

ogy; clinical interpretation of tests; correlation of results with patient condition; problem solving and validation of results.

**CLS 4700. Clinical Immunology** (4)

Study of the human immune system in health and disease; immunologic techniques including immunofluorescence, immunochemistry, molecular diagnostics, serology, and other related testing and instrumentation, including computer technology; clinical interpretation of tests; correlation of results with patient condition; problem solving and validation of results.

**CLS 4750. Topics in CLS/MT I** (2)

Orientation workshop, including basic technique, safety, computer and LIS technology, microscopy; phlebotomy techniques; parasitology; mycology; urinalysis and other fluids.

**CLS 4800. Topics in CLS/MT II** (2)

Professional topics seminars including medical ethics; mathematics; case studies; principles and practices of quality management; principles of laboratory administration, management and supervision; acquisition and evaluation of laboratory information systems; educational methods; professional conduct; comprehensive review and evaluation.

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## DEPARTMENT OF COMMUNICATION AND FINE ARTS

*Assistant Professor* Michael K. McDonald, Ph.D. (Chair)

This department combines the study of communication, business communication, art, media studies, music, theatre and journalism.

The purpose of the department of communication and fine arts is to provide an integrated study of the art and science of human communication. The majors include the study of communication at all levels of human interaction: intrapersonal, interpersonal, small group, public, social, and artistic.

To achieve this, the student may select one of three majors: communication, business communication or the liberal arts theatre major. Students may choose from a variety of minors in communication as well. Students choosing communication may select one of four tracks: communication theory, media studies (including journalism), theatre arts, and fine arts. The business communication program is described in a preceding section while the major in theatre is described in a following section.

In each track of communication or business communication, the curriculum is designed to give a liberal understanding of human communication and to prepare students for the professions, business, the arts, journalism, industry, education, health and public service, as well as graduate study in either an academic or professional field. To receive the B.A. in communication, the student must show an understanding of communication which includes historical, philosophical, ethical, social, political and cultural dimensions. And the student must demonstrate skill in the art of speech communication.

Students are encouraged to expand their education beyond the classroom through directed learning experiences in broadcast journalism, video production and theatre. Internships and directed research are available to students with a 3.0 grade point average in their major and a 2.0 GPA in all subjects.

The department is guided by the belief that a careful study of the process of communication enables people 1) to integrate and exchange knowledge, 2) to effect social action, and 3) to analyze and evaluate the uses of speech in the conduct of human affairs. This requires a liberal education in arts, sciences and humanities.

Throughout the study of communication at Rockhurst, emphasis is placed upon the ethical responsibility of the communicator to develop intellectual and moral integrity.

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# COMMUNICATION (CT)

(Department of Communication and Fine Arts)

<i>Professor</i>	Weslynn S. Martin, M.A.
<i>Associate Professor</i>	William J. Ryan, M.A.
<i>Assistant Professor</i>	Peter Bicak, Ph.D.
	Michael K. McDonald, Ph.D. (Chair)

## Major Field of Concentration

The concentration in communication consists of three tracks: communication theory, media studies (including broadcast journalism), and fine arts, art, music or theatre. Whichever track is chosen, the B.A. in communication requires CT 2040; CT 1220 (TA 1220) or CT 3190; CT 2200; JN 2000 Introduction to Journalism; an introductory art, music, or theatre course; and a minimum of 18 hours of upper-division courses, including CT 3300 or CT 4860; CT 4940; at least one seminar (TA 3400 History of Premodern Theatre, Drama, Criticism, or TA 3420 History of Modern Theatre, Drama, and Criticism, or CT 4870, or CT 4890). A minor or an additional 12 semester hours of upper-division courses in related disciplines (outside communication) are required, chosen under the direction of the major adviser.

The B.A. in communication also requires two semesters of college-level study of one language other than English. This requirement may be fulfilled by completing two semesters of college-level literature in one language other than English. In either case, these two courses must be taken for college-level credit.

A grade of C or better is required in each upper-division course in the major in order to be recommended for the BA in communication. (A grade of C- will not fulfill the requirement.)

## Minor Fields of Concentration

There are six tracks for the communication minor.

1. **Rhetorical criticism track:** The student must take JN 2000 Introduction to Journalism; CT 2200; CT 3200; CT 3840; CT 4750; and TA 3420 History of Modern Theatre, Drama, and Criticism.
2. **Organizational communication track:** The student must take CT 2040; CT 3850; CT 4350; CT 4860; and MG 3300 Organizational Behavior.
3. **Intercultural communication track:** The student must take CT 2040; IR 1000 Work in America; MG 3000 Introduction to Organizations; CT 3850; CT 4860; and MG 4300 International Business.
4. **Interpersonal communication track:** The student must take CT 2040; and four of the following courses: CT 3000, CT 3850, CT 4860, CT 4870 or approved communication special topics course.
5. **Communication general track:** The student must take CT 1220 (TA 1220) and CT 2040; and any four of the following courses: CT 3000, CT 3300, CT 3840, CT 4860, CT 4870 or CT 4890.
6. **Journalism track:** The student must take AR 1400 Basic Photography or JN 3450 Photojournalism; CT 2200, JN 2000 Introduction to Journalism; and four of the following courses: CT 4890, JN 3000 Advanced Reporting, JN 3030 Feature Writing, JN 3050 Editing and Design, JN 4170 Advertising Copywriting or JN 4180 Broadcast Journalism. A writing sample is required for entry into this track.

A grade of C or better is required in each upper-division course in the minor. (A grade of C- will not fulfill the requirement.)

- CT 1120 (ED 1120). Career Planning** (2)  
Students learn a career/life planning process geared toward determining education and career goals. Class work includes assessment of interests, abilities and values, research of literature, investigation of major fields of study and on-site information gathering in work environments. Identification and exploration of options are followed by evaluation, decision making and goal setting.
- CT 1220 (TA 1220). Voice and Diction** (3)  
A studio course in the use and training of the speaking voice. Fundamentals of voice production, breath control, voice placement, resonance and diction. Emphasis on development of skills for acting, public speaking, radio and television.
- CT 2000. Fundamentals of Communication** (3)  
*Fall and spring semester*  
An introduction to effective communication with emphasis on presentational speaking, critical listening, intrapersonal, interpersonal communication and small group communication. Focus on theory and practice of human communication through individual and group experiences. Prerequisite: EN 1110 College Composition I or equivalent. (OCP)
- CT 2040. Interpersonal Communication Laboratory** (3)  
Application of communication theory to face-to-face spontaneous interaction. Emphasis on acquiring skills in human relations, conflict management and group communication. Designed for analysis and evaluation of philosophies and behaviors which apply in effective and appropriate interpersonal exchange. Prerequisite: CT 2000.
- CT 2150. Honors Communication** (3)  
Intensive study of interpersonal and presentational communication in three phases: information gathering, message preparation and process, and style of delivery. Prerequisite: EN 1110 or EN 1140 or EN 1150; honors status or instructor approval.
- CT 2200. Mass Communication** (3)  
A study of the historical development, regulation and effects of mass media. Print, film and electronic media are included. The uses of media for journalism, advertising, education and propaganda are studied.
- CT 3000. Listening Research** (3)  
Theoretical and practical course to retrain students for listening for competence and productivity. Techniques, skills, and research approaches applied to discriminative, evaluative, appreciative, empathic, and self listening. Prerequisite: CT 2000.
- CT 3190. Media Performance** (3)  
A course in the preparation, presentation and criticism of radio and television performance. Vocal and verbal skills used in announcing, interviewing and narration are applied to news, education, and commercials. Laws of slander are studied. Lab includes audio and video media. Prerequisite: CT 2000.
- CT 3200. Cinema Critique** (3)  
An introduction to the art of film; students experience and discuss a variety of films from different genres, time periods and artistic styles. Laboratory fee. (ARI)
- CT 3210. The Films of Alfred Hitchcock.** (1)  
For about 40 years, from the '30s to the '70s, Alfred Hitchcock built a reputation as a cinematic master of suspense. His name was synonymous with sophisticated, exciting, engagingly complex movies that were guaranteed to thrill. Hitchcock delighted in playing games with the audience, seducing them into little traps, then laughing at their red faces. He has been imitated many times, but no one has yet exhibited Hitchcock's understanding of the film medium. In this course we examine what makes Hitchcock's movies so enjoyable and yet so disturbing. We study how Hitchcock worked closely with his writers, cinematographers and composers. We view four examples of Hitchcock's best work in order to discover how and why they had such a profound impact on the movie industry and on American culture.
- CT 3220. Screening Science Fiction** (1)  
Contrary to a popular misconception, science fiction is not necessarily about other planets, or alien invaders, or wars in outer space. It is about us, the people and institutions that shape our world and our future. Perhaps more than any other genre, science fiction is a barometer of the times. In this course we look at four science fiction films that probe the dynamics of the constant struggle between our sometimes vaunting aspirations and the often exorbitant price we must pay for them.
- CT 3300. Presentational Speaking** (3)  
A performance course in platform speaking. Emphasis on the speaker's credibility and delivery, the organization and content of the speech, audience analysis, critical listening and use of multimedia aids. Preparation, presentation and evaluation of informative, persuasive and special occasion speeches. Prerequisite: CT 2000.
- CT 3800. Paris: Organizational and Intercultural Communication Perspectives** (3)  
This course provides an orientation into the ways communication operates in France and in particular Parisian organizations. Topics include leadership, symbolism, management practices, and organizational design as it is witnessed in French culture. Special issues, which are unique to French organizations, are specifically addressed.
- CT 3801. Research Methods in Interpersonal Communication** (1)  
Coursework includes a survey of a variety of social science research methods with special emphasis on qualitative, applied research in the interpersonal/intercultural context. Prerequisite: CT 2000.

- CT 3840. Persuasion: Theories of Social Influence** (3)  
A study of the rhetorical, psychological and ethical principles of influencing change in others which includes consideration of the role of attitudes, beliefs, values and motives in human behavior. Application of theories through preparation and presentation of persuasive speeches and analysis of campaigns. Prerequisite: CT 2000.
- CT 3850. Intercultural Communication** (3)  
Examination of how people communicate, evaluate, and build attitudes about members of different cultures and subcultures. Exploration of varied communication patterns which take place nationally and internationally.
- CT 3860 (PS 3860). Media and Politics** (3)  
A study of the growing importance of mass media in American politics and their interaction with the formal and informal elements of the decision-making process. (SRII or SRI)
- CT 3880. Radio Programming and Production** (4)  
A course in the writing, production and evaluation of radio programs. Includes analysis of demographics, formats and trends. FCC regulations, copyright laws and ethical codes are studied. Lab applies electronic theory to operation of audio systems. Laboratory fee. Prerequisite: CT 2200.
- CT 3900. Video Production** (4)  
A lecture and lab course in the fundamentals of writing, producing and evaluating television programs. Emphasis is on news and documentary. Lab includes basic ENG, editing, and lighting. Laboratory fee. Prerequisite: CT 2200.
- CT 4170 (JN 4170). Advertising Copywriting** (3)  
A course in the conception and execution of creative, effective advertising for newspapers, magazines, radio and television. Includes a general survey of the field of advertising. Case studies, prizewinning advertisements and field trips are included. Prerequisite: CT 2200 or JN 2000 Introduction to Journalism or MK 3000 Principles of Marketing.
- CT 4180 (JN 4180). Broadcast Journalism** (3)  
A course in gathering, writing and producing news for radio and television. Included are skills in interviewing, editing news for broadcast and identifying news sources. Special problems unique to broadcast journalism are discussed. Prerequisites: CT 2200 and JN 2000 Introduction to Journalism.
- CT 4220 (ED 4220). Career Decisions** (2)  
Seniors experience a career decision-making process designed to facilitate the college-to-career transition. Reflecting on college experience, strengths, interests and work values are identified. A personal work ethic is examined. Speakers and videotapes present job market information. Researching literature, conducting information interviews, developing a resumé, interviewing for a job and writing cover letters are some of the job search skills that are taught. Prerequisite: Senior standing.
- CT 4350. Organizational Communication** (3)  
This course provides an orientation into the ways communication operates in organizations through historical, philosophical, and theoretical issues. Case study and organizational research are emphasized for study of leadership styles; communication climates; organizational design, coordination and symbolism; and communication satisfaction. Prerequisite: CT 2000.
- CT 4750. Rhetorical Criticism** (3)  
An examination and evaluation of verbal, visual and rhetorical artifacts which are formed due to social issues. Emphasis is placed on the relationship among the rhetor, the message, the audience, the cultural environment in which they communicate, and their ethical standards. This course is designed to develop critical thinking, listening and visual literacy.
- CT 4860. Seminar in Group Interaction** (3)  
A study of the principles and processes unique to group situations, with an emphasis on the structure of leadership, roles, norms, task and social functions. Problem solving, decision making and conflict resolution. Prerequisite: CT 2000.
- CT 4870. Seminar in Communication Theory and Research** (3)  
A survey of the contemporary contributions to the study of human communication. Evaluation and analysis are designed to explore what occurs when humans communicate and why certain effects occur. Survey includes considerations of interpersonal, intercultural, organizational, mass media and rhetorical communication. Prerequisites: Junior standing and instructor approval.
- CT 4890. Seminar in Mass Media** (3)  
Topics vary each semester but may include such themes as First Amendment issues, journalistic ethics, theories of the effects of mass communication, federal regulation, cultural impact of media and global issues in mass communication. Prerequisite: Junior standing.
- CT 4940. Senior Capstone** (1)  
Independent and collaborative research into major focus area; written/oral/artistic presentations required to demonstrate mastery of major area of study. Required to fulfill major.
- CT 4970. Internship** (2-3)  
Opportunities for students to apply their education by working in career fields related to a specific track in either communication or business communication. Internships may be in business, industry, government and not-for-profit organizations. Locations include Kansas City, St. Louis, and Paris. The Paris internship requires additional concurrent course enrollment. Prerequisites: Junior standing, upper-level courses relating to the specific internship, and internship faculty advisor approval.

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# COMMUNICATION SCIENCES AND DISORDERS (CD)

<i>Associate Professor</i>	Shelly Chabon, Ph.D. (Chair)
<i>Assistant Professor</i>	Rebecca Burke, Ph.D.
	Terre Graham, Ph.D.
	Betsy Green, M.S.
	Nancy Montgomery, Ph.D.
	Linda Solomon, Ph.D.
	Brenda Vann, M.A.
	Peggy Waggoner, M.A.

Rockhurst University offers a Bachelor of Science degree in Communication Sciences and Disorders. This degree program prepares students for graduate work in speech-language pathology or audiology. Speech-language pathology is the study of disorders of communication, including their characteristics, assessment, and treatment. Audiology involves the study of disorders of hearing, including the evaluation and rehabilitation of individuals with hearing problems. Completion of the BS degree in communication sciences and disorders provides the foundation for graduate study in speech-language pathology or audiology.

The bachelor of science program in communication sciences and disorders meets the requirements for certification by the State of Missouri as a speech-language specialist and by the American Speech-Language-Hearing Association (ASHA) as appropriate for an undergraduate program. However, to be eligible for state and ASHA certification, the students must earn a graduate degree from a program accredited by the Council on Academic Accreditation of the ASHA. Other requirements for ASHA certification include successful completion of a Clinical Fellowship Year and receipt of a passing score on the Praxis examination.

Students are required to earn a grade of C or better in all CSD courses (a grade of C- will not satisfy the requirement). Students are encouraged to maintain a GPA of 3.0 or higher in the major as well as an overall GPA of 3.0 or higher, as most graduate programs require a minimum GPA of 3.0 for admission.

## Major Field of Concentration

The major concentration in communication sciences and disorders consists of a total of 28 semester hours of upper-division work conducted at Rockhurst. The required upper-division courses in communication sciences and disorders are: CD 3100, CD 3300, CD 4100, CD 4150, CD 4350, CD 4500, CD 5450, CD 5600, CD 5620, and CD 5640. The required related upper-division courses are: PYED 3020 Psychology and Education of the Exceptional Child, ED 4010 Foundations of Education, ED 4020 Fundamentals of Literacy Learning, PY 3400 Developmental Psychology *or* PY 3410 Child Development, PYED 3430 Adolescent Psychology, PY 4350 Psychology of Language and PL 3100 Ethical Theory.

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Lower-division prerequisites for this major are: CD 2000, CD 2100, CD 2250, CD 2500, CT 2000 Fundamentals of Communication, BL 1250/1251 Principles of General Biology I, EN 1110 and 1120 College Composition I and II, HS 2100 History of the United States I or HS 2500 History of the United States II, MT 1190 Precalculus or MT 1030 Finite Mathematics, any physics course with or without lab, PS 1100 American Federal and State Government, PY 1000 Introduction to Psychology, and PY 2100 Introduction to Statistics for the Behavioral Sciences or EC 2200 Statistics.

### **Prep-Track**

The Post-Bachelor's Prep-Track in communication sciences and disorders provides the opportunity for those individuals, both recent graduates and non-traditional students desiring to change careers, who hold undergraduate degrees in disciplines other than CSD to complete all required and related coursework necessary for admission to a graduate program, whether at Rockhurst or at any other institution. (A graduate degree in CSD is the minimum academic preparation for eligibility for certification by ASHA and the state.)

### **Requirements for Admission to the Prep-Track:**

The Prep-Track was developed for students who did not major in communication sciences and disorders but who are interested in pursuing graduate study in this area. In order to be admitted to the Prep-Track, the candidate for admission must have completed an undergraduate degree at an accredited college or university. In accord with the admission requirements and procedures for all graduate students, the applicant must have earned an undergraduate GPA of at least 3.0 and must also provide GRE scores, three professional letters of recommendation, and an essay addressing his/her career goals and commitment to advanced study and service in the area of communication sciences and disorders. A student admitted to the Prep-Track will concurrently be admitted as a provisional graduate student. Upon completion of the 26 hours of required undergraduate coursework listed below with a minimum GPA of 3.0, the student will be assigned full graduate status.

The courses which a student in the Prep-Track must complete before being assigned full graduate status are: CD 2000, CD 2250, CD 2500, CD 3100, CD 5450, CD 5600, CD 5620, CD 5640, and PY 4350 Psychology of Language.

### **Minor Field of Concentration**

The minor in communication sciences and disorders consists of 12 hours of coursework in CSD: CD 2000, CD 2500, CD 4150 or CD 4350, and CD 4500. In addition, students must complete one of the following courses: CD 2100, CD 5640, PYED 3020 Psychology and Education of the Exceptional Child, PY 3400 Developmental Psychology, PY 3410 Child Psychology, PY 4350 Psychology of Language, ED 4020 Fundamentals of Literacy Learning, and either CD 4150 or CD 4350 if not selected as a required course. (Courses selected for the minor may not be used to fulfill the requirements for the major field of concentration.) A grade of 2.5 or better is required in each course in the minor.

## Bilingual Emphasis for Communication Sciences and Disorders Major

The bilingual emphasis establishes that a Communications Sciences and Disorders major has fulfilled requirements for a minor (12 credits of upper-division courses) in a foreign language with specially selected and required courses related to and/or supportive of the major. A joint undertaking of the Departments of Classical and Modern Languages and Communication Sciences and Disorders, the purpose of the emphasis is to provide undergraduates with an understanding of communication processes in bilingual groups and to develop the language competencies necessary to serve those from culturally and linguistically diverse backgrounds. Further education about communication disorders in culturally and linguistically diverse populations and refinement of the techniques for the prevention, identification, assessment and treatment of these disorders will occur at the graduate level.

The following courses or their equivalents are required (total of 12 credits):

SP 3150 Advanced Spanish Conversation and Composition II. (3 credits )

This course is a continuation of SP 3100. Prerequisite: SP 3100 or approval of instructor.

SP 4941 Senior Project. (3 credits)

For the CSD major, the project may take the form of an internship, here or abroad. The Spanish advisor as well as a CSD faculty mentor should be consulted for this assignment. The Senior project for this interdisciplinary work will normally involve a paper in Spanish and an oral presentation about this experience given in English at the Rockhurst campus.

An additional six credits in Spanish are required from among the following courses: SP 3400 Introduction to Latin American Culture, SP 3470 Introduction to Spanish Culture, SP 3800 Conversational Fluency, and SP 2070, 3070 or 4070 Medical Spanish/Spanish for the Health Care Professional or any suitable course from a study abroad program selected in conjunction with the Mexico Program advisor and with the approval of the Classical and Modern Languages Department Chair. The required language courses should be taken as early as possible in the college career so as to avoid scheduling conflicts in later years. It is possible to meet most of these requirements during a summer study abroad program if the student has attained advanced level competency in Spanish prior to the summer program.

It is *recommended* that students preparing for the bilingual emphasis also take the following course, which may be used for elective credit:

CT 3850 Intercultural Communication. (3 credits)

Examination of how people communicate, evaluate, and build attitudes about members of different cultures and subcultures. Exploration of varied communication patterns which take place nationally and internationally.

Following completion of all degree requirements students who elect to pursue this option will receive a certificate from the Department of Classical and Modern Languages and Communication Sciences and Disorders as evidence of their specialized skills.

A bilingual emphasis is also available in French with equivalent courses and approval of the Chair of the Department of Classical and Modern Languages.

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**CD 2000. Introduction to Human Communication Processes and Disorders** (3)

This course will provide a general understanding of normal and deviant speech, language, and hearing in adults and children. It considers the normal development of communication behavior, the nature of communication disorders, and the interaction of speech-language pathology and audiology with allied fields.

**CD 2100. Speech-Language-Hearing Services in the Schools** (3)

This course provides a review of the administration and management of speech, language and hearing programs in school settings. The course includes discussion of: 1) the history of speech-language services in the schools and the role of the speech-language pathologist in this setting; 2) documentation of services; 3) service delivery models; 4) case-load considerations; and 5) state regulations and financing. Information on how social and cultural issues have influenced speech and language programs in the schools is infused throughout the course. The course is a certification requirement for the Speech-Language Specialist Certificate which is issued by the Missouri Department of Elementary and Secondary Education and which is required before employment in school settings. Although this course is taken at the undergraduate level, initial certification work in school settings is not possible without a graduate degree in speech-language pathology. Prerequisite: CD 2000.

**CD 2250. Anatomy and Physiology of the Speech and Hearing Mechanisms** (4)

This course provides information on the anatomy and physiology of the speech and hearing mechanisms. The neural bases for phonation, articulation, respiration, and audition are also included.

**CD 2500. Language Development** (3)

This course provides information on the analysis of the development of systems of communication: phonologic, morphologic, syntactic, semantic, pragmatic, and relevant nonverbal and cognitive development in normal children. Review of current theories and methods of language measurement are addressed.

**CD 3100. Transcription Phonetics** (3)

Introduction to phonetic transcription with emphasis on American English. Students complete practical exercises in the transcription of normal and disordered speech using the International Phonetic Alphabet.

**CD 3300. Counseling in Speech Language Pathology and Audiology** (3)

Review and discussion of current theories in interviewing and counseling as they apply to individuals with communication disorders and their families. Opportunity for application of knowledge through

role playing of parent interviews, case history intakes, teacher conferences and review of diagnostic and treatment outcomes. Prerequisite: CD 2000.

**CD 4100. Principles of Clinical Management** (2)

This course provides information about the principles, methods and procedures used to effect positive change in the communication functioning of individuals with speech and/or language problems. Students have the opportunity to consider in-depth the processes and practices that occur when clinician and client come together. These include ways of interacting, shaping and reinforcing behavior, writing behavioral objectives, preparing for intervention, selecting client appropriate treatment methods and materials, and conducting parent conferences and professional staffings while serving culturally and linguistically diverse individuals. Prerequisites: CD 2000, CD 2100.

**CD 4150. Pediatric Communication Disorders** (3)

This course discusses the nature, evaluation and treatment of speech and language disorders in children and therapeutic principles that apply to the pediatric population. Prerequisite: CD 2000.

**CD 4350. Adult Communication Disorders** (3)

This course provides information on the speech and language characteristics of adults with communication disorders. Target populations include adults with the following problems: aphasia, apraxia, dysarthria, voice disorders, stuttering. Evaluation and treatment techniques for each of these populations are addressed. Prerequisites: CD 2000, CD 2250.

**CD 4500 (OT 6500) (PT 6500). Characteristics of Multicultural Populations** (3)

This course is intended to give the student an understanding of the influence of social-cultural factors such as age, gender, ethnicity, race, socio-economic status and geographic region on communication and assist in developing a culturally competent approach to clinical practice. It includes a review of the characteristics and history of a variety of groups as well as an overview of the evaluation instruments, treatment materials, test interpretations and interview techniques recommended for multicultural and/or multi-lingual populations. The graduate course PT/OT 6500 requires independent accelerated additional work appropriate for master's level study.

**CD 4660 (CD 6660). Sign Language I** (3)

The purpose of this course is to provide students with a beginning receptive and expressive vocabulary of signs and acquaint them with the manual alphabet. Students develop a basic understanding of the physiologic and medical aspects of hearing loss and become aware of facets of the sociology and culture of deafness. Information is provided on the causes as well as the educational and social implications of hearing loss. This is a beginning-

level course for students who have not previously completed a sign language course. Students taking this class for graduate credit must complete an additional project on an accelerated level appropriate for such graduate credit.

**CD 4661 (CD 6661). Sign Language II (3)**

This course offers continued development in the language of sign with emphasis on building vocabulary and developing conversational skills. Students taking this class for graduate credit must complete an additional project on an accelerated level appropriate for such graduate credit. Prerequisite: CD 4660

**CD 5450. Clinical Observation (1)**

Supervised clinical observation of assessment and treatment of children and adults with speech, language and hearing disorders. Assignment at off-campus sites as well as opportunities for observation via video-taped sessions. Discussion and analysis of observations during weekly class periods. A minimum of 25 hours of observation are required. Prerequisites: CD 2000, CD 2100, CD 3300.

**CD 5600. Speech and Hearing Science (4)**

This course provides an overview of the physics and psychoacoustics of speech. Acoustical components of speech are considered in relation to both

speech production and perception. Theory, measurement, and instrumentation issues in studying normal speech production and audition are included. Emphasis upon methodology and instrumentation issues in the study of speech is included in the lab experience. Pre- or co-requisites: CD 2250, CD 3100.

**CD 5620. Aural Rehabilitation (3)**

This course discusses the effects of hearing loss on verbal communication. Methods for providing speech and language services for pediatric and adult clients who exhibit various severities of hearing loss are highlighted. Educational options for children who are deaf and services that will benefit the child's development are also explored. Students taking this class for graduate credit must complete an additional project on an accelerated level appropriate for such graduate credit.

**CD 5640. Introduction to Audiology (3)**

This course discusses the principles of hearing measurement including testing and screening, as well as the interpretation of results. Anatomy and physiology of the auditory system are also reviewed. Students taking this class for graduate credit must complete an additional project on an accelerated level appropriate for such graduate credits.

## COMPUTER SCIENCE (CS) AND COMPUTER INFORMATION SYSTEMS (CIS)

(Department of Mathematics, Computer Science and Physics)

*Associate Professor* John F. Cigas, Ph.D.  
Daryl D. George, Ph.D.  
Paula M. Shorter, Ph.D. (Chair)

*Assistant Professor* Kevin Burger, M.S.

The Computer Science Program at Rockhurst University explores the theoretical and practical aspects of computing needed to understand and manipulate today's rapidly changing technological infrastructure. The theory provides students with a stable base, regardless of current technological trends, while practical components give students tangible reinforcement of theoretical concepts. The program prepares students for careers in scientific and business programming; database, network, and system management; user support services; and systems programming. The program, in conjunction with additional mathematics courses, also prepares students for graduate study in computer science.

Computer programming is used as the means to understand computer hardware and the algorithmic process that permeates the discipline, and to explore many of the topics in upper division classes. The current introductory programming language is Java, though other languages and tools are introduced throughout the program.

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The Computer Information Systems program at Rockhurst University explores the application of information technology to the business environment. The program provides a solid foundation in both applied and theoretical computing along with significant coursework in management or economics.

### Major Fields of Concentration

The major in computer science consists of at least 18 hours of upper-division courses in computer science, including CS 3110, CS 3310, CS 4210 and CS 4960 (a one-credit computer science seminar). Also required are 12 semester hours of related upper-division courses chosen under the direction of the major adviser. Lower-division prerequisites for this major are MT 1510 Discrete Structures, MT 1800 Calculus I, CS 1110/1120 and CS 2110. A grade of C or better is required in each upper-division course counted toward fulfillment of the major requirements. (A grade of C- will not satisfy this requirement.)

The computer information systems major consists of at least 18 hours of upper-division courses in computer science, including CS 3110, CS 3310, CS 3410, CS 4210, and CS 4960 (a one-credit computer science seminar). Lower-division prerequisites for this major are MT 1510 Discrete Structures, CS 1110/1120, and CS 2110. A minor in management or economics with one additional upper-division course offered by the Helzberg School of Management is also required. The specific additional HSOM course must be approved by a computer science faculty adviser. The description of the management and economics minors can be found in the Helzberg School of Management section of this Catalog. A grade of C or better is required in each upper-division course counted toward fulfillment of the major requirements. (A grade of C- will not satisfy this requirement.)

### Minor Field of Concentration

For a minor in computer science the student must take CS 3110 and three additional 3000- or 4000- level three-credit-hour CS courses. A grade of C or better is required in each upper-division course counted toward fulfillment of the minor requirements. (A grade of C- will not satisfy this requirement.)

**CS 1010. Introduction to Computing** (1)  
*Fall and spring semester*

This course gives students a working knowledge of microcomputers through a study of computer concepts and computer capabilities. The major categories of computer software are covered, including word processing, spreadsheets, data management, and data communications. Prerequisite: MT 0100 Algebra or high school equivalent. Concurrently: CS 1020.

**CS 1020. Introduction to Computing Laboratory** (2)  
*Fall and spring semester*

A laboratory designed to give students “hands-on” experience with the topics covered in CS 1010. Laboratory fee. Concurrently: CS 1010.

**CS 1110. Introduction to Programming** (3)  
*Fall and spring semester*

Concepts of top-down design of computer solutions to problems using a structured programming language. Topics covered include decision state-

ments, looping, parameter passing and arrays. Concurrently: CS 1120. Prerequisites: MT 1030 Finite Mathematics or MT 1190 Precalculus, at least concurrently.

**CS 1120. Introduction to Programming Laboratory** (1)  
*Fall and spring semester*

This structured lab, required in conjunction with CS 1110, allows the student to gain proficiency in computer programming by developing computer solutions to assigned problems. The student is also shown how to use the computer facilities for program development. Laboratory fee. Concurrently: CS 1110.

**CS 2110. Computer Science Concepts** (3)  
*Fall and spring semester*

Structured programming concepts; organization of computer programs; elementary computer architecture; internal representation of data; conceptual representation of data; abstract data types. Prerequisite: A grade of C or better in CS 1110/1120.

- CS 2330. Digital Circuits** (3)  
Boolean algebra, logic circuits, implementation of logic circuits and integrated circuit technology. Three lectures and one two-hour laboratory period every two weeks. Laboratory fee. Prerequisite: MT 1190 Precalculus or equivalent.
- CS 2710. File Processing and COBOL** (3)  
Topics include: file organization structures, file manipulation techniques, structured programming, and the COBOL language. Prerequisite: CS 2110.
- CS 3110. Data Structures** (3)  
*Fall semester*  
This course continues the development and use of Abstract Data Types, such as lists, strings, tables and trees, for storing and retrieving data from memory. It also covers advanced searching and sorting algorithms. Recursion is central to many of the topics discussed. Additionally, data structures and algorithms are analyzed for their time and space efficiency. Prerequisite: A grade of C or better in both CS 2110 and MT 1510 Discrete Structures.
- CS 3310. Computer Architecture and Assembly Language** (3)  
*Fall semester of even-numbered calendar year*  
A study of the internal operating structure of computers via in-depth coverage of assembly language programming. Topics covered include addressing techniques, internal storage of data and instructions, machine language instructions, subroutines, macro facilities and the assembly process. Prerequisite: CS 2110.
- CS 3330. Computer Organization** (3)  
A study of the basic logic circuits involved in modern digital computers. Topics include internal processor architecture, decoders, multiplexers, memory structure and state transitions. Topics are emphasized and illustrated by lab work on micro-processor systems. Prerequisites: CS 1110/1120 and CS 2330.
- CS 3410. Database Management Systems** (3)  
*Spring semester of even-numbered calendar year*  
A study of the principles and applications of computer databases including database administration, privacy, confidentiality, schema, subschema, database models and physical models. Projects are done utilizing database management systems from user written programs. Prerequisite: CS 3110.
- CS 3530 (MT 3530). Numerical Methods** (3)  
*Spring semester of even-numbered calendar year*  
Numerical solutions to algebraic and differential equations; numerical integration; interpolating polynomials and regression analysis; simultaneous equations and solutions to partial differential equations. Prerequisites: MT 1810.
- CS 3540. Numerical Methods Laboratory** (1)  
*Spring semester of even-numbered calendar year*  
Proficiency in the use of a numerical programming language is developed. Programming assignments parallel the topics covered in CS 3530 (MT 3530). Laboratory fee. Concurrently: CS 3530 (MT 3530).
- CS 4210. Operating Systems** (3)  
*Spring semester of odd-numbered calendar year*  
Operating system concepts and techniques. Course includes the study of basic concepts, interacting processes, scheduling, storage management, interrupt handling and implementation techniques. Prerequisite: CS 3310.
- CS 4230. Principles of Programming Languages** (3)  
This is an applied course in programming language constructs, introducing formal language theory. Topics include formal definitions of language, implementation of program data and control structures, lexical analysis and parsing. Several different languages are used for programming assignments. Prerequisite: CS 3110.
- CS 4410. Software Engineering** (3)  
Analysis of existing systems to determine functional parts and flow of data. Feasibility studies, analysis of user needs, system design strategies and methodologies and documentation of proposed systems are also studied. Prerequisite: CS 3110.
- CS 4430. Software Engineering Practicum** (3)  
This course provides the experience of working on projects similar to those encountered on the job. Part of the experience includes working in a project team environment. The projects are of significant size and are modeled after actual business settings. Prerequisite: CS 4410.
- CS 4810. Introduction to Computer Graphics** (3)  
*Spring semester of even-numbered calendar year*  
A study of computer graphics systems and programming techniques used in producing graphics effects. The student applies techniques and concepts through the writing of application programs using interactive graphics terminals. Prerequisite: A grade of C or better in CS 2110.
- CS 4850. Network Theory** (3)  
Fundamentals of data communications and networking is covered. Topics include common models of networking architecture, data transmission techniques and data communication protocols. Students gain an understanding of current networking trends and terminology. Prerequisite: CS 3110.
- CS 4960. Computer Science Seminar** (1)  
*Spring semester*  
Presentations by Junior and Senior students on computer science topics. Students research a topic in computing and present the results of their work.