

# Microsoft IT Academy

## Resources for Business and Information Technology Programs

Kentucky Department of Education  
Office of Career and Technical Education



The Microsoft IT Academy provides resources to schools to help students gain the skills and industry recognized certifications for careers in Business and Information Technology. The following pages include additional resources and background information from the Kentucky Department of Education, Office of Career and Technical Education for schools planning to utilize the Microsoft IT Academy resources.

**Request for additional information should be directed to:**

***Business Education and MOS Certifications***

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Division of College and Career Readiness  
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[Betty.hunt@education.ky.gov](mailto:Betty.hunt@education.ky.gov)

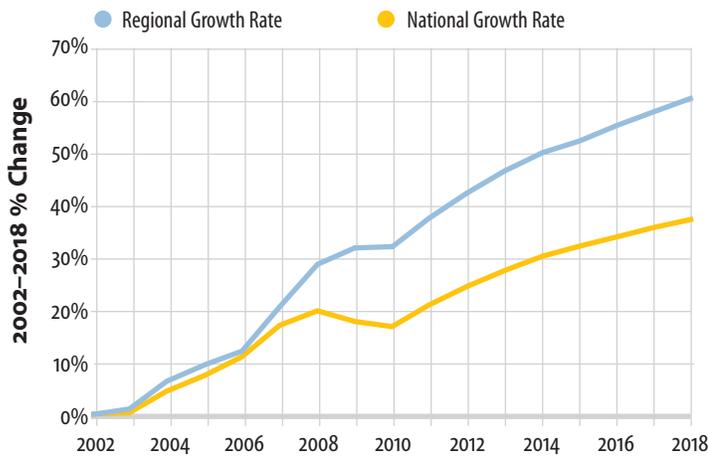
***Information Technology and MTA Certifications***

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# Business Services and Research and Development

## Basic Information<sup>8</sup>

The business services and research and development sector has consistently grown over the last eight years and notably outperformed national growth. The recent economic downturn leveled off some of the growth, but the sector is projected to continue growing well into the next decade. As a whole, the sector pays well above family-sustaining wages and many of the sectors would be characterized as small and/or entrepreneurial, innovation-oriented businesses, such as engineering services; industrial design services; and research and development in biotechnology.



Description	2002 Jobs	2018 Jobs	Change	% Change	2010 EPW	2010 Establishments
State Total	84,407	135,005	50,598	60%	\$60,955	9,410
National Total	9,863,098	13,521,061	3,657,963	37%	\$80,668	888,603

Source: EMSI Complete Employment—4th Quarter 2010

Source: EMSI Complete Employment - 4th Quarter 2010

SOURCE: Kentucky's Target Industry Sectors Report May 2011  
<http://kcc.ky.gov/KYTargetIndustrySectors.pdf>

<sup>8</sup> Region denotes the Commonwealth of Kentucky

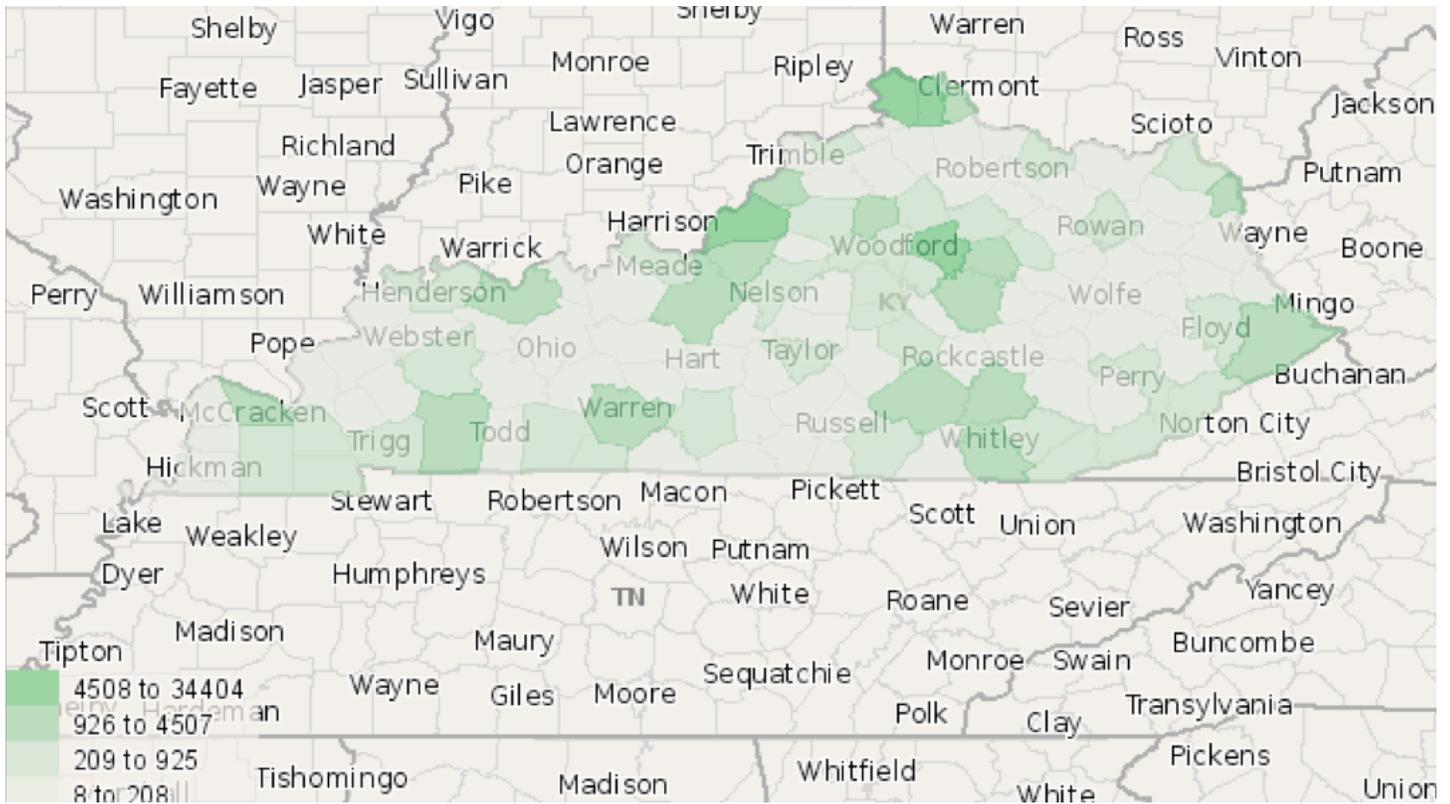
## Industry Summary Table

Industry-level data shows that opportunities exist to fill demand gaps in several services areas (e.g., lawyers; certified public accountants, payroll services; engineering services; and research and development in biotechnology). Though the concentration of this sector is lower than the average concentration in the country, significant growth is projected to poise the Commonwealth in an increasingly competitive position. As a whole, the business services and research and development sector pays well above family-sustaining wages. Analysis of the workforce characteristics indicates that approximately one out of five workers is compatible with the critical skill requirements of the sector. (Note: Roughly 50 percent of the jobs in the sector have a skill level that requires some form of postsecondary training or significant on-the-job training. This is predominately driven by lawyers, title abstract/settlement offices, accountants, engineering services, industrial design services and computer related services.

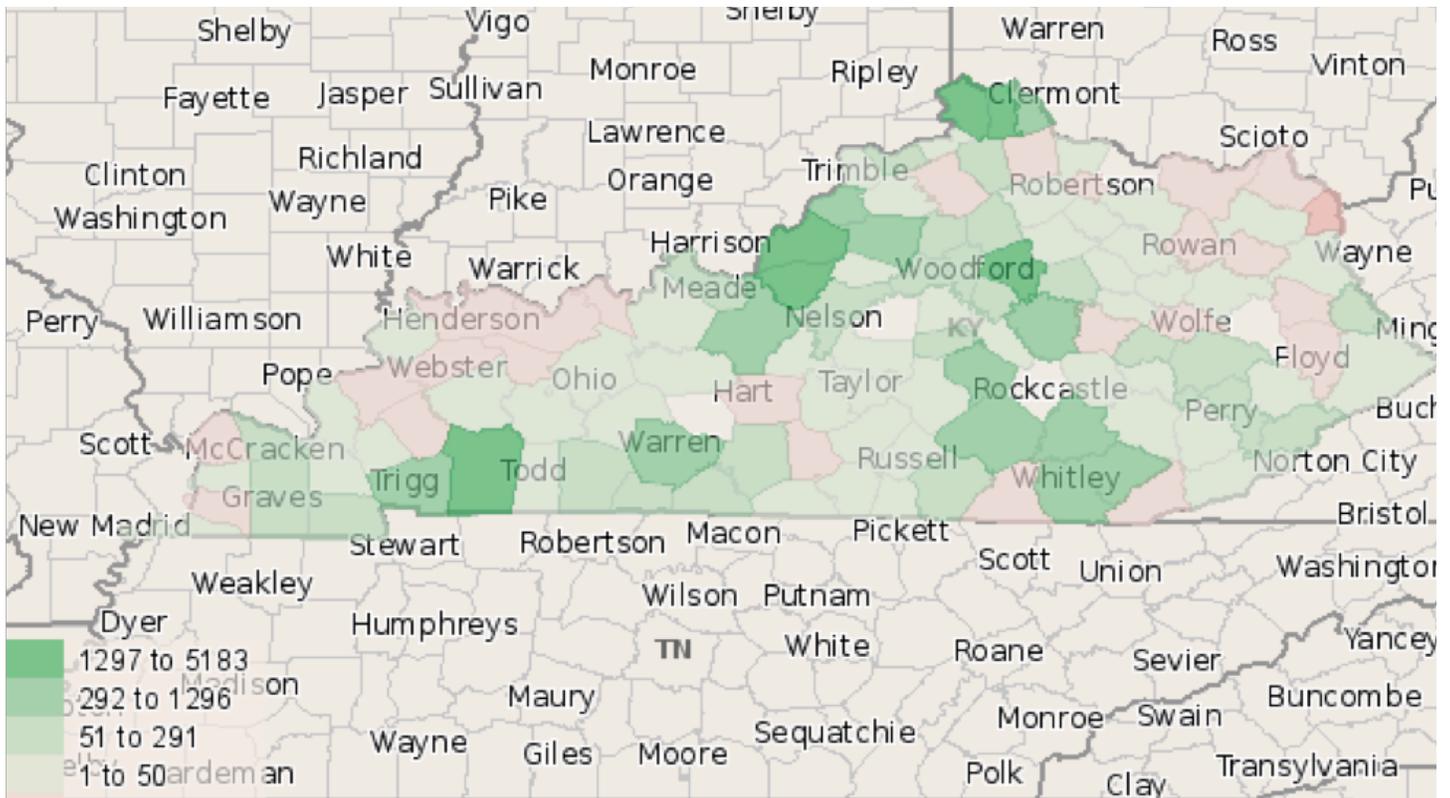
NAICS Code	Description	Average Wage	2002 Jobs	2010 Jobs	Change	2010 National LQ	2010-2018 Projected Change	Jobs Mult	Earnings Mult	Total Req's (K)	Imports (K)	Exports per job (K)	2009 Estab	Shift Share
541110	Offices of Lawyers	\$25.57	13,368	13,802	434	0.75	2,948	2.1	1.6	\$2,479,998	\$965,064	\$6	2130	174
541191	Title Abstract and Settlement Offices	\$25.74	486	682	196	0.71	244	1.8	1.6	\$88,867	\$29,364	\$7	112	160
541211	Offices of Certified Public Accountants	\$19.42	4,112	4,490	378	0.73	977	2.0	1.6	\$675,215	\$237,504	\$7	634	315
541213	Tax Preparation Services	\$15.44	2,560	3,024	464	0.95	665	1.3	1.6	\$95,550	\$8,694	\$3	331	(184)
541214	Payroll Services	\$19.48	833	859	26	0.40	(5)	1.6	1.6	\$176,306	\$120,088	\$6	122	(134)
541219	Other Accounting Services	\$16.76	8,508	8,540	32	1.16	1,159	1.7	1.6	\$383,627	\$19,181	\$36	559	(542)
541330	Engineering Services	\$24.88	7,874	8,535	661	0.65	2,888	2.4	1.7	\$2,075,661	\$1,450,266	\$81	737	45
541420	Industrial Design Services	\$15.83	53	134	81	0.37	73	2.0	1.6	\$29,291	\$18,974	\$25	28	61
541511	Custom Computer Programming Services	\$25.08	3,917	4,668	751	0.41	758	1.8	1.4	\$1,133,548	\$736,806	\$4	606	(61)
541512	Computer Systems Design Services	\$25.41	4,007	6,297	2,290	0.55	2,432	1.7	1.4	\$1,344,310	\$867,479	\$4	899	786
541513	Computer Facilities Management Services	\$27.90	1,595	2,274	679	2.51	926	1.9	1.5	\$101,098	\$5,055	\$72	46	829
541519	Other Computer Related Services	\$27.03	1,010	2,911	1,901	1.56	1,891	1.6	1.5	\$207,303	\$10,365	\$6	133	2,136
541611	Administrative Management and General Management Consulting Services	\$19.73	3,367	6,277	2,910	0.60	4,020	1.9	1.6	\$1,006,999	\$714,762	\$56	567	1,199
541612	Human Resources Consulting Services	\$18.34	616	784	168	0.55	243	1.8	1.6	\$169,397	\$150,466	\$63	92	266
541613	Marketing Consulting Services	\$19.97	827	2,524	1,697	0.58	2,111	1.6	1.6	\$310,447	\$249,408	\$42	224	1,077
541614	Process, Physical Distribution, and Logistics Consulting Services	\$21.68	675	2,352	1,677	1.33	2,535	1.7	1.6	\$149,243	\$93,570	\$58	193	1,419
541620	Environmental Consulting Services	\$20.80	1,114	1,494	380	0.83	903	1.8	1.6	\$164,057	\$50,598	\$12	119	8
541690	Other Scientific & Technical Consulting Services	\$19.85	1,449	2,774	1,325	0.64	2,066	1.9	1.6	\$400,264	\$144,527	\$5	264	(766)
541711	Research and Development in Biotechnology	\$24.92	421	431	10	0.21	109	2.5	1.8	\$555,567	\$492,016	\$8	46	(76)
541712	Research & Development in the Physical, Engineering, & Life Sciences (except Biotechnology)	\$24.55	1,035	1,131	96	0.18	284	2.6	1.8	\$1,497,810	\$1,326,349	\$8	90	(135)
541720	Research and Development in the Social Sciences and Humanities	\$22.01	303	292	(11)	0.32	38	2.4	1.8	\$163,170	\$121,379	\$8	35	27
541840	Media Representatives	\$18.43	315	422	107	0.81	89	2.2	1.7	\$67,107	\$22,073	\$26	38	141
541850	Display Advertising	\$19.60	333	1,103	770	1.69	641	1.7	1.7	\$52,480	\$12,801	\$35	65	704
541930	Translation and Interpretation Services	\$16.59	318	604	286	0.55	202	1.3	1.5	\$31,747	\$15,607	\$8	21	27
541940	Veterinary Services	\$17.22	3,825	4,881	1,056	1.11	1,510	1.7	1.7	\$338,314	\$16,915	\$30	465	83
541990	All Other Professional, Scientific, and Technical Services	\$16.62	7,704	10,220	2,516	0.68	1,563	1.5	1.5	\$968,230	\$385,814	\$7	251	696
551114	Corporate, Subsidiary, and Regional Managing Offices	\$24.34	13,783	19,615	5,832	0.79	944	2.6	1.7	\$4,701,004	\$1,103,444	\$18	590	4,781
	Total	\$21.95	84,408	111,120	26,712	0.71	32,214	2.0	--	\$19,366,612	\$9,368,568	--	9,397	13,034

Source: EMSI Complete Data – 3rd Quarter 2010.

**Business Services and Research & Development Employment Distribution**



**Business Services and Research & Development 2002–2010 Employment Change**



## College and Career Readiness for All

College-Ready	Career-Ready		College & Career-Ready	
(1 Point)  A student must meet benchmarks on one of the following:	(1 Point)  A student must meet benchmarks on one from <b>each</b> of the following columns:		(1.5 Points)  A student must meet benchmarks on one from <b>each</b> of the following columns:	
ACT COMPASS KYOTE	Career-Ready Academic	Career-Ready Technical	College-Ready Academic	College-Ready Technical
	ASVAB WorkKeys	KOSSA Industry Certificate	ACT COMPASS KYOTE	KOSSA Industry Certificate

### College-Ready

A **college-ready student** meets the benchmarks on the **ACT** in (18 for English, 20 for Reading, and 19 for Mathematics) or passed either the **COMPASS** (74 for English, 85 for Reading, and 36 for Mathematics) or **KYOTE** (6 for Writing, 20 for Reading, 22 for College Ready Math and 14 for College Algebra) college placement tests. Students who fail one or more measures on the ACT but pass the corresponding measure on one of the placement tests are college-ready.

### Career-Ready

A **career-ready student** is preparatory (has completed two credits and is enrolled in a third credit) for a CTE career pathway (state-approved sequence of progressive, non-duplicative courses that result in earning four credits), has received either an approved industry certification or Kentucky Occupational Skill Standards Assessment (**KOSSA**) certificate (with a score of 70) related to his or her career major, **and** has met the benchmark on ACT **WorkKeys** (75 for each part [Applied mathematics, Locating Information and Reading for Information]) **OR** on the **ASVAB** (score of 50).

### College and Career Ready

A **college and career ready student** is preparatory for a CTE career pathway, has received either an approved industry certification or KOSSA certificate, **and** has qualified to be college-ready based on the above definition.



Thanks to Jefferson County Public Schools for sharing this design concept.

Following are the Business and Information Technology Career Pathways that can benefit from use of the Microsoft IT Academy resources.

**Microsoft IT Academy Resources Can Support  
College and Career Readiness in the Following Business Career Pathways**

<b>Business Education Career Pathways</b>	<b>CIP Code</b>	<b>MOS <i>(3 required)</i></b>
Accounting	52.0301.00	X
Administrative Support	52.0401.00	X
Business Multimedia	52.0501.00	X
Database Management	52.1299.00	X
Information Processing	52.0407.00	X
Legal Office	22.0301.00	X
Medical Business Office	51.0716.00	X
Web Design for Business	52.0208.01	X
Business & Marketing Education	13.1310.00	X

# BUSINESS EDUCATION CAREER PATHWAYS

**2015-2016**

## ACCOUNTING CIP 52.0301.00

**PATHWAY DESCRIPTION:** A program that prepares individuals to practice the profession of accounting and to perform related business functions. Includes instruction in accounting principles and theory, financial accounting, managerial accounting, cost accounting, budget control, tax accounting, legal aspects of accounting, auditing, reporting procedures, statement analysis, planning and consulting, business information systems, accounting research methods, professional standards and ethics, and applications to specific for-profit, public, and non-profit organizations.

### BEST PRACTICE CORE

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) **TWO-THREE CREDITS** from the following:*

- 060112 Digital Literacy OR 110110 Computer Literacy OR  
060111 Business Principles and Applications
- 060122 Accounting & Finance Foundations
- 070122 Financial Accounting
- 070125 Advanced Accounting (Requires Special Teacher Training)

*Choose (1-2) **ONE-TWO CREDITS** from the following:*

- 060170 Financial Literacy (CTE Credit)/060171 (Math Credit)
- 060411 Business Management
- 070743 Advanced Computer & Technology Applications
- 060108 Business Education Internship
- 060107 Business Education Co-op

Accountant  
Forensic Accountant  
Planner  
Tax Preparer  
Auditor  
Auditing Clerk  
Budget Analyst  
Tax Examiner

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**ADMINISTRATIVE SUPPORT  
CIP 52.0401.00**

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to perform the duties of administrative assistants and/or secretaries and stenographers. Includes instruction in business communications, principles of business law, word processing and data entry, office machines operation and maintenance, office procedures, public relations, secretarial accounting, filing systems and records management, and report preparation.

**BEST PRACTICE CORE**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-4) TWO-FOUR CREDITS from the following:*

- 060112 Digital Literacy OR 110110 Computer Literacy OR  
060111 Business Principles and Applications
- 060122 Accounting & Finance Foundations OR  
060170 Financial Literacy (CTE Credit)/ 060171 (Math Credit)
- 070743 Advanced Computer & Technology Applications
- 070750 Microsoft Office (MOS)

*Choose (1-2) ONE-TWO CREDITS from the following:*

- 060155 Business Communications
- 060142 Word Processing
- 060121 Business Law
- 060511 Business Economics (CTE Credit)/  
060596 (Economics Credit)
- 060108 Business Education Internship
- 060107 Business Education Co-op

Administrative Assistant  
Human Resources  
Specialist  
Bookkeeper  
Court Reporter  
Billing & Accounts  
Collector

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**BUSINESS MULTIMEDIA  
CIP 52.0501.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to function in an organization as a composer, editor and proofreader of business or business-related communications.

<b>BEST PRACTICE CORE</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-4) TWO-FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060112 Digital Literacy <u>OR</u></li> <li>• 110110 Computer Literacy</li> <li>• 060751 Multimedia Publishing</li> <li>• 060199 Web Page Design</li> <li>• 060761 Advanced Multimedia</li> </ul> <p><i>Choose (1-2) ONE-TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060155 Business Communication</li> <li>• 081512 Promotional Applications &amp; Media (Marketing)</li> <li>• 070743 Advanced Computer &amp; Technology Applications</li> <li>• 060142 Word Processing</li> <li>• 060108 Business Education Internship</li> <li>• 060107 Business Education Co-op</li> </ul>	<p>Public Relations Specialist</p> <p>Desktop Publisher</p> <p>Proofreader</p> <p>Web Designer</p> <p>Multimedia Artist</p>

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**DATABASE MANAGEMENT  
CIP 52.1299.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals for development and management of database systems.

<b>BEST PRACTICE CORE</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 060112 Digital Literacy <u>OR</u> 110110 Computer Literacy</li> <li>• 070743 Advanced Computer &amp; Technology Applications</li> <li>• 070331 Data Modeling/SQL</li> <li>• 070399 Web Data Management</li> </ul>	<p>Database Developer</p>

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**INFORMATION PROCESSING  
CIP 52.0407.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to support business information operations by using computer equipment to enter, process, and retrieve data for a wide variety of administrative purposes. Includes instruction in using basic business software and hardware, business computer networking, principles of desktop publishing, preparing mass mailings, compiling and editing spreadsheets, list maintenance, preparing tables and graphs, receipt control, and preparing business performance reports.

**BEST PRACTICE CORE**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) ONE CREDIT:*

- 060112 Digital Literacy OR  
110110 Computer Literacy OR  
060111 Business Principles and Applications

*Complete (1) ONE CREDIT:*

- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)

*Complete (1) ONE CREDIT:*

- 060751 Multimedia Publishing OR  
060142 Word Processing OR  
081512 Promotional Applications & Media (Marketing Ed) OR  
060155 Business Communication

*Complete (1) ONE CREDIT:*

- 060122 Accounting & Finance Foundations OR  
060170 Financial Literacy (CTE Credit)/060171 (Math Credit) OR  
060172 Mathematics for Business & Industry (CTE  
Credit)/060190 (Math Credit) OR  
060108 Business Education Internship OR  
060107 Business Education Co-op

Receptionist/Information Clerk  
Data Entry Clerk  
Bill and Account Collector  
Insurance Claims Adjuster  
Administrative Assistant

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**LEGAL OFFICE  
CIP 22.0301.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to serve as legal office managers, special assistants, and legal secretaries. Includes instruction in office management, secretarial science, principles of U.S. or Canadian law, legal terminology and documentation, legal research, legal software applications, law office procedures, record-keeping, billing, applicable policies and regulations, and professional standards and ethics.

<b>BEST PRACTICE CORE</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 070743 Advanced Computer &amp; Technology Applications <u>OR</u> 070750 Microsoft Office (MOS)</li> <li>• 070881 Legal Office</li> <li>• 060121 Business Law</li> </ul> <p><i>Complete (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 060111 Business Principles and Applications <u>OR</u> 060112 Digital Literacy <u>OR</u> 110110 Computer Literacy</li> <li>• 060108 Business Education Internship <u>OR</u> 060107 Business Education Co-op</li> </ul>	<p>Legal Secretary Court Clerk/Reporter Legal Assistant</p>

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**MEDICAL BUSINESS OFFICE  
CIP 51.0716.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to perform the duties of special assistants and personal secretaries for practicing physicians and nurses, health care facilities and services administrators, and other health care professionals. Includes instruction in business and medical communications, medical terminology, principles of health care operations, public relations and interpersonal communications, software applications, record-keeping and filing systems, scheduling and meeting planning, applicable policy and regulations, and professional standards and ethics.

**BEST PRACTICE CORE**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) TWO-THREE CREDITS:*

- 060112 Digital Literacy OR 110110 Computer Literacy OR  
060111 Business Principles and Applications
- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 070971 Medical Office

*Choose (1-2) ONE-TWO CREDITS:*

- 060122 Accounting & Finance Foundations OR  
060170 Financial Literacy (CTE Credit)/060171 (Math Credit) OR  
060172 Mathematics for Business & Industry (CTE  
Credit)/060190 (Math Credit) OR  
070125 Advanced Accounting (Requires Special Teacher Training)
- 170131 Medical Terminology (Health Science teacher  
certification) (.5 credit)
- 170141 Emergency Procedures for Healthcare Professionals  
(Health Science teacher certification) (.5-1 credit)
- 060411 Business Management
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Health Records  
Professional  
  
Medical Secretary  
  
Health Care  
Administrator

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**BUSINESS & MARKETING EDUCATION  
CIP 13.1310.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to teach vocational sales and marketing operations/marketing and distributive education programs at various educational levels.

**BEST PRACTICE CORE**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) **TWO – THREE CREDITS:***

- 060112 Digital Literacy OR 110110 Computer Literacy
- 060111 Business Principles and Applications OR  
080716 Principles of Marketing
- 320210 Principles of Teaching

*Choose (1-2) **ONE – TWO CREDITS** from the following:*

- 070743 Advanced Computer and Technology Applications
- 080311 Business Management (Marketing) OR  
060411 Business Management (Business)
- 060122 Accounting & Finance Foundations
- 080717 Advanced Marketing
- 080310 Entrepreneurship OR 060185 Entrepreneurship
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Business & Marketing  
Education Teacher  
  
Corporate Trainer

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**BUSINESS EDUCATION CAREER PATHWAYS  
2015-2016**

**WEB DESIGN FOR BUSINESS/E-COMMERCE  
CIP 52.0208.00 (CIP code under review)**

**PATHWAY DESCRIPTION:** A program that prepares individuals to plan, manage, supervise, and market electronic business operations, products, and services provided online via the Internet. Includes instruction in business administration, information technology, information resources management, web design, computer and Internet law and policy, computer privacy and security, e-trading, insurance, electronic marketing, investment capital planning, enterprise operations, personnel supervision, contracting, and product and service networking.

**BEST PRACTICE CORE**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3-4) **THREE-FOUR CREDITS:***

- 060112 Digital Literacy OR  
110110 Computer Literacy
- 060751 Multimedia Publishing
- 060761 Advanced Multimedia
- 060199 Web Page Design

*Choose (1) **ONE CREDIT** from the following:*

- 080716 Principles of Marketing
- 081511 Advertising & Promotions
- 081512 Promotional Applications & Media
- 060108 Business Education Internship OR  
060107 Business Education Co-op

E-Business Consultant  
Website Designer  
Social Media Consultant  
Telemarketer

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## Microsoft IT Academy Resources Can Support College and Career Readiness in the Following IT Career Pathways

Information Technology Career Pathways	CIP Code	MTA	MOS <i>(3 required)</i>
Computer Science	11.0701.01	X	
Informatics	11.0802.00		Excel, Access and PowerPoint
Web Development/Administration	11.0801.01	X	
Digital Design and Game Development	36.0113.00	X	
Information Support and Services	47.0104.01	X	
Network Administration	11.0901.01	X	
Network Administration – MCSA	11.1001.00	X	
Network Security	11.1003.00	X	

# INFORMATION TECHNOLOGY CAREER PATHWAYS 2015-2016

## COMPUTER SCIENCE CIP 11.0701.01

**PATHWAY DESCRIPTION:** The Computer Science Pathway courses focus on computer theory, computing problems and solutions, and design of computer systems and user-interfaces. The coursework will include instruction in the principles of computational science, computer development and programming and applications to a variety of end use situations.

BEST PRACTICE CORE	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (1) ONE CREDIT from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110710 Introduction to Computer Science (NEW Course 2015-2016) (May be taken in place of Computer Literacy if proficiency has been demonstrated)</li> </ul> <p><i>Complete (1) ONE CREDIT from the following:</i></p> <ul style="list-style-type: none"> <li>• 110251 Computational Thinking</li> <li>• 110205 JAVA</li> <li>• 110711 Computer Science Principles (NEW Course 2015-2016)</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 110701 AP Computer Science A</li> <li>• 110202 C++1</li> <li>• 110207 Visual Basic</li> <li>• 110809 JavaScript</li> <li>• 110206 JAVA II</li> <li>• 110208 Visual Basic II</li> <li>• 110752 Special Topics in Computer Science (this would include the new course PLTW Computer Science and Software Engineering)</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>Software Developer</p> <p>Database Administrator</p> <p>Computer Hardware Engineer</p> <p>Computer Systems Analyst</p> <p>Computer Network Architect</p> <p>Web Developer</p> <p>Information Security Analyst</p> <p>Computer Programmer</p> <p>Computer Systems Manager</p> <p>Information Systems Manager</p> <p>Project Manager</p>

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2015-2016**

**INFORMATICS PATHWAY  
CIP 11.0802.00**

**PATHWAY DESCRIPTION:** Students will apply software systems such as Excel, Access and other industry software to acquire, collect, store and communicate data in meaningful ways to clients. Students will manage projects, work in teams, think critically, solve problems and propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to effectively solve real-world challenging problems. Through project-based learning, students will explore the future of informatics and learn those habits of behavior and mind unique to professionals in the field. Informatics leverages technology, data and communication by instilling in a new generation the knowledge, imagination and flexibility to tackle complex issues successfully in a data-rich digital world. It is the process of designing systems that take raw data and convert it into new knowledge that can be applied to any field while considering the impact on individuals, organizations and society. **THIS IS A PATHWAY SPECIFIC TO THE SOUTHERN REGION EDUCATION BOARD (SREB). EACH COURSE REQUIRES TEACHER SUMMER TRAINING BEFORE IMPLEMENTATION.**

**BEST PRACTICE CORE**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** in the following:*

- 111001 Computer, Networks and Databases (**SREB**)
- 111002 Design for the Digital World (**SREB**)
- 111003 Databases in the Cloud (**SREB**)
- 111004 Developing a Cloud Presence (**SREB**)
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Note: (SREB) courses require an agreement between the Southern Region Education Board and the District.

Bioinformaticist  
Data Mapper  
Chemical Informaticist  
Database Designer  
Digital Artist  
Human-Computer Interface Designer  
Information Architect  
Usability Analyst  
Interaction Designer  
System Integrator  
Web Designer  
Software Engineer  
Project Manager  
Informatics Support  
Member Expert

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2015-2016**

**WEB DEVELOPMENT AND ADMINISTRATION PATHWAY  
CIP 11.0801.01**

**PATHWAY DESCRIPTION:** The Web pathway courses involve creating, designing and producing interactive multimedia products and services. This will include development of digitally-generated or computer-enhanced media, and the adherence to web standards, as used in business, training, communications and marketing. Organizations of all types and sizes use digital media, web pages, and websites to communicate with existing and potential customers, to track transactions, and to collaborate with colleagues. This pathway will prepare students to enter the workforce ready to participate as leaders in a broad range of careers and further their education. The courses for this pathway are designed to build on each other and should be taken in the order specified.

**BEST PRACTICE CORE**

**EXAMPLE ILP-RELATED CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 110110 Computer Literacy OR  
060112 Digital Literacy
- 110801 Web Page Development
- 110804 Web Site Design and Production

*Choose (1) **ONE CREDITS** from the following:*

- 110213 Computer Graphics
- 110917 Internet Technologies
- 110251 Computational Thinking
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Internet Project Manager  
IT Education Teacher  
Webmaster  
Web Administrator  
Web Developer  
Web Graphic Designer  
Web Programmer/Analyst

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# INFORMATION TECHNOLOGY CAREER PATHWAYS 2015-2016

## DIGITAL DESIGN & GAME DEVELOPMENT CIP 36.0113.00

**PATHWAY DESCRIPTION:** The digital design/gaming pathway courses provide students with a thorough understanding of techniques for designing advanced 3D games and simulations. The courses will cover 2D and 3D graphics, animation, character development, texturing, scripting, program design and coding, and game setup using state-of-the-art software development tools. Completing students will have developed the skills necessary to create 3D graphics and simple applications that can be used for games and simulations.

### BEST PRACTICE CORE

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE -- TWO CREDITS from the following:*

- 113605 Game Design Principles (NEW Course 2015-2016)
- 110110 Computer Literacy OR 060112 Digital Literacy

*Choose (2-3) TWO – THREE CREDITS from the following:*

- 113601 Introduction to Digital 3D Game Graphics
- 113602 Game & Engine Development, Animation, (Photoshop)
- 113603 Advanced 3D Game Development
- 110201 Programming Introduction
- 110251 Computational Thinking
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Internet Project Manager  
IT Education Teacher  
Web Animator  
Design Artist  
Cartoonist  
Game Designer  
Game Design Analyst  
Webmaster  
Web Developer  
Web Graphic Designer

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2015-2016**

**INFORMATION SUPPORT AND SERVICES PATHWAY  
CIP 47.0104.01**

**PATHWAY DESCRIPTION:** The Information Support and Services pathway focuses on the design of computing systems. The courses include instruction in the principles of computer hardware & software components, algorithms data basis, telecommunications, etc. Any course not found under this career major/sub code may be found in another career major/sub code within this program area.

<b>BEST PRACTICE CORE</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110101 Computer Hardware and Software Maintenance</li> <li>• 110102 Help Desk Operations</li> </ul> <p><i>Choose (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110302 Management of Support Services (previously Help Desk II)</li> <li>• 110917 Internet Technologies</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>Computer Technician</p> <p>Customer Service Representative</p> <p>Data Entry Technician</p> <p>Electronics Technician</p> <p>Quality Assurance Tester</p> <p>Technical Support</p> <p>Help Desk Associate</p> <p>Technical Writing Clerk</p>

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# INFORMATION TECHNOLOGY CAREER PATHWAYS 2015-2016

## NETWORK ADMINISTRATION PATHWAY CIP 11.0901.01

**PATHWAY DESCRIPTION:** The networking pathway courses will help students learn new administration support skills or upgrade existing computer information systems skills. Students will be able to properly install networking software on an appropriately sized computer, configure the software for a simple server environment and connect it correctly to a physical network, manage a simple networking environment, effectively troubleshooting common problems, adding new users and attending to security concerns, work within the ethical and professional parameters in the field of network administration.

<b>BEST PRACTICE CORE</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110101 Computer Hardware and Software Maintenance</li> <li>• 110901 Introduction to Networking Concepts</li> <li>• 110251 Computational thinking</li> <li>• 110917 Internet Technologies</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>Network Server Administrator</p> <p>Support Team Member</p> <p>Quality Assurance System Analyst</p> <p>Sales Representative</p> <p>Technical Support Rep.</p> <p>Technical Writing Expert</p> <p>Electronics Engineer</p> <p>Hardware Engineer</p> <p>System Administrator</p> <p>Network Administrator</p>

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2015-2016**

**NETWORK ADMINISTRATION “MCSA” PATHWAY  
CIP 11.1001.00**

**PATHWAY DESCRIPTION:** The MCSA pathway courses will help students learn new Microsoft server administration support skills or upgrade existing computer information systems skills. Students will be able to properly install Microsoft server software on an appropriately sized computer, configure the software for a simple server environment and connect it correctly to a physical network, manage a simple networking environment, effectively troubleshooting common problems, adding new users and attending to security concerns, work within the ethical and professional parameters in the field of Microsoft Server Administration. Students working in this pathway will work toward the MCSA certification.

<b>BEST PRACTICE CORE</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u></li> <li>060112 Digital Literacy</li> <li>• 110101 Computer Hardware and Software Maintenance</li> <li>• 110901 Introduction to Networking Concepts</li> <li>• 110913 MS Client/Server Configuration</li> <li>• 110918 Information Technology Co-op <u>OR</u></li> <li>110919 Information Technology Internship</li> </ul>	<p>Microsoft Server Administrator</p> <p>Microsoft server admin. Support team member</p> <p>Electronics Engineer</p> <p>Hardware Engineer</p> <p>System Administrator</p> <p>Quality Assurance System Analyst</p> <p>Sales Representative</p> <p>Technical Support Rep.</p> <p>Technical Writing Expert</p> <p>Security Expert</p>

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2015-2016**

**SECURITY PATHWAY  
CIP 11.1003.00**

**PATHWAY DESCRIPTION:** The Network Administration pathway specializing in Security courses will help students be able to properly design and install a wired LAN, including all network devices, physically connect servers and desktop computers, properly design and install a wireless LAN including all network devices, and make physical LAN connections for servers and desktop computers, integrate the Wireless LAN with the wired LAN and work within the ethical and professional parameters in the Computer Networking profession. Students will be a team member, learn new network administration support skills and upgrade existing computer information system skills. Students in this pathway will work towards the Security + certification.

**BEST PRACTICE CORE**

**EXAMPLE ILP-RELATED CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (4) **FOUR CREDIT** from the following:*

- 110110 Computer Literacy OR  
060112 Digital Literacy
- 110101 Computer Hardware and Software Maintenance
- 110901 Introduction to Networking Concepts
- 110912 Security Fundamentals
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Networking Security Administrator

Electronics Security Engineer

Hardware Security Engineer

System Security Administrator

Quality Assurance System Security Analyst

Security Expert

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# Teacher Certification

## Business Education

- Business & Marketing Certification (grades 5 -12) gained by completing a traditional teacher preparation program.

Teacher must complete the degree before entering the classroom.

- Alternative Routes to Business & Marketing Teacher Certification
  - Masters of Arts in Teaching--MAT

## Information Technology Education

- Computer Systems Technology- This is the IT Occupation Based Teacher Certification
- Instructional Computer Technology Endorsement
- Alternative Routes to Teacher Certification
  - Options 1 and 3 are most commonly used—contact EPSB for details
  - Adjunct Instructor – ***Part-time***
- **NOTE:** The Computer Science Career Pathway has permissions for Math Teachers.

## IT Teacher Certification Options:

NOTE: Teachers certified under one of the following options can teach all courses in the IT Program of Studies, with the exception of “AP Computer Science A”. Refer to the Kentucky Uniform Academic Course Codes “with all certifications” at <http://education.ky.gov/curriculum/modcurrframe/Pages/Kentucky-Uniform-Academic-Course-Codes.aspx>. *NOTE: Several courses in the Computer Science Career Pathway have permissions for Math Teachers.*

1. Primary Information Technology Teacher Certifications
  - a. 731 Computer Systems Technology- This is the IT Occupation Based Teacher Certification. It requires 4 years of IT industry occupational experience verified by KDE-OCTE, reference 16 KAR 2:020. Teacher completes a university planned program while teaching IT.
  - b. Endorsements to Certificates – gained by completing course work in addition to an existing teacher certification. Teacher must obtain the endorsement prior to teaching the IT content.
    - i. Computer Science (Grades 8 through 12) (*NOTE: no Kentucky universities currently offer this endorsement*)
    - ii. Instructional Computer Technology (Primary through Grades 12)
2. Alternative Routes to Teacher Certification
  - a. Options 1 and 3 are most commonly used – contact EPSB for details
  - b. Adjunct Instructor – this is for part time staffing only and requires 4 years of IT occupational experience (reference 16 KAR 9:040)
3. If no qualified IT teacher can be found, districts may opt for:
  - a. The Probationary Certificate for Information Technology (16 KAR 2:190). Candidates must hold a valid Kentucky teaching statement of eligibility OR a Kentucky teaching certificate issued by EPSB;
    - i. Requires enrollment in an approved IT teacher preparation program and minimum annual progress toward completion of the program;
    - ii. Candidate can teach the IT content while completing the planned university program
  - b. Emergency certification
4. Other – Post-Secondary contract to provide a teacher.