

UNIVERSITY OF THE WEST INDIES  
DEPARTMENT OF CHEMISTRY  
TEXTBOOKS 2016/2017. PART II COURSES

REQ = Required; REC = Recommended; REF = Reference; OR = Online Resources

COURSE	TYPE	TEXTBOOKS
CHEM2010 CHEM2011	REQ	- Skoog, West, Holler & Crouch, Fundamentals of Analytical Chemistry, Brooks Cole
	REC	- Harris, Quantitative Chemical Analysis, Freeman. - Miller & Miller, Statistics & Chemometrics for Analytical Chemistry, Pearson. - Harvey, <a href="http://www.asdlib.org/onlinearticles/ecourseware/Analytical%20Chemistry%202.0/Text_Files.html">http://www.asdlib.org/onlinearticles/ecourseware/Analytical%20Chemistry%202.0/Text_Files.html</a>
	REF	- Jeffery, Bassett, Mendham & Denney, Vogel's Textbook of Quantitative Chemical Analysis, Longman - Skoog, Holler & Crouch, Principles of Instrumental Analysis, Saunders.  <u>For laboratory reports:</u> notebook which can be used to take carbon copies which can be removed from the book (available at Copy Works)
CHEM2110 Semester II	REQ	- Housecroft, C. and Sharpe, A.G. Inorganic Chemistry, Prentice Hall - Vincent, A. Molecular Symmetry and Group Theory A Programmed Introduction to Chemical Applications, John Wiley & Sons
	REC	- Miessler, G.L., Fischer, P.J., and Tarr, D.A. Inorganic Chemistry, Prentice Hall
CHEM2111 Semester II	REQ	- Housecroft, C., Sharpe, A., Inorganic Chemistry, Prentice Hall - CHEM2111 Laboratory Manual, Chemistry Department, UWI, Mona.
CHEM2210 CHEM2211 Semester I	REQ	- Pavia, Lampman, Kriz & Vyvyan, Introduction to Spectroscopy, Thomson/Brooks Cole - Solomons & Fryhle, Organic Chemistry, Wiley
CHEM2310 Semester II	REQ	- Atkins & de Paula, Atkins' Physical Chemistry, Oxford Univ. Press.
	REC	- Shaw, Introduction to Colloid & Surface Chemistry, Butterworth Heinemann. - Young & Lovell, Introduction to Polymers, CRC Press.
	REF	- Moore, Physical Chemistry, Prentice Hall
CHEM2311 Semester I	REC	- Atkins, P.W. and de Paula, J.: <i>Atkins' Physical Chemistry</i> . Oxford University Press - CHEM2311 Laboratory Manual, Department of Chemistry, UWI, Mona - Garland, C.W., Nibler, J.W. and Shoemaker, D.P.: <i>Experiments in Physical Chemistry</i> , McGraw-Hill

CHEM2410 Semester I	REC	<ul style="list-style-type: none"> <li>- Crittenden, J., Trussell, R., Hand, D., et al., MWH. Water Treatment, Principles and Design. John Wiley and Sons</li> <li>- Whiting N.E. and Drinan J.E., Water and Wastewater Treatment. CRC Press</li> <li>- Faust S.D. Faust F.D. and Aly O.M. Chemistry of Water Treatment. CRC Press</li> <li>- Lawrence K. W., Yung-Tse Hung, Howard H. Lo, Constantine Y., Waste Treatment in the Food Processing Industry. CRC Press</li> <li>- Mattson B. and Sonesson U., Environmentally Friendly Food Processing. CRC Press</li> <li>- Tillman G.M., Wastewater Treatment: Trouble Shooting and Problem Solving. CRC Press</li> <li>- Waldron K., Waste Management and Co-product Recovery in Food Processing. CRC Press</li> <li>- Yuncong Li and Kati Migliaccio, Water Quality Concepts Sampling and Analyses.</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- Mountain Empire Community College, (Virginia Community College System) Water/Wastewater Distance Learning Website: <i><a href="http://water.me.vccs.edu/courses/ENVI49/envI49_lessons.htm">http://water.me.vccs.edu/courses/ENVI49/envI49_lessons.htm</a></i></li> <li>- Environmental Health and Safety Freeware; A free directory of environmental health and safety resources; Donley Technology, Virginia USA <i><a href="http://www.ehsfreeware.com/wwtom.htm">http://www.ehsfreeware.com/wwtom.htm</a></i></li> <li>- United States Geological Survey (USGS)</li> <li>- USGS Water Quality Information Pages <i><a href="http://water.usgs.gov/owq/">http://water.usgs.gov/owq/</a></i></li> <li>- United States Environmental protection Agency (USEPA)</li> <li>- USEPA Onsite Wastewater Treatment Manual: <i><a href="http://www.epa.gov/nrmrl/pubs/625r00008/html/625R00008.htm">http://www.epa.gov/nrmrl/pubs/625r00008/html/625R00008.htm</a></i></li> </ul>
CHEM2510 CHEM2511 CHEM2512 Semester I	REQ	- Fellows, Food Processing Technology, Woodhead Publishing
	REC	- Coultate, Food. The Chemistry of its Components, Royal Society of Chem
	REF	<ul style="list-style-type: none"> <li>- Heldman &amp; Hartel, Principles of Food Processing, Springer</li> <li>- Hui &amp; Smith, Food Processing : Principles and Applications, Wiley-Blackwell</li> <li>- Jay, Modern Food Microbiology, Springer</li> <li>- Potter &amp; Hotchkiss, Food Science, Chapman &amp; Hall/Springer</li> <li>- Weddig, Balestrini &amp; Shafer , Canned Foods, GMA Science &amp; Education Foundation</li> </ul>
CHEM2601	REQ	Andrews, Brimblecombe, Jickells, Liss & Reid, AN INTRODUCTION TO ENVIRONMENTAL CHEMISTRY, Blackwell/Wiley. Kebbekus & Mitra, ENVIRONMENTAL CHEMICAL ANALYSIS, Blackie Academic and Professional.
	REC	Brimblecombe, AIR COMPOSITION & CHEMISTRY, Cambridge Univ. Press.
	REF	<ul style="list-style-type: none"> <li>Bashkin &amp; Howarth, MODERN BIOGEOCHEMISTRY. Springer 2003.</li> <li>Evans, AN INTRODUCTION TO METALLIC CORROSION, Edward Arnold.</li> <li>Jeffery, Bassett, Mendham &amp; Denney,</li> <li>VOGEL'S TEXTBOOK OF QUANTITATIVE CHEMICAL ANALYSIS, Longman.</li> <li>Krauskopf &amp; Bird, INTRODUCTION TO GEOCHEMISTRY, McGraw-Hill.</li> <li>Manahan, ENVIRONMENTAL CHEMISTRY, latest ed., CRC Press.</li> <li>Scully, FUNDAMENTALS OF CORROSION, Pergamon</li> <li>Sparks, ENVIRONMENTAL SOIL CHEMISTRY, Elsevier 2002.</li> <li>Stumm &amp; Morgan, AQUATIC CHEMISTRY: CHEMICAL EQUILIBRIA AND RATES</li> </ul>

		<p>IN NATURAL WATERS. 1995. Wiley Interscience.</p> <p>Uhlig, CORROSION &amp; CORROSION CONTROL, 3<sup>rd</sup> ed., Wiley.</p> <p>Whiting &amp; Drinan, WATER AND WASTEWATER TREATMENT. CRC Press 2001.</p> <p><u>For laboratory:</u> a notebook which can be used to take carbon copies which can be removed from the book (available at Copy Works)</p>
CHEM3110 Semester I	REQ	- Housecroft, C. and Sharpe, A.G. Inorganic Chemistry, Prentice Hall
	REC	<ul style="list-style-type: none"> <li>- Atkins, A. Overton, T., Rourke, J., Weller, M., Armstrong, F. Shriver and Atkins' Inorganic Chemistry. Oxford University Press.</li> <li>- Cotton, F. A., Murillo, C.A., Bochmann, M., and Grimes, R. N. Advanced Inorganic Chemistry. John Wiley and Sons</li> <li>- Miessler, G.L., Fischer, P.J., and Tarr, D.A., Inorganic Chemistry, Prentice Hall</li> </ul>
CHEM3112 Semester II	REQ	- Housecroft, C. and Sharpe, A.G. Inorganic Chemistry, Prentice Hall
	REC	<ul style="list-style-type: none"> <li>- Fraústo da Silva, J.J.R and Williams, R.J.P. The Biological Chemistry of the Elements: The Inorganic Chemistry of Life. Oxford University Press</li> <li>- Lippard, S., and Berg, J.M. Principles of Bioinorganic Chemistry, University Science Books</li> <li>- Roat-Malone, R.M. Bioinorganic Chemistry : A Short Course, Wiley-Interscience</li> <li>- Que, L. Jr., ed. Physical Methods in Bioinorganic Chemistry, University Science Books</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.tvdsb.on.ca/westmin/science/sbi3a1/Cells/cellc.html">http://www.tvdsb.on.ca/westmin/science/sbi3a1/Cells/cellc.html</a></li> <li>- <a href="http://swissmodel.expasy.org//SWISS-MODEL.html">http://swissmodel.expasy.org//SWISS-MODEL.html</a></li> <li>- <a href="http://www.rcsb.org/pdb/static.do?p=education_discussion/molecule_of_the_month/pdb35_1.html">http://www.rcsb.org/pdb/static.do?p=education_discussion/molecule_of_the_month/pdb35_1.html</a></li> <li>- <a href="http://chem.ps.uci.edu/~pfarmer/1271/index.html">http://chem.ps.uci.edu/~pfarmer/1271/index.html</a></li> <li>- <a href="http://www.chemcases.com/cisplatin/">http://www.chemcases.com/cisplatin/</a></li> <li>- <a href="http://www.chem.qmul.ac.uk/iupac/bioinorg/">http://www.chem.qmul.ac.uk/iupac/bioinorg/</a></li> <li>- <a href="http://www.sbichem.org/">http://www.sbichem.org/</a></li> </ul>
	REC	- Sykes, A Guidebook to Mechanism in Organic Chemistry, Pearson
	REF	- Furniss, Hannaford, Smith & Tatchell, Vogel's Textbook of Practical Organic Chemistry, Longman
CHEM3210	REQ	<ul style="list-style-type: none"> <li>- Mackie, Smith &amp; Aitken, Guidebook to Organic Synthesis, Prentice Hall.</li> <li>- Pavia, Lampman, Kriz &amp; Vyvyan, Introduction to Spectroscopy, Thomson/Brooks Cole.</li> <li>- Solomons &amp; Fryhle, Organic Chemistry, Wiley</li> </ul>
	REC	<ul style="list-style-type: none"> <li>- Furniss, Hannaford Smith &amp; Tatchell, Vogel's Textbook of Practical Organic Chemistry, Longman.</li> <li>- Morris, Stereochemistry, Royal Society of Chemistry.</li> <li>- Sykes, A Guidebook to Mechanism in Organic Chemistry, Pearson.</li> </ul>
CHEM3212 Semester II	REQ	<ul style="list-style-type: none"> <li>- Carruthers &amp; Coldham, Some Modern Methods of Organic Synthesis, Cambridge Univ. Press.</li> <li>- Mann, Chemical Aspects of Biosynthesis, Oxford Univ. Press</li> <li>- Silverstein &amp; Webster, Spectrometric Identification of Organic Compounds, Wiley.</li> </ul>
CHEM3213 Semester I	REC	<ul style="list-style-type: none"> <li>- Green, Hartley &amp; West, Chemicals for Crop Improvement &amp; Pest Management, Pergamon.</li> <li>- Korolkovas, Essentials of Medicinal Chemistry, Wiley.</li> <li>- Patrick, An Introduction to Medicinal Chemistry, Oxford Univ. Press</li> </ul>

	REF	<ul style="list-style-type: none"> <li>- Buchel, Chemistry of Pesticides, Wiley.</li> <li>- Gilchrist, Heterocyclic Chemistry, Addison-Wesley Publishing</li> <li>- Joule &amp; Mills, Heterocyclic Chemistry, Blackwell</li> <li>- Silverman, The Organic Chemistry of Drug Design and Drug Action, Academic</li> </ul>
CHEM3010 CHEM3011	REQ	<ul style="list-style-type: none"> <li>- Kebbekus &amp; Mitra, Environmental Chemical Analysis, Blackie Academic and Professional.</li> <li>- Skoog, West, Holler &amp; Crouch, Fundamentals of Analytical Chemistry, Thomson</li> </ul>
	REC	<ul style="list-style-type: none"> <li>- Harris, Quantitative Chemical Analysis, FreemanHarvey, <a href="http://www.asdlib.org/onlinearticles/ecourseware/Analytical%20Chemistry%202.0/Text_Files.html">http://www.asdlib.org/onlinearticles/ecourseware/Analytical%20Chemistry%202.0/Text_Files.html</a></li> <li>- Miller &amp; Miller, Statistics &amp; Chemometrics for Analytical Chemistry, Wiley</li> </ul>
	REF	<ul style="list-style-type: none"> <li>- Jeffery, Bassett, Mendham &amp; Denney, Vogel's Textbook of Quantitative Chemical Analysis, Longman.</li> <li>- Skoog, Holler &amp; Nieman, Principles of Instrumental Analysis, Saunders.</li> </ul> <p><u>For laboratory:</u> a notebook which can be used to take carbon copies which can be removed from the book (available at Copy Works)</p>
CHEM3210 CHEM3211		-
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CHEM3310	REQ	<ul style="list-style-type: none"> <li>- Atkins, P.W. and de Paula, J.: <i>Atkins' Physical Chemistry</i>, Oxford University Press</li> <li>- Atkins, P.W. and de Paula, J.: <i>The Elements of Physical Chemistry</i>, Oxford University Press</li> <li>- Banwell, C.N. and McCash, E.M.: <i>Fundamentals of Molecular Spectroscopy</i>, McGraw-Hill</li> <li>- Engel, T. and Reid, P.: <i>Physical Chemistry with Mastering Chemistry®</i>, Prentice Hall</li> <li>- Nash, L.K.: <i>Elements of Statistical Thermodynamics</i>, Dover</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.khanacademy.org">http://www.khanacademy.org</a> Video tutorials on several topics including Chemistry.</li> <li>- <a href="http://www.oup.com/uk/orc/bin/9780199226726/">http://www.oup.com/uk/orc/bin/9780199226726/</a></li> <li>- Course notes on OurVLE</li> </ul>
CHEM3311 Semester II	REC	<ul style="list-style-type: none"> <li>- Atkins, P.W. and de Paula, J.: <i>Atkins' Physical Chemistry</i>. Oxford University Press</li> <li>- CHEM2311 Laboratory Manual, Department of Chemistry, UWI, Mona.</li> <li>- Garland, C.W., Nibler, J.W. and Shoemaker, D.P.: <i>Experiments in Physical Chemistry</i>, McGraw-Hill</li> </ul>
CHEM3312 Semester I	REQ	<ul style="list-style-type: none"> <li>- Engel, T. &amp; Reid, P. <i>Physical Chemistry with Mastering Chemistry®</i>, Prentice Hall</li> <li>- Shaw, D.J. <i>Colloid and Surface Chemistry</i>, Butterwoth- Heinemann Ltd.</li> <li>- Smart, L.E., Moore, E. A. <i>Solid State Chemistry: An Introduction</i>. CRC Press, Taylor &amp; Francis Group.</li> </ul>
	REC	<ul style="list-style-type: none"> <li>- Cheetham, A.K., Day, P. <i>Solid State Chemistry Techniques</i>, Oxford University Press</li> <li>- Rao, C.N.R., Müller, A. and Cheetham, A.K. <i>The Chemistry of Nanomaterials: Syntheses, Properties and Applications</i>, Wiley-VCH, Verlag GmbH and Co. KGaA, Weinheim</li> </ul>

	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.Khanacademy.org">http:// www.Khanacademy.org</a>. Video tutorials on several topics including chemistry.</li> <li>- <a href="http://www.Oup.Com/uk/orc/bin/9780199226726/">http:// www.Oup.Com/uk/orc/bin/9780199226726/</a> (accessed 16/02/2012).</li> <li>- Course notes on OurVLE.</li> </ul>
CHEM3313 Semester II	REC REC	<ul style="list-style-type: none"> <li>- Atkins, P.W. &amp; de Paula, J. Physical Chemistry. Oxford University Press</li> <li>- Engel, T. &amp; Reid, P. Physical Chemistry with Mastering Chemistry®. Prentice Hall</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- Computational Methods: <a href="http://ocw.mit.edu/courses/chemistry/">ocw.mit.edu/courses/chemistry/</a></li> <li>- Magnetic Resonance Spectroscopy: <a href="http://140.117.34.2/faculty/phy/sw_ding/teaching/nmrI-chap17.pdf">140.117.34.2/faculty/phy/sw_ding/teaching/nmrI-chap17.pdf</a></li> <li>- Redox Processes and Advanced Electrochemistry: <a href="http://allwebhunt.com/dir-wiki.cfm/Top/Science/Chemistry/Electrochemistry">http://allwebhunt.com/dir-wiki.cfm/Top/Science/Chemistry/Electrochemistry</a></li> </ul>
CHEM3401 Semester I	REF	<ul style="list-style-type: none"> <li>- Batty, An Introduction to Cost &amp; Management Accounting, Heinemann</li> <li>- Bernstein &amp; Wild, Analysis of Financial Statements, McGraw-Hill</li> <li>- Douglas, Managerial Economics. Analysis &amp; Strategy, Prentice Hall</li> <li>- Horngren &amp; Sundew, Introduction to Management Accounting, Prentice Hall</li> <li>- Musselman &amp; Hughes, Introduction to Modern Business: Analysis &amp; Interpretation, Prentice Hall</li> <li>- Resnick, Process Analysis &amp; Design for Chemical Engineers, McGraw-Hill</li> <li>- Statistical Institute of Jamaica, Consumer Price Index, Statin Pubs</li> <li>- Statistical Institute of Jamaica, National Income and Product, Statin Pubs</li> <li>- Thompson, Economics of the Firm: Theory &amp; Practice, Prentice Hall Int'l Ed</li> </ul>
CHEM3403	REQ	<ul style="list-style-type: none"> <li>- Himmelblau, D.M., Riggs, J. Basic Principles and Calculations in Chemical Engineering, , Prentice Hall</li> <li>- McCabe, W.L., Smith, J.C. and Harriott, P. Unit Operations of Chemical Engineering, McGraw-Hill</li> </ul>
	REC	<ul style="list-style-type: none"> <li>- Elliott, JR, Lira, CT. Introductory Chemical Engineering Thermodynamics. Prentice Hall.</li> <li>- Fogler, H. S., Essentials of Chemical Reaction Engineering, Prentice Hall,</li> <li>- Geankoplis, C.J., Transport Processes and Separation Process Principles (Includes Unit Operations), Prentice Hall.</li> <li>- Massey, B., Ward-Smith, J., Mechanics of Fluids, Stanley Thornes Ltd.</li> <li>- Smith, Robin. Chemical Process: Design and Integration. John Wiley and Sons</li> <li>- Stoker, Stephen H. Introduction to Chemical Principles, Prentice Hall.</li> <li>- Tester, Jefferson W., and Michael Modell. Thermodynamics and its Applications. Upper Saddle River, NJ: Prentice Hall</li> </ul>

CHEM 3402	REC	<ul style="list-style-type: none"> <li>- Chenier, P.J. Survey of Industrial Chemistry, Springer</li> <li>- Donaldson, D., Raahauge, B., Essential Readings in Light Metals - Volume I: Alumina and Bauxite, The Minerals, Metals &amp; Materials Society</li> <li>- Gesser, H.D., Applied Chemistry: A Textbook for Engineers and Technologists, Kluwer Academic/Plenum Publishers N.Y.</li> <li>- Heaton C.A. Introduction to Industrial Chemistry. Springer</li> <li>- Hewlette, P. C. (Ed.) Lea's Chemistry of Cement and Concrete, Elsevier Ltd.</li> <li>- Kauffman G.B. Ullman's Encyclopedia of Industrial Chemistry Springer</li> <li>- Lancaster M. Green Chemistry: An Introductory Text. Royal Society of Chemistry</li> <li>- Reigel E.R. and Bissinger H.G., Riegel's Handbook of Industrial Chemistry, Springer</li> <li>- Speight, J. G, The Chemistry and Technology of Petroleum, CRC Press</li> <li>- Warner J.C. and Anastas P.J., Green Chemistry. Oxford University Press,</li> <li>- Weissermel K. and Arpe H-J. Industrial Organic Chemistry, Wiley VCH</li> </ul>
CHEM3510 CHEM3511 CHEM3512 Semester II	REQ	<ul style="list-style-type: none"> <li>- Coultate, T.P., Food. The Chemistry of its Components, Royal Society of Chem.</li> </ul>
	REC	<ul style="list-style-type: none"> <li>- Damodaran, Parkin &amp; Fennema, Fennema's Food Chemistry, CRC Press</li> <li>- Deman, Principles of Food Chemistry, Springer</li> </ul>
	REF	<ul style="list-style-type: none"> <li>- Belitz, Grosch &amp; Schieberle, Food Chemistry, Springer</li> <li>- Fox and Cameron, Food Science, Nutrition &amp; Health, Hodder Education.</li> <li>- Nielsen, Food Analysis, Springer.</li> <li>- Pomeranz and Meloan, Food Analysis: Theory and Practice, Springer</li> </ul>
CHEM3513	REQ	<ul style="list-style-type: none"> <li>- Marriott, Norman G &amp; Gravani, Robert B. Principles of Food Sanitation. Springer</li> <li>- Scott, Virginia N. &amp; Stevenson, Kenneth E. HACCP Manual: A Systematic Approach to Food Safety.</li> </ul>
	REF	<ul style="list-style-type: none"> <li>- Alli, Inteaz. Food Quality Assurance: Principles and Practices. CRC Press.</li> <li>- Guillermo Etienne. Principles of Cleaning and Sanitation in the Food and Beverage Industry. iUniverse, Inc.</li> </ul>
CHEM3610	REC	<ul style="list-style-type: none"> <li>- Van-Loon G.W. and Duffy S.J. (2010) Environmental Chemistry: A global perspective. 3<sup>rd</sup> edition, Oxford University Press. ISBN 978-0-19-922886-7.</li> <li>- Manahan, S.E., (2010), Water Chemistry: Green Science and Technology of Nature's most renewable resource. CRC Press. ISBN 9781439830680.</li> <li>- Greenaway A.M, (2002), The Planetary Environment: A Chemical perspective. In Natural Resource Management for Sustainable Development in the Caribbean. Eds I. Goodbody and E. Thomas-Hope. Canoe Press. ISBN 9768125764.</li> <li>- Brezonik, P.L., Arnold, W.A., (2011) Water Chemistry: An Introduction to the Chemistry of Natural and Engineered Aquatic Systems. Oxford University press. . ISBN 9780199730728.</li> <li>- Manahan S. Environmental Chemistry. 9<sup>th</sup> edition. 2009. CRC Press. ISBN 9781420059205</li> <li>- Lancaster M. , (2002), Green chemistry: An Introductory text. Royal Society of Chemistry. ISBN 0854046208</li> <li>- Stumm W. and Morgan J.J., (1995) Aquatic Chemistry: Chemical equilibria and rates in natural waters. Wiley Interscience. ISBN 0471511854.</li> </ul>

	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.noaa.gov">http://www.noaa.gov</a></li> <li>- <a href="http://water.epa.gov/">http://water.epa.gov/</a></li> <li>- <a href="http://en.wikipedia.org/wiki/Water">http://en.wikipedia.org/wiki/Water</a></li> <li>- <a href="http://ec.europa.eu/environment/water/index_en.htm">http://ec.europa.eu/environment/water/index_en.htm</a></li> </ul>
CHEM3611	REC	<ul style="list-style-type: none"> <li>- Weiner, E.R. (2012). Applications of Environmental Aquatic Chemistry: A Practical Guide. 3<sup>rd</sup> edition, CRC Press ;ISBN-10: 1439853320</li> <li>- Van-Loon G.W. and Duffy S.J. (2010). Environmental Chemistry: A global perspective. 3<sup>rd</sup> edition, Oxford University Press. . ISBN 978-0-19-922886-7.</li> <li>- Essington, M.E., (2003). Soil and Water Chemistry: An Integrative Approach; CRC Press ISBN-10: 0849312582</li> <li>- Kebbekus, B.B. and Mitra, S., (1998). Environmental Chemical Analysis: Chapman &amp; Hall. . ISBN 0-7514-0456-X.</li> <li>- Manahan, S.E., (1010). Water Chemistry: Green Science and Technology of Nature's most renewable resource. CRC Press. ISBN 9781439830680.</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.noaa.gov">http://www.noaa.gov</a></li> <li>- <a href="http://water.epa.gov/">http://water.epa.gov/</a></li> <li>- <a href="http://www.who.int/water_sanitation_health/resourcesquality/wqmonitor/en/">http://www.who.int/water_sanitation_health/resourcesquality/wqmonitor/en/</a></li> <li>- <a href="http://ec.europa.eu/environment/water/index_en.htm">http://ec.europa.eu/environment/water/index_en.htm</a></li> <li>- <a href="http://www.who.edu/OCB-OA/page.do?pid=112136">http://www.who.edu/OCB-OA/page.do?pid=112136</a></li> <li>- <a href="http://pubs.usgs.gov/circ/circ1139/htdocs/natural_processes_of_ground.htm">http://pubs.usgs.gov/circ/circ1139/htdocs/natural_processes_of_ground.htm</a></li> </ul>
CHEM3612	REQ	<ul style="list-style-type: none"> <li>- Holloway A.M., Wayne R.P. (2010). Atmospheric Chemistry. RSC, Cambridge, . ISBN 9781847558077</li> <li>- Bashkin V.N. and Howarth W.W., (2003). Modern Biogeochemistry. Springer . ISBN 140200994.</li> </ul>
	REC	<ul style="list-style-type: none"> <li>- Hobbs, P.V. (2000). Introduction to Atmospheric Chemistry. Cambridge University Press ISBN 052177800</li> <li>- Brimblecombe P. (1995). Air Composition and Chemistry. Cambridge University Press, . ISBN 0521459729.</li> <li>- Seinfeld J.H. and Pandis S.N. (2006). Atmospheric Chemistry and Physics: From Air Pollution to Climate Change. J. Wiley and Sons. ISBN 0471720186.</li> <li>- Finlayson-Pitts B.J. and Pitts J.N. (2000). Chemistry of the Upper and Lower Atmosphere. Academic Press. ISBN 12257060.</li> <li>- Jacob D.J., (1999). Introduction to Atmospheric Chemistry. Princeton University Press .ISBN 0691001855.</li> <li>- Schlesinger W.H., (1997). Biogeochemistry: An Analysis of Global Change. Academic Press . ISBN 012625155X.</li> <li>- Berner, E.K. and Berner R.A. (2012). Water, Air and Geochemical Cycles. Prentice Hall .ISBN 9780691136783.</li> <li>- Sparks D.L. (2002). Environmental Soil Chemistry. Elsevier .ISBN 0126564469.</li> <li>- Bland W.J. and Rolls D. (1998). Weathering: An Introduction to the Basic Principles. Oxford University Press. ISBN 0340677449.</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.noaa.gov">http://www.noaa.gov</a></li> <li>- <a href="http://water.epa.gov/">http://water.epa.gov/</a></li> <li>- <a href="http://en.wikipedia.org/wiki/Biogeochemical_cycle">http://en.wikipedia.org/wiki/Biogeochemical_cycle</a></li> <li>- <a href="http://www2.ucar.edu/">http://www2.ucar.edu/</a></li> </ul>

CHEM362I	REC	<ul style="list-style-type: none"> <li>- Van-Loon G.W. and Duffy S.J. Environmental Chemistry: A global perspective. 3<sup>rd</sup> edition, Oxford University Press. 2010. ISBN 978-0-19-922886-7.</li> <li>- Manahan, S.E. Water Chemistry: Green Science and Technology of Nature's most renewable resource. CRC Press. 2010. ISBN 9781439830680.</li> <li>- Stumm W. and Morgan J.J. Aquatic Chemistry: Chemical equilibria and rates in natural waters. 1995. Wiley Interscience. ISBN 0471511854. Selected journal articles.</li> </ul>
	OR	<ul style="list-style-type: none"> <li>- <a href="http://www.noaa.gov">http://www.noaa.gov</a></li> <li>- <a href="http://water.epa.gov/">http://water.epa.gov/</a></li> <li>- <a href="http://ec.europa.eu/environment/water/index_en.htm">http://ec.europa.eu/environment/water/index_en.htm</a></li> <li>- <a href="http://www.whoi.edu/OCB-OA/page.do?pid=112136">http://www.whoi.edu/OCB-OA/page.do?pid=112136</a></li> <li>- <a href="http://pubs.usgs.gov/circ/circ1139/htdocs/natural_processes_of_ground.htm">http://pubs.usgs.gov/circ/circ1139/htdocs/natural_processes_of_ground.htm</a></li> <li>- <a href="http://www.science-house.org/nesdis/index.html">http://www.science-house.org/nesdis/index.html</a></li> </ul>
CHEM371I	OR	<p>Journal of Undergraduate Research: <a href="http://www.vmi.edu/content.aspx?id=2150">http://www.vmi.edu/content.aspx?id=2150</a></p> <p>American Chemical Society:</p> <ul style="list-style-type: none"> <li>- Undergraduate Research in Chemistry <a href="http://portal.acs.org/portal/acs/corg/content?nfpb=true&amp;pageLabel=PP_SUPERARTICLE&amp;node_id=2213&amp;use_sec=false&amp;sec_url_var=region1&amp;uuid=0c93b49c-f2a8-4c4b-ad1f-58416a158019">http://portal.acs.org/portal/acs/corg/content?nfpb=true&amp;pageLabel=PP_SUPERARTICLE&amp;node_id=2213&amp;use_sec=false&amp;sec_url_var=region1&amp;uuid=0c93b49c-f2a8-4c4b-ad1f-58416a158019</a></li> <li>- Undergraduate Research in Chemistry Guide <a href="http://portal.acs.org/portal/acs/corg/content?nfpb=true&amp;pageLabel=PP_SUPERARTICLE&amp;node_id=2215&amp;use_sec=false&amp;sec_url_var=region1&amp;uuid=3bd11d22-fa66-476b-80ca-ee10cac63899">http://portal.acs.org/portal/acs/corg/content?nfpb=true&amp;pageLabel=PP_SUPERARTICLE&amp;node_id=2215&amp;use_sec=false&amp;sec_url_var=region1&amp;uuid=3bd11d22-fa66-476b-80ca-ee10cac63899</a></li> <li>- Preparing a Research Report <a href="http://portal.acs.org/portal/fileFetch/C/CTP_005606/pdf/CTP_005606.pdf">http://portal.acs.org/portal/fileFetch/C/CTP_005606/pdf/CTP_005606.pdf</a></li> </ul>



## COURSE TITLES AND COORDINATORS

CODES	TITLES	COORDINATORS
CHEM2010	Introductory Chemical Analysis	Dr. Vaughn Rattray
CHEM2011	Introductory Chemical Analysis Lab	Dr. Vaughn Rattray
CHEM2110	Advanced Inorganic Chemistry A	Dr. Marvadeen Singh-Wilmot
CHEM2111	Inorganic Chemistry Laboratory I	Dr. Nickeisha Stephenson
CHEM2210	Organic Chemistry A	Prof. Helen Jacobs
CHEM2211	Organic Chemistry Laboratory I	Dr. Nadale Downer-Riley
CHEM2310	Physical Chemistry A	Prof. Willem Mulder
CHEM2311	Physical Chemistry Laboratory I	Dr. Paul Maragh
CHEM2402	Chemistry in Our Daily Lives	Dr. Nickeisha Stephenson
CHEM2410	Water Treatment	Dr. Debbie – Ann Gordon Smith
CHEM2510	Food Processing Principles I	Dr. Andrea Goldson-Barnaby
CHEM2511	Food Processing Principles Lab	Dr. Donna Minot Kates
CHEM2512	Food Processing Principles II	Dr. Andrea Goldson- Barnaby
CHEM3010	Chemical Analysis B	Dr. Vaughn Rattray
CHEM3011	Instrumental Chemical Analysis lab B	Dr. Vaughn Rattray
CHEM3110	Advanced Inorganic Chemistry B	Dr. Novelette Sadler – McKnight
CHEM3112	The Inorganic Chemistry of Biological Systems	Dr. Novelette Sadler – McKnight
CHEM3210	Organic Chemistry B	Dr. Nadale Downer-Riley
CHEM3211	Organic Chemistry Laboratory II	Prof. Helen Jacobs
CHEM3212	Natural Products Chemistry	Dr. Roy Porter
CHEM3213	Applications of Organic Chemistry in Medicine & Agriculture	Dr. Roy Porter
CHEM3310	Physical Chemistry B	Dr. Paul Maragh
CHEM3311	Physical Chemistry Laboratory II	Prof. Willem Mulder
CHEM3312	Chemistry of Materials	Dr. Paul Maragh
CHEM3313	Topics in Advanced Physical Chemistry - Structure, Dynamics & Computational Methods	Prof. Willem Mulder
CHEM3401	Project Evaluation and Management for Science Based Industries	Dr. Andrea Goldson- Barnaby
CHEM3402	The Chemical Industries	Dr. Vaughn Rattray
CHEM3403	Chemical Process Principles	Dr. Novelette Sadler – McKnight
CHEM3510	Food Chemistry I	Dr. Donna Minott-Kates
CHEM3511	Food Chemistry Lab	Dr. Patrice Peart
CHEM3512	Food Chemistry II	Dr. Patrice Peart

CHEM3513	Food Safety	Dr. Donna Minot – Kates
CHEM3610	Marine and Freshwater Chemistry	Dr. Debbie – Ann Gordon Smith
CHEM3611	Marine and Freshwater Chemistry Laboratory	Dr. Debbie – Ann Gordon Smith
CHEM3612	Atmospheric Chemistry & Biogeochemical Cycles	Dr. Debbie – Ann Gordon Smith
CHEM3711	Chemistry Research Project	TBA