

## CARBOHYDRATE BIOTECHNOLOGY (2 credits)

First semester (2025)

Time: TH, FR 13.00 - 14.00

Co-ordinator: Kittikhun

Room: SCI10 503

| Topic                                                                                                                                                                                                                                                                                                                                               | Hrs. | Date                        | Instructor          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------|---------------------|
| 1. Review on Carbohydrates                                                                                                                                                                                                                                                                                                                          |      |                             |                     |
| 2. Introduction to Carbohydrate Biotechnology :<br>From Agricultural Products to Carbohydrates of Industrial and Medicinal Importance                                                                                                                                                                                                               | 2    | 9, 15 Aug                   | Kittikhun (ตามเดิม) |
| 3. Enzymatic Production of Carbohydrates and Glycosides :<br>Glycosyl Hydrolases and Glycosyl Transferases                                                                                                                                                                                                                                          | 2    | 16, 22 Aug                  | Kittikhun (ตามเดิม) |
| 4. Carbohydrate Characterization & Analysis                                                                                                                                                                                                                                                                                                         | 4    | 23, 29, 30 Aug 5 Sep        | Manchumas           |
| 5. Functional Carbohydrates : Structure, production, properties, and applications (Starch; Oligosac: MOS, IMO, Gentio-OS, Cyclodextrins; Disac: Trehalose, Maltose, Maltitol, Nigerose; Monosac: Glucose, Fructose)<br>5.1 Starch and Related Saccharides<br>5.2 Fructose Related Saccharides (FOS, Glycosylsucrose, Palatinose, GOS, Lactosucrose) | 5    | 6, 12, 13, 19, 20 Sep       | Karan               |
| Mid-term examination: 22 - 26 Sep 2025; 25 Sep 2025 13:00 - 15:00 น.                                                                                                                                                                                                                                                                                |      |                             |                     |
| 5.3 Chitin-Chitosan and Other Low-digestible Saccharides (XOS, Manno-OS)                                                                                                                                                                                                                                                                            | 4    | 10, 11, 17, 18 Oct          | Rath                |
| 6. Glycobiology and Glycoconjugates - Concepts of Glycobiology<br>- Glycosylation and Disease<br>- Glycoconjugates and recognition                                                                                                                                                                                                                  | 6    | 24, 25, 31 Oct, 1, 7, 8 Nov | Kittikhun (ตามเดิม) |
| 7. Future Prospects: Carbohydrate Drug Design & Carbohydrate based Vaccines<br>: Glycomics and Glycobiology<br>: Functional Carbohydrates                                                                                                                                                                                                           | 3    | 14, 15, 21 Nov              | Manchumas           |
| Final-term examination: 24 Nov - 8 Dec 2025; 24 Nov 2025 13:00 - 15:00 น.                                                                                                                                                                                                                                                                           |      |                             |                     |

เปิดให้นักศึกษาที่เรียนตอน summer 2567 แล้วเท่านั้น