0000002637	Gemmecker	Application necessary; one year students only
CH3187	Cell Biology (Zellbiologie)	SoSe	German, partly English	5	Lecture 821020878 with exercises	Buchner; Haslbeck, Martin	
CH0156	Drug Discovery Chemistry (Chemie der Wirkstoffkunde)	SoSe	English	5	Lecture 0000005521	Casini	
CH0157	Protein Modifications (Proteinmodifikationen)	WiSe	English	5	Lecture 0000002279 Seminar 0000002280	Alpi	Brandnew module!
CH3037	Molecular Biotechnology (Molekulare Biotechnologie)	SoSe	German, partly English	5	Lecture 0000000553 Seminar 0000002544	Buchner, Johannes	
CH3044	Protein Chemistry (Proteinchemie)	SoSe	English	5	Lecture 0000001445	Zeymer	Exam consists of two parts, one in writing, one involves your own presentation

Specialization: MACROMOLECULES, COLLOIDS, INTERFACES							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3211	Basics in Macromolecular Chemistry (Grundlagen der Makromolekularen Chemie)	WiSe	German	5	Lecture 220081443	Rieger, Bernhard	
CH3213	Modern Aspects and Catalysis in Macromolecular Chemistry (Moderne Aspekte und Katalyse der Makromolekularen Chemie)	SoSe	German, partly English	7	Lecture 1 0000002642 Lecture 2 0000001302	Rieger, Bernhard	Time consuming module
CH3214	Modern Aspects and Industrial Applications of Macromolecular Chemistry (Moderne Aspekte und industrielle Anwendungen der Makromolekularen Chemie)	SoSe	German	7	Lecture 1 0000002642 Lecture 2 0000001303	Rieger, Bernhard	Time consuming module
CH0300	Applied Biopolymers and Biomaterials (Angewandte Biopolymere und Biomaterialien)	SoSe	German, partly English	5	Lecture 0000000781	Winnacker	
CH3098	High Performance Polymers (Hochleistungspolymere)	SoSe	German	5	Lecture 0000002158 with exercises	Rieger, Bernhard	
CH3099	Technical Polymerisation (Polymerisationstechnik)	WiSe	German	5	Lecture 0240298000	Troll	
CH3216	Supramolecular Chemistry (Supramolekulare Chemie)	SoSe	English	5	Lecture 0000001301	Boekhoven	
CH3218	Functional Nanomaterials (Funktionelle Nanomaterialien)	SoSe	German, partly English	5	Lecture 0000002129	Lechner, Barbara	

Specialization: CATALYSIS							
				More options see: Technical Chemistry			
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3241	Fundamentals of Catalysis (Grundlagen der Katalyse)	WiSe	English	5	Lecture 0000001989 with Exercises	Lercher; Jentys	
CH3242	Methods in Catalysis (Methoden der Katalyse)	SoSe	English	5	Lecture 0000003014 seminar 0000003699	Jentys	
CH3094	Industrial Chemical Processes 1 - Catalysis for Energy (Industrielle Chemische Prozesse 1 - Katalyse für Energie)	WiSe	German, partly English	5	Lecture 220022816	Lercher; N.N.	
CH3095	Industrial Chemical Processes 2 - Catalysis for Synthesis (Industrielle Chemische Prozesse 2 - Katalyse für Synthese)	SoSe	German, partly English	5	Lecture 0000002829	Khare	
CH3246	Catalysis in Industrial Practice (Katalyse in der industriellen Anwendung)	WiSe	English	5	Lecture 0000001996 with exercises	Fischer, Richard	
CH3247	Metal-organic and Biocatalysis (Metallorganische und Biokatalyse)	SoSe	English	5	Lecture 0000004781	Cokoja	
CH5108	Industrial Relevant Activation of Small Molecules (Industriell relevante Aktivierung kleiner Moleküle)	SoSe	German	5	Lecture 0820887394	Fischer, Richard	

Specialization: FOOD CHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
WZ1900	Special Food Chemistry (Spezielle Lebensmittelchemie)	WiSe+SoSe	German	6	Lecture 1 0000001716 Lecture 2 0000001972	Dawid	One year students only, time consuming module

Specialization: MATERIALS CHEMISTRY		More options see: Inorganic Chemistry and Physical Chemistry					
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3271	Instrumental Methods in Materials Chemistry (Instrumentelle Methoden der Materialchemie)	WiSe	German, partly English	5	Lab 0000001438 Seminar 0000002582	Hlukhyy	Application necessary
CH3006	Main Group Chemistry in Material Science (Hauptgruppenchemie in der Materialwissenschaft)	SoSe	German, partly English	5	Lecture 0000002196	Nilges	
CH3007	Electronic Structure of Inorganic Molecules and Solids (Elektronische Struktur anorganischer Moleküle und Festkörper)	SoSe	German, partly English	5	Lecture 0000002278	Fässler	
CH3008	Hybrid Materials - Structure-Function-Relationships (Hybridmaterialien - Struktur-Funktionsbeziehungen)	WiSe	English	5	Lecture 0000000678 Seminar 0000002396	Fischer, Roland	
CH3009	Solid State Materials: From Design, Chemistry to Functional Devices (Festkörpermateriale: Vom Design über die Chemie bis zu funktionalen Bauelementen)	SoSe	German	5	Lecture 0000000310 Exercises 0000000315	Rupp	
CH3065	Fundamental Electrochemistry (Grundlagen der Elektrochemie)	WiSe	English	5	Lecture 0000001632	Gasteiger	
CH3098	High Performance Polymers (Hochleistungspolymere)	SoSe	German	5	Lecture 0000002158 with exercises	Rieger, Bernhard	
CH3154	Nano Materials (Nanomaterialien)	SoSe	German	5	Lecture 0000003120 Lab 0000003184	Gädt	Lab work subject to availability (lab space and supervision capacity); application necessary

Specialization: PHARMACEUTICAL RADIOCHEMISTRY							
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3301	Pharmaceutical Radiochemistry 1 (Pharmazeutische Radiochemie 1)	WiSe	German/English	5	Lecture 0000003432	Casini	
CH3302	Pharmaceutical Radiochemistry 2 (Pharmazeutische Radiochemie 2)	SoSe	German/English	5	Lecture 0000001812	Casini	
CH3303	Radioactivity, Radioanalytics and Production of Radiopharmaceuticals (Radioaktivität, Radioanalytik und Herstellung von Radiopharmazeutika)	WiSe+SoSe	German/English	5+5=10	Lecture 0000001126 WiSe, 0000000062 SoSe; Lab 0000002642	Casini	Application necessary; one year students only; lecture ID differs from winter to summer

Specialization: THEORETICAL CHEMISTRY		More options see: Physical Chemistry					
Module ID	Module Title	Time frame	Language	ECTS	Components	Module coordinator	Remarks
CH3331	Advanced Programming and Numerical Methods (Fortgeschrittenes Programmieren und numerische Methoden)	WiSe	English	5	Lecture 0000001723	Ortmann	
CH3333	Advanced Electronic Structure (Fortgeschrittene elektronische Struktur)	WiSe	English	5	Lecture 0000001799 with exercises	Oberhofer	
CH3334	Methods of Molecular Simulation (Methoden der molekularen Simulation)	SoSe	English	5	Lecture 0000003606 with exercises	Ortmann	
CH3335	Quantum Dynamics and Spectroscopy (Quantendynamik und Spektroskopie)	SoSe	English	5	Lecture 0000003608	Ortmann	
CH3336	Solid State Theory (Festkörpertheorie)	SoSe	English	5	Lecture 0000003619	Ortmann	
CH3337	Symmetry and Group Theory (Symmetrie und Gruppentheorie)	WiSe	English	5	Lecture 0000002383	Schulte-Herbrüggen	
PH2019	Molecular Dynamics Simulations (Molekulardynamik-Simulationen)	SoSe	German, partly English	5	Lecture 000000205 Exercises 0000002869	Zacharias	

WiSe = Winter semester (Oct 1st - March 31st)

SoSe = Summer semester (April 1st - September 30th)

All lab based, research oriented work is subject to availability: Application directly to individual module coordinator (Chair/Professor) necessary; check of prerequisites obligatory. Availability also depends on resources in lab space and supervision capacity - TUM full time degree students need to be given priority!