<table>
<tr><td>Course Code</td><td colspan="3">CHE303M3</td></tr>
<tr><td>Course Title</td><td colspan="3">Advanced Organic Chemistry I</td></tr>
<tr><td>Credit Value</td><td colspan="3">03</td></tr>
<tr><td rowspan="2">Hourly Breakdown</td><td>Theory</td><td>Practical</td><td>Independent Learning</td></tr>
<tr><td>45</td><td>-</td><td>105</td></tr>
<tr><td>Objective/s</td><td colspan="3">• Discuss the heterocyclic syntheses, reactions and mechanisms
• Provide in-depth understanding of pericyclic reaction mechanisms and their stereochemical effects
• Elaborate the principles and applications of photochemistry</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="3">• Outline the mechanisms of heterocyclic reactions and syntheses
• Apply the theory of concerted reaction to pericyclic reactions
• Predict the stereochemistry of the products
• Interpret photochemical principles
• Explain photochemical reactions</td></tr>
<tr><td>Course Content</td><td colspan="3">Advanced heterocyclic chemistry
• Synthesis, reaction and mechanism of quinolone, isoquinoling, indole, benzofuran, benzothiophene, α- and γ-pyrones, benzopyrones such as chromones, coumarins and isocoumarins, pyrilium ion, benzopyrilium ion, diazines such as pyridazine, pyrimidine and pyrazine, 1,3-azoles such as imidazole, thiazole and oxazole, and purins.

Pericyclic reactions
• Introduction, classification: electrocyclic, cycloaddition, chelatropic, sigmatropic and group transfer reactions; theories of concerted reaction, prediction of the mode of reaction and the stereochemistry of products under thermal and photochemical conditions by applying the theories.

Photochemistry
• Photochemical principles, photochemical reactions: photo oxidation, reactions of saturated and α,β-unsaturated carbonyl compounds, photo addition, photo reduction, photo isomerisation and photo rearrangement; photochemistry in nature, applied photochemistry.</td></tr>
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Teaching and Learning Methods / Activities	Lectures, tutorial discussions, small group assignment and home-work assignments	
Evaluation/Assessment Strategy	In-course Assessment	End-of-course Examination
	30 %	70 %
Recommended References	• Sankararaman, S., Hoffmann, R., Pericyclic Reactions - A Textbook: Reactions, Applications and Theory, **2005** • Jagdamba Singh, Jaya Singh, Photochemistry and Pericyclic Reactions, **2009.** • Coyl, J. D., Introduction to Organic Photochemistry, **1991.** • Gilchrist, T. L., Heterocyclic chemistry, Longman, England, **1997.** • Joule J.A, Mills K., Heterocyclic chemistry, 5th Edition, Wiley-Blackwell, **2010**. • Sainsbury M., Heterocyclic chemistry, R.Sc. publication, UK, **2001**.	