Semester	AUG 2022
Open to semester	5,7,11,13,21
Course code	**BI3194/BI6314**
Course title	**Developmental Biology**
Credits	4 /4
Course Coordinator & participating faculty (if any)	Girish Ratnaparkhi*, Richa Rikhy
Nature of Course	Lectures
Pre-requisites	A previous course on Genetics and Cell Biology is recommended but not compulsory
Objectives (goals, type of students for whom useful, outcome etc)	The goal of this course is to introduce students to the patterns and mechanisms of animal development. Model organisms such as Drosophila, Xenopus, C. elegans and also Stem Cells will be used to explain commonalities and differences in molecular mechanisms across the animal kingdom. In in each module, the instructors will teach advanced topics, using current research papers, once the history and basic concepts of each section has been explained to students. Students are expected to read the literature shared in order to gain a global perspective of animal development.
Course contents (details of topics /sections with no. of lectures for each)	Content: The Course will follow the development of invertebrates and vertebrates from the egg to the embryo, to the adult. Basic concepts of developmental biology as also principles and mechanisms that help form and shape the organism will be taught and discussed. 1. Egg and sperm: The assembly line that forms the mature egg and sperm. 2. The primordial germ cells. Elements for a new beginning. 3. Fertilization 4. Positional information, axes, coordinates and morphogen gradients 5. Cell division, the Blastula, Gastrula and cell fate specification. The three germ layers. 6. Modes of cell-cell interactions during tissue organization:

	Self-organization, lateral inhibition, induction, and recruitment 7. Growth and differentiation. Organ formation. 8. Evolution of body plan 9. Stem cell biology and Regeneration
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-20% assignment, quiz or paper presentation%
Suggested readings (with full list of authors, publisher, year, edn etc.)	Rather than books, the teachers will share recent reviews, perspectives and research with students as study material. Students can however also refer to the following books, both old and new editions for additional information. 1. Developmental Biology: S.F. Gilbert (2006) 8 edition, Sinauer Associates or the recent version Gilbert and Barresi (2017, 2019). 2. Principles of Development by Cheryll Tickle and Lewis Wolpert (2012) Oxford University Press. The 2008 version is also good for conceptual information.