Tentative Course Syllabus

0402502: Spectroscopy for Chemical Sciences Credits 3 (3-0-6)

Dr. Nopporn Thasana, Course Director & Lecturer, CRI&CGI
Assoc. Prof. Dr. Prasat Kittakoop, Lecturer, CGI
Dr. Watthanachai Jumpathong, Lecturer, CGI
Dr. Rungroj Saruengkhanphasit, Lecturer, CGI
Dr. Worawat Niwetmarin, Lecturer, CGI
Dr. Tawatchai Thongkongkaew, CGI
Assoc. Prof. Dr. Kiattawee Choowongkomon, Guest, KU

Room: Teleconference room, Floor 3rd, CGI.

Time: Tuesday and Thursday 13:30-15:30 PM, September – November, 2019 (45 Hours)

Date	hour	Topic	Lecturer	Remark
Tue 030919	1	NMR: 1D NMR I (Synthetic Compounds)	Dr. Nopporn	
	2	Case study: NMR Problem Solving I		
Thu 050919	3	NMR: 1D NMR II (Natural Products)	Dr. Nopporn	
	4	Case study: NMR Problem Solving II		
Tue 100919	5	NMR: 1D NMR III (Natural Products)	Dr. Nopporn	
	6	Case study: NMR Problem Solving III		
Thu 120919	7	NMR: 1D NMR IV (Natural Products)	Dr. Nopporn	
	8	Case study: NMR Problem Solving IV		
Tue 170919	9	MS: Background and Principle of MS	Dr. Prasat	
	10	MS: Small Molecule Characterization		
Thu 190919	11	Current Topic in MS I	Dr. Prasat	
	12	Current Topic in MS II		
Tue 240919	13	MS: Mass spectrometry for biomolecules & Proteomics I	Dr. Watthanachai	
	14	MS: Proteomics II		
Thu 260919	15	UV/VIS: Electronic Spectroscopy	Dr. Rungroj	
	16	IR: Vibrational Spectroscopy		
Tue 011019	17	Circular Dichroism (CD) Spectroscopy	Dr. Tawatchai	
	18	Optical Rotation		
Thu 031019	19	NMR&MS: Other Modern Techniques	Dr. Worawat	
	20	Current Topic in NMR and MS		
Thu 101019*	21	*Midterm Exam*	*09:00 am-12:00 pm	
	22	*Midterm Exam*		
	23	*Midterm Exam*		
Tue 151019	24	NMR: 2D NMR I (COSY, DQFCOSY, HETCOR, HMQC, HMBC)	Dr. Nopporn	
	25	Case study: NMR Problem Solving V		
Thu 171019	26	NMR: 2D NMR II (COSY, HMQC, HMBC)	Dr. Nopporn	
	27	Case study: NMR Problem Solving VI		
Tue 221019	28	NMR: 2D NMR III (TOCSY)	Dr. Nopporn	
	29	Case study: NMR Problem Solving VII		
Thu 241019	30	NMR: 2D NMR IV (NOE and NOESY)	Dr. Nopporn	
	31	Case study: NMR Problem Solving VIII		
Tue 291019	32	NMR: Kinetics and Dynamics of Biomolecules	Dr. Kiattawee Guest (KU)	
	33	NMR: NMR of Proteins and Nucleotides I		
Thu 311019	34	NMR: NMR of Proteins and Nucleotides II	Dr. Kiattawee Guest (KU)	
	35	Case study: NMR Problem Solving IX		
Tue 051119	36	NMR: 2D NMR V (ROESY)	Dr. Nopporn	
	37	Case study: NMR Problem Solving X		
Thu 071119	38	NMR: 2D NMR VI (INADEQUATE)	Dr. Nopporn	
	39	Case study: NMR Problem Solving XI		
Tue 121119	40	Review, Discussions and Presentation: Current Topics in Spectroscopy	Dr. Nopporn, Dr. Prasat, Dr. Watthanachai, Dr. Rungroj, Dr. Worawat, Dr. Tawatchai	
	41			
	42			

Tue* 191119	43	*Final Exam*	*09:00 am-12:00 pm	
	44	*Final Exam*		
	45	*Final Exam*		

Course Textbook:

***Spectrometric Identification of Organic Compounds* By Robert M. Silverstein, Francis X. Webster, and David J. Kiemle (John Wiley & Sons).**

***Basic One- and Two-Dimentional NMR Spectroscopy* By Horst Friebolin.**

***Mass Spectrometry: Principles and Applications. 3rd edition,* By Edmond de Hoffmann, Vincent Stroobant. John Wiley & Sons Ltd, @copyright 2007 (chapter 8)**

Additional Textbooks Available in Library:

Modern NMR Techniques for Chemistry Research By A. Derome.

Modern NMR Spectroscopy: A Guide for Chemists By J. K. M. Sanders and B. K. Hunter.

Modern NMR Spectroscopy: A Workbook of Chemical Problems By J. K. M. Sanders, E. C. Constable, and B. K. Hunter.

150 and More Basic NMR Experiments By S. Braun, H.-O. Kalinowski, and S. Berger.

Two-Dimensional NMR Spectroscopy: Applications for Chemists and Biochemists By W. Croasmun and R. Carlson.

Mass Spectrometry: Principles and Applications By Edmond de Hoffmann and Vincent Stroobant.

Biomolecular NMR Spectroscopy By Jeremy N. S. Evans.

NMR of Macromolecules By G. C. K. Roberts.

NMR Spectroscopy Explained: Simplified Theory, Application and Examples for Organic Chemistry and Structural Biology ByN. E. Jacobsen (Wiley Interscience: 2007)

Classics in Spectroscopy: Isolation and Structure Elucidation of Natural Products By S. Berger, D. Sicker (Wiley-VCH: 2009)

Protein NMR Spectroscopy: Principles and Practice By J. Cavanagh, W. J. Fairbrother, A. G. Palmer III, M. Rance, N. J. Skelton. (Academic Press: 2007)

Medicinal Natural Products: A Biosynthetic Approach By Paul M. Dewick (Wiley: 2009)