

INTEGRATED SCI & TECHNOLOGY (IST)

 - General Education Course

IST 150 Spreadsheet & Database Prin	3 Credit hours
Comprehensive coverage of spreadsheets and databases. Includes techniques to collect, manage, and analyze data; solve problems; and effectively communicate results for scientific research. Includes macro development and introduction to scripting.	
Grade Mode: Normal Grading Mode	
IST 224  Intro to Forensic Science	4 Credit hours
The relationship between scientific process and crime solutions is explored. DNA technology, probability theory, fingerprints, blood spatter, questioned documents, crime scene investigation will be examined using laboratories and case studies.	
Attributes: Natural Sciences, Core II Natural Sciences	
Grade Mode: Normal Grading Mode	
IST 241 Introduction to DNA Cloning	4 Credit hours
Basic Molecular Genetics. Topics include DNA, RNA, and protein structure and function, microbiology, genetics, cell biology, gene regulation, molecular biology applications in agriculture, medicine, and industry. Hands-on DNA cloning lab.	
Grade Mode: Normal Grading Mode	
IST 264 Technology Foundations	3 Credit hours
This course introduces the student to the common hardware and technology that pervades business and society as a whole. Topics include pc's, networks, software, the internet, cellular phones, etc.	
Grade Mode: Normal Grading Mode	
IST 280 Special Topics	1-4 Credit hours
Grade Mode: Normal Grading Mode	
IST 281 Special Topics	1-4 Credit hours
Grade Mode: Normal Grading Mode	
IST 282 Special Topics	1-4 Credit hours
Grade Mode: Normal Grading Mode	
IST 283 Special Topics	1-4 Credit hours
Grade Mode: Normal Grading Mode	
IST 285 Independent Study	1-3 Credit hours
Independent study for selected sophomores or advanced freshmen under supervision of faculty; may be repeated only once.	
Grade Mode: Normal Grading Mode	
IST 286 Independent Study	1-4 Credit hours
Independent study for selected sophomores or advanced freshmen under supervision of faculty; may be repeated only once.	
Grade Mode: Normal Grading Mode	
IST 301 Public Service Experience	1 Credit hour
At least 30 contact hours in a public service/volunteer experience with a group, organization or agency that offers a service to the general public. Advisor permission required.	
Grade Mode: Credit/No Credit Grade Only	
IST 330 Knowledge Engin Fund	3 Credit hours
Introduction to fundamental topics of knowledge engineering and the development of Knowledge-Based Systems (KBS). Covers life cycle activities, knowledge acquisition, representation, and the implementation of KBS and building tools.	
Pre-req: IST 263.	
Grade Mode: Normal Grading Mode	
IST 340 DNA Technology	4 Credit hours
This class deals with DNA and genes, the code of life, which we receive from our parents. It tells how humans recently learned about DNA and started to manipulate it.	
Pre-req: IST 241 or CHM 212 or BSC 120.	
Attributes: Natural Sciences	
Grade Mode: Normal Grading Mode	
IST 341 Human Genetics	4 Credit hours
Principles, problems, and methods in human genetics. Mendelian, biochemical, medical, quantitative, and molecular genetics, cytogenetics, bioethics applied to humans. Lab includes DNA sequencing SNP genotyping. PR: IST 241 or equivalent.	
Pre-req: IST 241 or CHM 212 or BSC 120.	
Attributes: Natural Sciences	
Grade Mode: Normal Grading Mode	
IST 342 Biosciences Research Meth	3 Credit hours
Students will develop proficiency in the laboratory methods used in Biosciences. These skills prepare students for successful internships and advanced courses in biotechnology and environmental sciences. Hands-on and WebCT instruction.	
Pre-req: IST 241 or CHM 212 or BSC 120.	
Attributes: Natural Sciences	
Grade Mode: Normal Grading Mode	
IST 343 Genomic Cloning & Cytogenetics	4 Credit hours
Advanced molecular genetics class emphasizing lab techniques. DNA cloning and plasmid purification, Genomic DNA purification, Southern and Northern hybridization, DNA sequencing, animal cell culture and human cytogenetics.	
Pre-req: IST 241 or CHM 212 or BSC 120.	
Attributes: Natural Sciences	
Grade Mode: Normal Grading Mode	
IST 350 Manufacturing Systems	3 Credit hours
Various manufacturing systems used within organizations are introduced. Methods of manufacturing are presented along with various technologies employed. Design for manufactur- ing, material management, quality considerations, etc. are treated.	
Pre-req: IST 160.	
Grade Mode: Normal Grading Mode	
IST 434 Molecular Diagnostics	3 Credit hours
This course is designed to provide an overview of the general principles and methods used to diagnose bacterial, viral and human diseases by molecular techniques.	
Grade Mode: Normal Grading Mode	
IST 441 Metabolic Systems	3 Credit hours
Discusses basic molecules, processes, and mechanisms responsible for the activity of all living systems, and the methods of their analysis. Provides necessary theoretical background for the understanding of industrial biotechno- logy.	
Pre-req: BSC 120.	
Attributes: Natural Sciences	
Grade Mode: Normal Grading Mode	

IST 442 Bioethics **3 Credit hours**

Discuss ethical issues in scientific research: fraud, informed consent, genetic testing, gene therapy, cloning, new drugs, vaccines and foods produced via engineered organisms. Includes real case studies and media analysis.

Grade Mode: Normal Grading Mode

IST 443 Protein Biotechnology **3 Credit hours**

Discussion covers basics of protein structure and function, post-translational modification and transport simple immunology. Laboratories include protein quantitation, enzyme kinetics, protein purification and dialysis protein gel electrophoresis and staining.

Pre-req: BSC 120.

Attributes: Natural Sciences

Grade Mode: Normal Grading Mode

IST 444 Bioinformatics **3 Credit hours**

Bioinformatics computer software is used to draw inferences from DNA and protein databases. Students will find pattern and meaning in genomic data through computer-aided analysis of DNA, RNA, and protein.

Pre-req: IST 241 or CHM 212 or BSC 120.

Attributes: Natural Sciences

Grade Mode: Normal Grading Mode

IST 445 DNA Forensics **3 Credit hours**

Hands-on DNA typing of simulated crime scene evidence. Process biological samples, purify DNA, perform presumptive and confirmatory tests for blood and semen, learn microscopy, PCR genetic analysis and practice testimony.

Pre-req: IST 224 or IST 340 or IST 341.

Attributes: Natural Sciences

Grade Mode: Normal Grading Mode

IST 455 Drugs Biologics Med Devices **3 Credit hours**

Students will learn key components of the drug discovery process and the steps leading to full regulatory approval and commercialization of drugs, biologics and medical devices. Case studies will be discussed.

Pre-req: IST 340 or BSC 322.

Grade Mode: Normal Grading Mode

IST 480 Special Topics **1-4 Credit hours**

Grade Mode: Normal Grading Mode