production learned in basic audio and video, this includes financing, budgets, and other reporting that is required both as an independent filmmaker, and as an independent music producer and artist, as well as when working with an established production company or music studio. Assignments will be differentiated for students to focus more on audio (for music production) or on video (for film production). Prerequisite: COMM 237 or COMM 238.

COMM 345 Journalism Practicum (1)
*Varies*
This course will give students time and opportunity to evaluate and improve the student newspaper, the Courier, and will take up issues in reporting, writing, layout, and management. This course may be repeated. COMM 241 recommended.

COMM 346 Topics in Communication (3)
*Varies*
These courses focus on salient topics in communication arts such as political communication, family communication, or other current issues as interest and need demand.

COMM 348 Topics in Media (3)
*Varies*
These courses focus on salient topics in media communication such as religion and film, media criticism, or other current issues as interest and need demand.

COMM 355 Webcasting Practicum (1)
*Varies*
This course translates the practices of radio broadcasting into the skills needed for webcasting, including the management of audio data, the navigation of playlists, the creation of programming, and the coordination of broadcast events. This course may be repeated.

COMM 365 Station Management Practicum (1)
*Varies*
In order to acquaint students with operations and procedures in radio station management, this course details the structure of a working radio station, the air shifts of the station day clock, the development of programming, the handling of radio personnel issues, and the complexities of commercial advertisement and station marketing. This course may be repeated.

COMM 399 Independent Study (2)
*Varies*
Topics are selected from students’ major interests.

COMM 400 Internship in Communication (3)
*Varies*

COMM 410 Senior Communication Seminar (3)
*Fall*
A capstone course that orients students to their academic past and professional future. Students demonstrate their knowledge and skills developed throughout the entire major, and formulate strategies for beginning their professional careers. Assignments include developing a major project, a resume, a portfolio, a philosophy of Reformed Christian communication, and completing a comprehensive exam over core communication classes. Meets field education requirement. Prerequisites: communication arts major and completion of communication arts core classes and approved capstone project proposal.

**CPSC  COMPUTER SCIENCE**

CPSC 107 Web Page Design (2)
*Fall*
This course introduces the basics of Web page construction and Web site organization to communicate a consistent client message. Platform-independent textual and graphical elements, creation of hypertext links, efficient use of computer resources, appropriate use of color and navigational signals will be studied in detail. Optional topics include frame design, animated graphics, image maps, interactive forms, and java applets. The skills are developed in the context of sensitivity to a consistent design scheme and to an awareness of the communicative dimensions including audience and overall message.

CPSC 111 Elements of Programming I (3)
*Fall*
An introduction to the basics of computer programming. Using a programming environment that is appropriate for beginners, students will learn to write programs that generate graphical, textual, or numeric output. No previous experience with computer programming is required.

CPSC 112 Elements of Programming II (3)
*Spring*
A continuation of CPSC 111. Foundational concepts introduced in CPSC 111 are covered in greater depth, working up to an introduction to the principles of object-oriented programming. Prerequisite: Grade of C- or better in CPSC 111 or permission of instructor.

CPSC 202 Data Structures (3)
*Fall*
A continuation of CPSC 112. Advanced topics in object-oriented programming and graphical user interface design are introduced. Foundational data structures such as arrays, lists, stacks, queues, and trees are explored, along with associated algorithms for searching and storing them.

CPSC 221 Operating Systems (3)
*Fall, Odd*
Students develop an understanding of the organization and architecture of computer systems at the register-transfer and programming levels of system description, learn the major concept areas of operating systems principles, and study interrelationships between the operating system and the architecture of computer systems. Prerequisite: CPSC 112. CPSC 202 recommended.
CPSC 231 Databases (3)
Spring
An introduction to the principles, design, implementation, and use of relational database management systems. Topics include the use of Structured Query Language (SQL) to query and modify databases, database logic, normalization, sorting, searching, indexing, reports, table relationships, and database ethics. Prerequisite: CPSC 202, or sophomore status and CPSC 111.

CPSC 252 Unix: Concepts and Administration (3)
Fall, Even
This course offers an overview of Unix systems. In addition to learning central concepts of Unix, students gain knowledge and experience in the administration and management of Unix-based computer systems. Prerequisite: CPSC 111.

CPSC 260 Business Computing (3)
Spring
Through intensive hands-on learning, students acquire the ability to use spreadsheet and database software to organize information, to create and employ data models, and to solve business-related informational problems.

CPSC 261 Web Architecture and Design (3)
Fall
This course introduces the use of foundational technologies that underlie web pages. Students will learn to write HTML, CSS, and JavaScript/jQuery to create content, format, and process web pages.

CPSC 302 Software Engineering (3)
Spring, Even
This course is a survey of software engineering principles including software project management, system and requirements analysis, the design and implementation of software, software quality assurance and testing, software maintenance, dependability and security. Prerequisite: CPSC 202.

CPSC 311 Programming Languages (3)
Fall, Even
This course is a comparative study of programming languages and their features. The aim is to develop an understanding of the organization of programming languages, especially the run-time behavior of programs, and to continue the development of problem solution and programming skills introduced in the elementary-level material. Prerequisite: CPSC 202.

CPSC 312 Algorithms and Complexity Theory (3)
Spring, Odd
This course reviews techniques for proving an algorithm's correctness and analyzing its efficiency, explores a catalog of advanced algorithms and algorithmic techniques, data structures, and analysis methods, and considers issues of computability and tractability of problems, particularly the concept of NP-completeness, and computational complexity. Prerequisites: CPSC 202 and MATH 210.

CPSC 313 Computational Biology (4)
Spring, Odd
This course focuses on computational strategies toward solving biological problems. The challenges of processing large datasets to identify meaningful biological insights are discussed. This course includes a laboratory component. Prerequisites: BIOL 110, MATH 151, CPSC 111. Cross-listed with BIOL 301. $50.00 lab fee.

CPSC 331 Networking (3)
Spring, Odd
The course introduces typologies for networks, ports, protocols, switching, routing, Transmission Controlled Protocol/Internet Protocol (TCP/IP), and network layers. Prerequisites: CPSC 111 or sophomore standing.

CPSC 332 Computing Administration (3)
Spring, Even
This course introduces Microsoft Windows Server, web servers, network storage, active directories, client servers, software implementation, and systems administration. Prerequisites: CPSC 111 or sophomore standing. CPSC 331 is recommended.

CPSC 370 Topics in Computer Science (3)
Fall, Spring
A study of a specific topic in Computer Science. Subjects might include Artificial Intelligence, Data Mining, Cryptography and other pertinent topics of the day. This course is not offered on a regular basis. This course may be repeated for credit with different topics. Prerequisite: CPSC 112, or sophomore status and CPSC 111.

CPSC 399 Independent Study (1)
Varies

CPSC 400 Field Education (2)
Fall, Spring

CPSC 401 Senior Seminar (1)
Fall
This seminar provides an opportunity for students to reflect on the concepts, contextual, foundational, and worldview issues, and applications studies in past coursework. The seminar emphasizes how these issues will impact their lives beyond the College. Presentations, both in class and off campus, attended by students and made by students, are a key component of the course. Prerequisites: Senior class standing and prior completion of at least six required courses in the major (excluding cognate course requirements).

CSEM  CHICAGO SEMESTER

CSEM 301 Arts in the City (3)
Fall, Spring
This course investigates urban cultural life as reflected in the arts of Chicago. Students will attend plays, concerts, movies, and visit art galleries. We will process these experiences through readings, lectures, and classroom discussion.