

***IDENTIFYING & DEFINING:***  
**Life Science,**  
**Bio-Tech,**  
**High-Tech,**  
**Knowledge Industries and**  
**Information Technology Industries**

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## INTRODUCTION

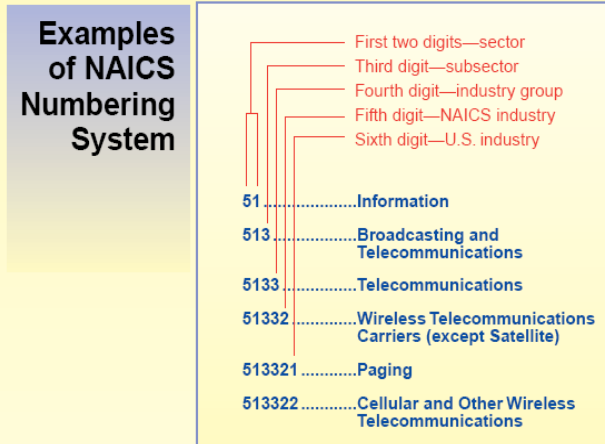
There are no “official” definitions of Life Science, Bio-Tech, High-Tech and Knowledge Industries assigned by the federal government, the Commonwealth of Massachusetts or other organizations. The definitions of these industries may be subjective and may change over time.

Most definitions of special industries groups are subjective or a result of a variety of organizations membership lists. Other definitions use a combination of qualitative & quantitative research methodologies to form a comprehensive list.

The U.S. Bureau of Labor Statistics (BLS) has listed NAICS codes that identify the “High-Tech” industries in the United States, by defining “high tech” industries if employment in technology-oriented occupations account for a designated proportion of that industry’s employment.

NAICS uses a six-digit coding system to identify particular industries & their placement in this hierarchical structure of the classification system. The first two digits of the code designate the sector, the third digit designates the sub-sector, the fourth digit designates the industry group, the fifth digit designates the NAICS industry, and the sixth digit designates the national industry. A zero as the sixth digit generally indicates that the six digit industry and the five digit industry’s are the same.

The use of NACIS codes to identify industries for local workforce areas has some limitations. The source of industry employment is the *Quarterly Census of Employment and Wages ((QCEW)-(ES-202))*.



| NAICS  | Life Science Core Industry Group 1/   |
|--|---------------------------------------|
| 3254   | Pharmaceutical & Medicine Mfg.        |
| 325411   | Medicinal & Botanical Mfg.            |
| 325412   | Pharmaceutical Preparation Mfg.       |
| 325413   | In-vitro Diagnostic Substance Mfg.    |
| 325414   | Other Biological Product Mfg.         |
| 334510   | Electro Medical Apparatus Mfg.        |
| 334517   | Irradiation Apparatus Mfg.            |
| 3391   | Medical Equipment & Supplies Mfg.     |
| 339111   | Laboratory Apparatus & Furniture Mfg. |
| 339112   | Surgical & Medical Instrument Mfg.    |
| 339113   | Surgical Appliance & Supplies Mfg.    |
| 339114   | Dental Equipment & Supplies Mfg.      |
| 339115   | Ophthalmic Goods Mfg.                 |
| 339116   | Dental Laboratories                   |
| 5417102 *  | Biological R&D                        |
| 1/ Life Science Core Group include Bio-Tech, Pharmaceutical, R&D in the Life Science, and Medical Devices. |                                       |
| * Economic Census 7 digit supplemental code. Note: This will be 541711 on the new NAICS revisions.         |                                       |

Although the NAICS code goes to six digits, the QCEW data published by the Massachusetts Division of Unemployment Assistance (DUA) only goes to the 4 digit level. This makes identifying special industry groups difficult.

An example is the Life Science Core Industry Group. Since this grouping of NAICS codes includes six digits, the researcher will only find economic data for four digit NAICS codes or in some cases only at the two-digit or three digit levels when the QCEW data is suppressed due to confidentiality. This will over state employment levels, but, nonetheless will give the business service representative and the job counselor an indication of the significance these industries have in the Workforce Area.

An economic development professional for a city or town will have the same issue; however, their intimate knowledge of the local industry mix will augment their research of the area.

The following special industry definitions:

- Defining the Life Science Core Industry Group
  - Life Science Core Industry Group,
  - Biotech Industry,
  - Pharmaceutical Industry,
  - R&D in the Life Sciences Industry,
  - Medical Devices Industry,
  - Life Sciences Supporting Industries Group,  
Source: Milken Institute, *"America's Biotech & Life Science Clusters"*- July 2004.
  
- Defining the High Tech Industries
  - Level-I industries
  - Level-II industries
  - Level-III industries  
Source: U.S. Bureau of Labor Statistics (BLS) Monthly Labor Review July 2005.
  
- Defining the Information Technology Industries  
Source: Center for Urban Economic Development, University of Illinois at Chicago
  
- Defining the Knowledge Industries
  - All Knowledge Creation Industries,
  - All Health Care Knowledge Industries,
  - All Information Technology Industries,
  - All Financial Services Industries,  
Source: *"Reconnecting Massachusetts Gateway Cities"* by MassINC & The Brookings Institution.
  
- Knowledge Based Industries Group  
Source: *"Massachusetts; Toward a New Prosperity"*.

# Identifying and Defining: Life Science, Bio-Tech, High-Tech, Information Technology and Knowledge Industries

| Defining The Life Science Core Industry Group |  |
|---|--|
| NAICS   | <u>Life Science Core Industry Group 1/</u> |
| 3254  | Pharmaceutical & Medicine Mfg.             |
| 325411  | Medicinal & Botanical Mfg.                 |
| 325412  | Pharmaceutical Preparation Mfg.            |
| 325413  | In-vitro Diagnostic Substance Mfg.         |
| 325414  | Other Biological Product Mfg.              |
| 334510  | Electro Medical Apparatus Mfg.             |
| 334517  | Irradiation Apparatus Mfg.                 |
| 3391  | Medical Equipment & Supplies Mfg.          |
| 339111  | Laboratory Apparatus & Furniture Mfg.      |
| 339112  | Surgical & Medical Instrument Mfg.         |
| 339113  | Surgical Appliance & Supplies Mfg.         |
| 339114  | Dental Equipment & Supplies Mfg.           |
| 339115  | Ophthalmic Goods Mfg.                      |
| 339116  | Dental Laboratories                        |
| 5417102 *                                     | Biological R&D                             |

| Defining The Biotech Industry |                                    |
|-------------------------------|------------------------------------|
| NAICS                         | <u>Biotech Industry</u>            |
| 325411                        | Medicinal & Botanical Mfg.         |
| 325413                        | In-vitro Diagnostic Substance Mfg. |
| 325414                        | Other Biological Product Mfg.      |

| Defining The Pharmaceutical Industry |                                 |
|--------------------------------------|---------------------------------|
| NAICS                                | <u>Pharmaceutical Industry</u>  |
| 325412                               | Pharmaceutical Preparation Mfg. |

| Defining The R&D In The Life Sciences Industry |  |
|--|--|
| NAICS  | <u>R&amp;D In The Life Sciences Industry</u> |
| 5417102 *                                      | Biological R&D                               |

| Defining The Medical Devices Industry |                                       |
|---------------------------------------|---------------------------------------|
| NAICS                                 | <u>Medical Devices Industry</u>       |
| 334510                                | Electro Medical Apparatus Mfg.        |
| 334517                                | Irradiation Apparatus Mfg.            |
| 3391                                  | Medical Equipment & Supplies Mfg.     |
| 339111                                | Laboratory Apparatus & Furniture Mfg. |
| 339112                                | Surgical & Medical Instrument Mfg.    |
| 339113                                | Surgical Appliance & Supplies Mfg.    |
| 339114                                | Dental Equipment & Supplies Mfg.      |
| 339115                                | Ophthalmic Goods Mfg.                 |
| 339116                                | Dental Laboratories                   |

| Defining Life Science Supporting Industries |  |
|---|--|
| NAICS                                       | <u>Life Sciences Supporting Industries Group</u> |
| 325188                                      | All Other Basic Inorganic Chemical Mfg           |
| 325199                                      | All Other Basic Organic Chemical Mfg             |
| 333314                                      | Optical Instrument & Lens Mfg                    |
| 423450                                      | Medical Equip. & Merchant Wholesalers            |
| 423460                                      | Ophthalmic Goods Merchant Wholesalers            |
| 42421                                       | Druggists' Goods Merchant Wholesalers            |
| 44611                                       | Pharmacies & Drug Stores                         |
| 44613                                       | Optical Goods Stores                             |
| 524114                                      | Direct Health & Medical Insurance Carriers       |
| 541380                                      | Testing Laboratories                             |
| 621111                                      | Offices of Physicians (exc Mental Health)        |
| 62121                                       | Offices of Dentists                              |
| 62131                                       | Offices of Chiropractors                         |
| 62132                                       | Offices of Optometrists                          |
| 621391                                      | Offices of Podiatrists                           |
| 621399                                      | Offices of All Other Misc Health Practitioners   |
| 621491                                      | HMO Medical Centers                              |
| 621492                                      | Kidney Dialysis Centers                          |
| 621493                                      | Freestanding Emergency Medical Centers           |
| 621511                                      | Medical Laboratories                             |
| 621512                                      | Diagnostic Imaging Centers                       |
| 62161                                       | Home Health Care Services                        |
| 621991                                      | Blood & Organ Banks                              |
| 62211                                       | General Medical & Surgical Hospitals             |
| 62231                                       | Other Specialty Hospitals                        |
| 62311                                       | Nursing Care Facilities                          |

Source: Milken Institute, America's Biotech & Life Science Clusters - June 2004

\* Economic Census 7 digit supplemental code. Note: This will be 541711 on the new NAICS revisions.

1/ Life Science Core Group include Bio-Tech, Pharmaceutical, R&D in the Life Science, and Medical Devices.

| Defining The High Tech Industries |   |
|-----------------------------------|---|
| NAICS                             | <u>Level-I Industries</u>                           |
| 3254                              | Pharmaceutical & Medicine Mfg.                      |
| 3341                              | Computer & Peripheral Equipment Mfg                 |
| 3342                              | Communications Equipment Mfg.                       |
| 3344                              | Semiconductor & Other Electronic Component Mfg      |
| 3345                              | Nav, Measuring, Electromedical, & Control Inst Mfg. |
| 3364                              | Aerospace Product & Parts Mfg.                      |
| 5112                              | Software Publishers                                 |
| 5161                              | Internet Publishing & Broadcasting                  |
| 5179                              | Other Telecommunications                            |
| 5181                              | Internet Service Providers & Web Search Portals     |
| 5182                              | Data Processing, Hosting, & Related Services        |
| 5413                              | Architectural, Engineering, & Related Services      |
| 5415                              | Computer Systems Design & Related Services          |
| 5417                              | Scientific Research & Development Services          |

| Level-II Industries |  |
|---------------------|--|
| 1131,32             | Forestry   |
| 2111                | Oil & Gas Extraction                                 |
| 2211                | Elec.power Generation, Transmission, & Dist.         |
| 3251                | Basic Chemical Mfg.                                  |
| 3252                | Resin, Synth. Rubber, & Artificial Synth. Fibers Mfg |
| 3332                | Industrial Machinery Mfg.                            |
| 3333                | Commercial & Service Industry Machinery Mfg          |
| 3343                | Audio & Video Equipment Mfg.                         |
| 3346                | Mfg. & Reproducing, Magnetic & Optical Media         |
| 4234                | Prof. & Comm. Equip. & Sup, Merch. Wholesalers       |
| 5416                | Mang, Scientific, & Tech Consulting Serv             |
| ---                 | Federal Government, Excluding Postal Service         |

| Level-III Industries |  |
|----------------------|--|
| 3241                 | Petroleum & Coal Products Mfg.                   |
| 3253                 | Pesticide, Fertilizer, & Other Agra Chem Mfg.    |
| 3255                 | Paint, Coating, & Adhesive Mfg.                  |
| 3259                 | Other Chemical Product & Preparation Mfg         |
| 3336                 | Engine, Turbine, & Power Transmission Equip Mfg. |
| 3339                 | Other General-purpose Machinery Mfg              |
| 3353                 | Electrical Equipment Mfg.                        |
| 3369                 | Other Transportation Equipment Mfg.              |
| 4861                 | Pipeline Transportation of Crude Oil             |
| 4862                 | Pipeline Transportation of Natural Gas           |
| 4869                 | Other Pipeline Transportation                    |
| 5171                 | Wired Telecommunications Carriers                |
| 5172                 | Wireless Telecomm Carriers (except Satellite)    |
| 5173                 | Telecommunications Resellers                     |
| 5174                 | Satellite Telecommunications                     |
| 5211                 | Monetary Authorities, Central Bank               |
| 5232                 | Securities & Commodity Exchanges                 |
| 5511                 | Management of Companies & Enterprises            |
| 5612                 | Facilities Support Services                      |
| 8112                 | Electronic & Precision Equip. Repair & Maint.    |

Note: An industry is considered high tech if employment in technology-oriented occupations accounted for a proportion of that industry's total employment that was at least twice the 4.9% average for all industries. With this relatively low threshold, 46 four-digit NAICS industries are classified as High tech.

Three levels of high technology

- Level I includes the 14 industries in which these occupations account for a proportion that was at least 5 times the average or greater and constituted 24.7% or more of industry employment.
- Level II includes the 12 industries in which the high tech occupations were 3.0 to 4.9 times the average (constituting 14.8 percent to 24.1 percent of total employment), and
- Level III includes the 20 industries with a proportion that was 2.0 to 2.9 times the average (making up 9.8 percent to 14.7 percent of total employment).

Source: BLS Monthly Labor Review July 2005

| Defining The Information Technology Industries |  |
|--|--|
| NAICS  | <u>Information Technology Industry</u>     |
| 5112   | Software Publishers                        |
| 518  | ISPs, Search Portals, & Data Processing    |
| 5181   | ISPs & Web Search Portals                  |
| 5182   | Data Processing & Related Services         |
| 5415   | Computer Systems Design & Related Services |

Source: Center for Urban Economic Development, University of Illinois at Chicago

| Defining The Knowledge Industries |  |
|-----------------------------------|--|
| NAICS                             | <u>All Knowledge Creation Industries</u>   |
| 3231                              | Printing & Related Support Activities      |
| 5411                              | Legal Services                             |
| 5412                              | Accounting & Bookkeeping Services          |
| 5413                              | Architectural & Engineering Services       |
| 5416                              | Management & Technical Consulting Services |
| 5417                              | Scientific Research & Development Services |
| 6112                              | Junior Colleges                            |
| 6113                              | Colleges & Universities                    |
| 6114                              | Business, Computer & Management Training   |
| 6115                              | Technical & Trade Schools                  |

| All Health Care Knowledge Industries |   |
|--------------------------------------|---|
| 3254                                 | Pharmaceutical & Medicine Mfg.          |
| 3391                                 | Medical Equipment & Supplies Mfg        |
| 622                                  | Hospitals                               |
| 6221                                 | General Medical & Surgical Hospitals    |
| 6222                                 | Psychiatric & Substance Abuse Hospitals |
| 6223                                 | Specialty Hospitals                     |

| All Information Technology Industries |   |
|---------------------------------------|---|
| 334                                   | Computer & Electronic Product Mfg               |
| 3341                                  | Computers & Peripheral Equipment Mfg.           |
| 3342                                  | Communications Equipment Mfg.                   |
| 3343                                  | Audio & Video Equipment Mfg.                    |
| 3344                                  | Semiconductor & Electronic Components Mfg.      |
| 3345                                  | Nav, Measuring, Electromed, & Control Inst Mfg. |
| 3346                                  | Mfg. & Reproducing, Magnetic & Optical Media    |
| 335                                   | Electrical Equipment & Appliances               |
| 3351                                  | Electric Lighting Equipment Mfg                 |
| 3352                                  | Household Appliance Mfg.                        |
| 3353                                  | Electrical Equipment Mfg.                       |
| 3359                                  | Other Electrical Equipment & Components Mfg.    |
| 5112                                  | Software Publishers                             |
| 516                                   | Internet Publishing & Broadcasting              |
| 517                                   | Telecommunications                              |
| 5171                                  | Wired Telecommunications Carriers               |
| 5172                                  | Wireless Telecommunications Carriers            |
| 5173                                  | Telecommunications Resellers                    |
| 5174                                  | Satellite Telecommunications                    |
| 5175                                  | Cable & Other Programming Distribution          |
| 5179                                  | Other Telecommunications                        |
| 518                                   | ISPs, Search Portals, & Data Processing         |
| 5181                                  | ISPs & Web Search Portals                       |
| 5182                                  | Data Processing & Related Services              |
| 5415                                  | Computer Systems Design & Rel Services          |

| All Financial Services Industries |  |
|-----------------------------------|--|
| 522                               | Credit Intermediation & Related Activity |
| 5221                              | Depository Credit Intermediation         |
| 5222                              | Nondepository Credit Intermediation      |
| 5223                              | Activities Rel To Credit Intermediation  |
| 523                               | Financial Investment & Related Activity  |
| 5231                              | Security & Commodity Investment Activity |
| 5232                              | Securities & Commodity Exchanges         |
| 5239                              | Other Financial Investment Activities    |
| 524                               | Insurance Carriers & Related Activities  |
| 5241                              | Insurance Carriers                       |
| 5242                              | Agencies, Brokerages & Other Insurance   |

Source: Reconnecting Massachusetts Gateway Cities By MassINC & The Brookings Institution

| Defining Knowledge Based Industries |  |
|-------------------------------------|--|
| NAICS                               | <u>Knowledge Based Industries Group</u>  |
| 3231                                | Printing & Related Support Activities    |
| 5411                                | Legal Services                           |
| 5412                                | Accounting & Bookkeeping Services        |
| 5413                                | Architectural & Engineering Services     |
| 5416                                | Management & Technical Consulting Svc    |
| 5417                                | Scientific Research & Development Svc    |
| 5418                                | Advertising & Related Services           |
| 5511                                | Management of Companies & Enterprises    |
| 6112                                | Junior Colleges                          |
| 6113                                | Colleges & Universities                  |
| 6114                                | Business, Computer & Management Training |
| 6115                                | Technical & Trade Schools                |

Source: Massachusetts Toward A New Prosperity

NAICS-1131, 32 Forestry are found in:

- High Tech Industries
  - High Tech Level-II industries

NAICS- 2111 Oil & Gas Extraction are found in:

- High Tech Industries
  - High Tech Level-II industries

NAICS-2211 Electric Power Generation, Transmission, & Distribution are found in:

- High Tech Industries
  - High Tech Level-II industries

NAICS-3231 Printing & Related Support Activities are found in:

- Knowledge Industries
  - All Knowledge Creation Industries
- Knowledge Based Industries Group

NAICS-3241 Petroleum Refineries are found in:

- High Tech Industries
  - High Tech Level-II industries
  - High Tech Level-III industries

NAICS-3251 Basic Chemical Manufacturing is found in:

- High Tech Industries
  - High Tech Level-II industries

NAICS-325188 All other Basic Inorganic Chemical Manufacturing are found in

- Life Sciences Supporting Industries Group

NAICS-325199 All other Basic Organic Chemical Manufacturing are found in:

- Life Sciences Supporting Industries Group

NAICS-3252 Resin, Rubber, & Synthetic Fibers are found in:

- High Tech Industries
  - High Tech Level-II industries

NAICS-3253 Agricultural Chemical Manufacturing are found in:

- High Tech Industries
  - High Tech Level-III industries

NAICS-3254 Pharmaceutical & Medicine Manufacturing

- Life Science Core Industry Group

NAICS-325411 Medicinal & Botanical Manufacturing

- Life Science Core Industry Group
- Biotech Industry

NAICS-325412 Pharmaceutical Preparation Manufacturing

- Life Science Core Industry Group
- Pharmaceutical Industry

NAICS-325413 In-vitro Diagnostic Substance Manufacturing

- Life Science Core Industry Group
- Biotech Industry

NAICS-325414 Other Biological Product Manufacturing are found in

- Life Science Core Industry Group

- Biotech Industry
- NAICS-3255 Paint, Coating, & Adhesive Manufacturing are found in:
- High Tech Industries
    - High Tech Level-III industries

- NAICS-3259 Other Chemical Preparation Manufacturing is found in:
- High Tech Industries
    - High Tech Level-III industries

- NAICS-3332 Industrial Machinery Manufacturing is found in:
- High Tech Industries
    - High Tech Level-II

- NAICS-3333 Commercial & Service Industry Machinery are found in:
- High Tech Industries
    - High Tech Level-II

- NAICS-333314 Optical Instrument & Lens Manufacturing is found in:
- Life Sciences Supporting Industries Group

- NAICS-3336 Engine, Turbine, & Power Transmission Equipment Manufacturing are found in:
- High Tech Industries
    - High Tech Level-III

- NAICS-3339 Other General Purpose Machinery Manufacturing is found in:
- High Tech Industries
    - High Tech Level-III

- NAICS-334 Computer & Electronic Product Manufacturing are found in:
- Knowledge Industries
    - All Information Technology Industries

- NAICS-3341 Computers & Peripheral Equipment is found in:
- Knowledge Industries
    - All Information Technology Industries
  - High Tech Industries
    - High Tech Level-II

- NAICS-3342 Communications Equipment Manufacturing is found in:
- Knowledge Industries
    - All Information Technology Industries
  - High Tech Industries
    - High Tech Level-I

- NAICS-3343 Audio & Video Equipment Manufacturing is found in:
- Knowledge Industries
    - All Information Technology Industries
  - High Tech Industries
    - High Tech Level-II

- NAICS-3344 Semiconductor & Electronic Components are found in:
- Knowledge Industries
    - All Information Technology Industries
  - High Tech Industries
    - High Tech Level-I

NAICS-3345 Electronic Instrument Manufacturing is found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-I

NAICS-334510 Electro Medical Apparatus Manufacturing are found in:

- Life Science Core Industry Group
- Medical Devices Industry

NAICS-334517 Irradiation Apparatus Manufacturing are found in:

- Life Science Core Industry Group
- Medical Devices Industry

NAICS-3346 Magnetic Media Manufacture & Reproducing are found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-II

NAICS-335 Electrical Equipment & Appliances are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-3351 Electric Lighting Equipment Manufacturing is found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-3352 Household Appliance Manufacturing is found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-3353 Electrical Equipment Manufacturing is found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level III

NAICS-3359 Other Electrical Equipment & Components are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-3364 Aerospace Product & Parts Manufacturing is found in:

- High Tech Industries
  - High Tech Level-I

NAICS-3369 Other Transportation Equipment Manufacturing is found in:

- High Tech Industries
  - High Tech Level III

NAICS-3391 Medical Equipment & Supplies Manufacturing are found in:

- Life Science Core Industry Group
- Medical Devices Industry
- Knowledge Industries
  - All Health Care Knowledge Industries

NAICS-339111 Laboratory Apparatus & Furniture Manufacturing. are found in

- Medical Devices Industry
- Life Science Core Industry Group

NAICS-339112 Surgical & Medical Instrument Manufacturing are found in

- Medical Devices Industry
- Life Science Core Industry Group

NAICS-339113 Surgical Appliance & Supplies Manufacturing are found in:

- Medical Devices Industry
- Life Science Core Industry Group

NAICS-339114 Dental Equipment & Supplies Manufacturing are found in:

- Medical Devices Industry
- Life Science Core Industry Group

NAICS-339115 Ophthalmic Goods Manufacturing are found in:

- Medical Devices Industry
- Life Science Core Industry Group

NAICS-339116 Dental Laboratories are found in:

- Medical Devices Industry
- Life Science Core Industry Group

NAICS-4234-Professional & Commercial Equip. & Supplies, Merchant Wholesalers are found in:

- High Tech Industries
  - High Tech Level-II

NAICS-423450 Medical Equip. & Merchant Wholesalers are found in:

- Life Science Supporting Industries

NAICS-42346 Ophthalmic Goods Merchant Wholesalers are found in:

- Life Science Supporting Industries

NAICS-42421 Druggists' Goods Merchant Wholesalers are found in:

- Life Science Supporting Industries

NAICS-44611 Pharmacies & Drug Stores are found in:

- Life Science Supporting Industries

NAICS-44613 Optical Goods Stores are found in:

- Life Science Supporting Industries

NAICS- 4861 Pipeline Transportation of Crude Oil is found in:

- High Tech Industries
  - High Tech Level-III

NAICS- 4862 Pipeline Transportation of Natural Gas is found in:

- High Tech Industries
  - High Tech Level-III

NAICS- 4869 Other Pipeline Transportation is found in:

- High Tech Industries
  - High Tech Level-III

NAICS-5112 Software Publishers are found in:

- Knowledge Industries
  - All Information Technology Industries
  - Information Technology Industry
- High Tech Industries
  - High Tech Level-I

NAICS-516 Internet Publishing & Broadcasting are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-5161 Internet Publishing & Broadcasting are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-517 Telecommunications are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-5171 Wired Telecommunications Carriers are found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-III

NAICS-5172 Wireless Telecommunications Carriers are found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-III

NAICS-5173 Telecommunications Resellers are found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-III

NAICS-5174 Satellite Telecommunications are found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-III

NAICS-5175 Cable & Other Programming Distribution are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-5179 Other Telecommunications is found in:

- Knowledge Industries
  - All Information Technology Industries
- High Tech Industries
  - High Tech Level-I

NAICS-518 ISPs, Search Portals, & Data Processing are found in:

- Knowledge Industries
  - All Information Technology Industries

NAICS-5181 Internet Service Providers & Web Search Portals\* are found in:

- High Tech Industries
  - High Tech Level-I
- Knowledge Industries
  - All Information Technology Industries

NAICS-5182 Data Processing & Related Services are found in:

- High Tech Industries
  - High Tech Level-I
- Knowledge Industries
  - All Information Technology Industries

NAICS-522 Credit Intermediation & Related Activity is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5221 Depository Credit Intermediation is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5222 Non-depository Credit Intermediation is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5223 Activities Related to Credit Intermediation is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-523 Financial Investment & Related Activity is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5231 Security & Commodity Investment Activity is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5232 Securities & Commodity Exchanges are found in:

- High Tech Industries
  - High Tech Level-III
- Knowledge Industries
  - All Financial Services Industries

NAICS-5239 Other Financial Investment Activities is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-524 Insurance Carriers & Related Activities is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5241 Insurance Carriers is found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS 524114 Direct Health & Medical Insurance Carriers are found in:

- Life Sciences Supporting Industries Group

NAICS-5242 Insurance Agencies, Brokerages & Support are found in:

- Knowledge Industries
  - All Financial Services Industries

NAICS-5411 Legal Services are found in:

- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-5412 Accounting & Bookkeeping Services are found in:

- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-5413 Architectural & Engineering Services are found in:

- High Tech Industries
  - High Tech Level-I
- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-541380 Testing Laboratories are found in:

- Life Sciences Supporting Industries Group

NAICS-5415 Computer Systems Design & Related Services are found in:

- High Tech Industries
  - High Tech Level-I
- Knowledge Industries
  - All Knowledge Creation Industries

NACIC-5416 Management & Technical Consulting Services are found in:

- High Tech Industries
  - High Tech Level-II
- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NACIS-5417 Scientific Research & Development Services are found in:

- High Tech Industries
  - High Tech Level-I
- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-5417102 Biological R&D is found in:

- R&D in the Life Sciences Industry
- Life Science Core Industry Group

NAICS-5418 Advertising & Related Services are found in:

- Knowledge Based Industries Group

NACIS-5511 Management of Companies & Enterprises are found in:

- High Tech Industries
  - High Tech Level-III
- Knowledge Based Industries Group

NAICS- 5612 Facilities Support Services are found in:

- High Tech Industries
  - High Tech Level-III

NAICS-6112 Junior Colleges are found in:

- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-6113 Colleges & Universities are found in:

- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-6114 Business, Computer & Management Training

- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-6115 Technical & Trade Schools are found in:

- Knowledge Based Industries Group
- Knowledge Industries
  - All Knowledge Creation Industries

NAICS-621111 Offices of Physicians (exc Mental Health) are found in:

- Life Sciences Supporting Industries Group

NAICS-62121 Offices of Dentists are found in:

- Life Sciences Supporting Industries Group

NAICS-62131 Offices of Chiropractors are found in:

- Life Sciences Supporting Industries Group

NAICS-62132 Offices of Optometrists are found in:

- Life Sciences Supporting Industries Group

NAICS-621391 Offices of Podiatrists are found in:

- Life Sciences Supporting Industries Group

NAICS-621399 Offices of all Other Miscellaneous Health Practitioners are found in:

- Life Sciences Supporting Industries Group

NAICS-621491 HMO Medical Centers are found in:

- Life Sciences Supporting Industries Group

NAICS-621492 Kidney Dialysis Centers are found in:

- Life Sciences Supporting Industries Group

NAICS-621493 Freestanding Emergency Medical Centers are found in:

- Life Sciences Supporting Industries Group

NAICS-621511 Medical Laboratories are found in:

- Life Sciences Supporting Industries Group

NAICS-621512 Diagnostic Imaging Centers are found in:

- Life Sciences Supporting Industries Group

NAICS-62161 Home Health Care Services are found in:

- Life Sciences Supporting Industries Group

NAICS-621991 Blood & Organ Banks are found in:

- Life Sciences Supporting Industries Group

NAICS-622 Hospitals are found in:

- Knowledge Industries
  - All Health Care Knowledge Industries

NAICS-6221 General Medical & Surgical Hospitals are found in:

- Knowledge Industries
  - All Health Care Knowledge Industries

NAICS-62211 General Medical & Surgical Hospitals are found in:

- Life Sciences Supporting Industries Group

NAICS-6222 Psychiatric & Substance Abuse Hospitals are found in:

- Knowledge Industries
  - All Health Care Knowledge Industries

NAICS-6223 Other Hospitals are found in:

- Knowledge Industries
  - All Health Care Knowledge Industries

NAICS-62231 Other Specialty Hospitals is found in:

- Life Sciences Supporting Industries Group

NAICS-62311 Nursing Care Facilities are found in:

- Life Sciences Supporting Industries Group

NAICS-8112 Electronic & Precision Equipment Repair & Maintenance:

- High Tech Industries
  - High Tech Level-III

Federal Government, excluding Postal Service is found in:

- High Tech Industries
  - High Tech Level-II

## Sources:

- Milken Institute, America's Biotech & Life Science Clusters - June 2004
  - Life Science Core Industry Group,
  - Biotech Industry,
  - Pharmaceutical Industry,
  - R&D in the Life Sciences Industry,
  - Medical Devices Industry,
  - Life Sciences Supporting Industries Group
  
- U.S Bureau of Labor Statistics
  - Defining High Tech Industries; an industry is considered high tech if employment in technology-oriented occupations accounted for a proportion of that industry's total employment that was at least twice the 4.9% average for all industries. With this relatively low threshold, 46 four-digit NAICS industries are classified as High tech.
    - Three levels of high technology;
      - Level I-includes the 14 industries in which these occupations accounted for a proportion that was at least 5 times the average or greater & constituted 24.7% or more of industry employment.
      - Level II-includes the 12 industries in which the high tech occupations were 3.0 to 4.9 times the average (constituting 14.8 percent to 24.7 percent of total employment), &
      - Level III-includes the 20 industries with a proportion that was 2.0 to 2.9 times the average (making up 9.8 percent to 14.7 percent of total employment).
  
- Massachusetts Toward a New Prosperity
  - Defining Knowledge Based Industries
  
- Reconnecting Massachusetts Gateway Cities by MassINC & The Brookings Institution
  - Defining Knowledge Industries
    - All Knowledge Creation Industries
    - All Financial Services Industries
    - All Health Care Knowledge Industries
    - All Information Technology Industries