

## Unit 12: Working with Design Patterns to Structure Code

The reading this week focusses on the role which can be played by design patterns in the creation of software and following an object oriented approach. We also examine the challenge of sustainable code development for energy efficiency concerns.

### Required Reading

Philips, D. (2018) *Python 3 Object-Oriented programming*. 3rd ed. Packt Publishing.

- Chapter 10.

Gamma, E., Helm, R., Johnson, R. & Vlissides, J. (1995) *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley.

- Pages 27-29, 36-37

Zhang, C. & Budgen, D. (2012) What Do We Know about the Effectiveness of Software Design Patterns? in *IEEE Transactions on Software Engineering* 38(5): 1213-1231. DOI: 10.1109/TSE.2011.79.

Kampffmeyer, H. & Zschaler, S. (2007) Finding the Pattern You Need: The Design Pattern Intent Ontology. *MODELS*. 4735. 211-225. DOI: 10.1007/978-3-540-75209-7\_15.

Guo, P. (2021) Ten Million Users and Ten Years Later: Python Tutor's Design Guidelines for Building Scalable and Sustainable Research Software in Academia. In *The 34th Annual ACM Symposium on User Interface Software and Technology (UIST '21)*. Association for Computing Machinery. New York, NY, USA. 1235–1251. DOI: 10.1145/3472749.3474819.