<table>
<tr><td>Course Code</td><td colspan="3">CHE403M2</td></tr>
<tr><td>Course Title</td><td colspan="3">Inorganic Material Chemistry</td></tr>
<tr><td>Credit Value</td><td colspan="3">2</td></tr>
<tr><td rowspan="2">Hourly Breakdown</td><td>Theory</td><td>Practical</td><td>Independent Learning</td></tr>
<tr><td>30</td><td>-</td><td>70</td></tr>
<tr><td>Objective/s</td><td colspan="3">• Illustrate the concepts of inorganic materials
• Explain synthetic methods, properties and characterization of different materials</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="3">• Explain synthetic methods of inorganic materials
• Design synthetic methods for nanomaterials
• Examine the properties of materials
• Plan the characterization techniques for inorganic materials and nanomaterials
• Identify potential applications of nanomaterials</td></tr>
<tr><td>Course Contents</td><td colspan="3">Synthesis of Inorganic Materials
• Solid state reactions
• Synthesis from Liquids: preparation from melts, liquid salts as solvents, hydrothermal process, sol-gel method
• Gas-phase technique: vapor transport, physical vapor deposition, chemical vapor deposition, plasma synthesis
• Properties of materials: Transport, magnetic, dielectric, optical and mechanical properties
• Material Characterization: optical microscopy, electron microscopy, scanning probe microscopy, X-ray techniques, thermal analysis

Nanomaterials
• Introduction to nanomaterials, properties, preparative techniques: top-down and bottom-up approaches and its characterization
• Synthesis and applications: metal oxide nanostructures, nanocomposites, silicon carbide nanomaterials</td></tr>
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Teaching and Learning Methods / Activities	Lectures, tutorials, group discussions and homework assignments, e-learning, online learning	
Evaluation/Assessment Strategy	In-course Assessments	End of Course Examination
	30%	70%
Recommended References	• Allcock, H. R., "Introduction to Materials Chemistry", John Wiley & Sons, Inc, 2008. • Rao, C. N. R., Biswas, K., "Essential of Inorganic Material Synthesis", John Wiley & Sons, Inc, 2015. • Lalena, J. N., Cleary D.A., "Principles of Inorganic Material Design", 2nd Edition, John Wiley & sons, Inc, 2010. • Tantra, R., "Nanomaterial Characterization", John Wiley & Sons, Inc, 2016. • Bhagyaraj, S. M., Oluwafemi, O. S., Kalarikkal, N., and Thomas, S., "Synthesis of Inorganic Nanomaterials", Woodhead Publishing, 2018.	