

AIIMS Syllabus 2020 for Biology

UNIT I: Reproduction

UNIT II: Genetics and Evolution

UNIT III: Biology and Human Welfare

UNIT IV: Biotechnology and Its Applications

UNIT V: Ecology and environment

Detailed Syllabus of AIIMS MBBS 2020: Biology Section

UNIT I: Reproduction

- Reproduction in organisms: Reproduction, a characteristic feature of all organisms for the continuation of species; Modes of reproduction – Asexual and sexual; Asexual reproduction; Modes-Binary fission, sporulation, budding, gemmule, fragmentation; vegetative propagation in plants.
- Sexual reproduction in flowering plants: Flower structure; Development of male and female gametophytes; Pollination-types, agencies and examples; Outbreeding devices; Pollen-Pistil interaction; Double fertilization; Post fertilization events. Development of endosperm and embryo, Development of seed and formation of fruit; Special modes-apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation.
- Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis spermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development up to blastocyst formation, implantation; Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).
- Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies – IVF, ZIFT, GIFT (Elementary idea for general awareness).

UNIT II: Genetics and Evolution

- Heredity and variation: Mendelian Inheritance; Deviations from Mendelism-Incomplete dominance, Co-dominance, Multiple alleles and Inheritance of blood groups, Pleiotropy; Elementary idea of polygenic inheritance; Chromosome theory of inheritance; Chromosomes and genes; Sex determination-In humans, birds, honey bee; Linkage and crossing over; Sex-linked inheritance-Haemophilia, Colour blindness; Mendelian disorders in humans-Thalassemia; Chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.
- Molecular basis of Inheritance: Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central dogma; Transcription, genetic code, translation; Gene expression and regulation-Lac Operon; Genome and human genome project; DNA fingerprinting.
- Evolution: Origin of life; Biological evolution and evidences for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence); Darwin's contribution, Modern Synthetic Theory of Evolution; Mechanism of evolution-Variation (Mutation and Recombination) and Natural Selection with examples, types of natural selection; Gene flow and genetic drift; Hardy-Weinberg's principle; Adaptive Radiation; Human evolution.

UNIT III: Biology and Human Welfare

- Health and Disease; Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ringworm); Basic concepts of immunology-vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse.
- Improvement in food production; Plant breeding, tissue culture, single-cell protein, Biofortification; Apiculture and Animal husbandry.
- Microbes in human welfare: In household food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and bio fertilisers.

UNIT IV: Biotechnology and Its Applications

- Principles and process of Biotechnology: Genetic engineering (Recombinant DNA technology).
- Application of Biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy; genetically modified organisms- Bt crops; Transgenic Animals; Biosafety issues- Biopiracy and patents.

UNIT V: Ecology and environment

- Organisms and environment: Habitat