Identification of Potential Exemplar Jobs/Job Training Programs for NAEP Reporting: Phase I

Presented by ACT, Inc.
August 11, 2010

Table of Contents

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Introduction

The National Assessment Governing Board (NAGB) awarded a contract to ACT, Inc. for the identification of potential exemplar jobs/job training programs for NAEP reporting (the Identification Project). This draft report summarizes the work completed for the project and follows the activities and steps outlined in the planning document.

Activity 1: Identify 20 Civilian Occupations

ACT used data from the U. S. Department of Labor, specifically O*NET and the Bureau of Labor Statistics (BLS), to identify civilian occupations that meet the criteria provided by the National Assessment Governing Board (NAGB). These criteria were:

- 0*NET Zones 2 and 3 – In addition, eliminate occupations designated as requiring a bachelor's degree or "short-term on-the-job training" in the employment projections from the BLS.
- Availability of Civilian and Military Counterparts - this is addressed in Activity 2.
- Coverage of Occupational Families and Industry Sectors - span across occupational families and industries to the extent possible.
- Recognizability of Occupations - be familiar to the public.
- High Employment Level Projected into the Future – cover a large proportion of jobs and job openings, and should not be projected to decline in the future
- High Growth Projected into the Future – consider occupations in which high growth in important areas is expected.
- Coverage of Reading and Mathematics Requirements – should represent a range of reading and mathematics skills along the NAEP reporting scale.

Activity 1 was completed through the following steps:

1. Projected Step: ACT will use O*NET as the foundation for the working list of exemplar occupations. An initial list of occupations will be created by searching O*NET for both Zone 2 and 3 occupations and downloading a complete list. This list will include 498 occupations.

   Completed Step: Step 1 was completed as indicated above. Zone 2 jobs are defined as needing some preparation while Zone 3 jobs need medium preparation.

2. <u>Projected Step</u>: As a result of an occupation being in either Zone 2 or Zone 3, the majority of occupations in the working list will require training beyond high school, yet not require a bachelor's degree. However, the working list of occupations will be cross-referenced with data from the BLS to filter out any occupations that either do not require training beyond high school, or require a bachelor's degree. For example, although "Assessors" (O*NET # 13-2021.01) is under O*NET Zone 3, data from the BLS suggests it requires a bachelor's degree. As a result, "Assessors" would be removed from the working list of occupations.

   Also, the working list of occupations will be cross-referenced with BLS data to remove any occupations which require short-term on-the-job training. For example, although "Bill and Account Collectors" (O*NET #43-3011.00) are designated by O*NET as Zone 3 (Medium Preparation Needed), data from the BLS suggests only short-term on-the-job training is needed. Thus "Bill and Account Collectors" would be removed from the working list of occupations.

   <u>Completed Step</u>: The 498 occupations from Step 1 were cross-referenced with BLS data to remove any occupations from the working list which either do not require training beyond high school, or require a bachelor's degree. This resulted in the removal of 17 occupations from the working list. Furthermore, cross-referencing these occupations with BLS data to remove any occupations that require short-term on the job training, resulted in the removal of 88 more occupations. Thus, at the conclusion of this step, 393 occupations remained in the working list of exemplar occupations.

3. <u>Projected Step</u>: Next, ACT will sort the working list of occupations by occupational family using the O*NET job families to represent the occupational families. All subsequent steps and analysis will be conducted within each specific family to ensure that exemplar occupations span occupational families to the extent possible and, to the extent possible, span industry sectors. There are 22 civilian job family classifications. It is anticipated that it will not be possible to include some families in the final list of 20 civilian occupations. The occupations in a given job family may not meet the educational criteria used for this project or there may not be military equivalents as needed in subsequent activities of this project.

   <u>Completed Step</u>: ACT staff downloaded data regarding the O*NET job families from the O*NET website. Using this data, we created a variable titled "Job Family" in the working list/dataset. This indicated that all 22 O*NET job families are represented by at least one occupation in the current working list/dataset of 393 occupations. It should be noted, however, that some O*NET job families are represented by many occupations (e.g., Production = 90 occupations), others are represented by very few occupations in the dataset (e.g., Community and Social Services = 1 occupation).

4. <u>Projected Step</u>: Next, ACT will address the criterion regarding high growth projected into the future. Specifically, ACT will import data from the BLS regarding projected percent change in individuals employed in an occupation from 2006 to 2016. This is

the data that O*NET uses to identify its In-Demand occupations as growing at a rate "much faster than average," "faster than average," "average," and "slower than average." At this point, the focus of further work will be on those occupations identified as growing at a much faster than average rate and a faster than average rate.

Completed Step: Using the BLS data regarding the projected percent change in individuals employed in an occupation from 2006 to 2016 (i.e., Projected Growth Percentage), ACT staff created a variable titled "Projected Growth Percentage" in the working dataset. Of the 393 occupations in the current working dataset, 86 were projected by BLS to grow at a much faster than average rate (>21%), or a faster than average rate (14% - 20%). As a result of applying this criteria, 5 of the original 22 O*NET job families that were represented at the previous step, were no longer represented in the working dataset. Communication with the COR on December 12, 2008 resulted in the inclusion of occupations with "faster" and "much faster" than average growth, as well as those occupations with "average" (7% - 13%) projected job growth. With this modification, 197 occupations remained with only one O*NET job family (45-0000: Farming, Fishing, and Forestry) not represented in the working dataset. Subsequent to this initial analysis, BLS released new data covering the period 2008 to 2018. The data for 2008-2018 were compared to those for 2006-2016 and, while some values had changed, the changes in these values did not significantly modify the rank order of the occupations

5. Projected Step: The list of potential exemplary job/occupations will be examined to ensure representativeness of industries as it is important to ensure that to the extent possible, all industries are represented in the list of exemplary jobs. The challenge with this is that ACT is charged with providing NAGB with a list of 20 exemplary jobs and most methods of categorizing industries result in more than 20 industries so, in the end, there are limited options to represent all industries in 20 jobs. The COR suggested BLS as a possibility and this is what we found from the BLS: They have four levels of classification. At the industry level, there are 339 industries. Next comes the industry group level and then the industry subsectors, and finally, 20 industry sectors which overlap quite a bit with the O*NET job families. Using the 20 BLS industry sectors seems our best option in the attempt to be inclusive of industries. However, it is still possible one or more industries may not be represented for the reasons cited in # 3 above.

    Completed Step: ACT staff downloaded data from the BLS that details the various industry sectors in which each of the remaining 197 occupations can be found. Using this data, we created a variable for each industry sector and coded whether an occupation is represented in that industry (1 = yes, "missing" = no). A variable titled "Number of Industries" that shows the number of industry sectors in which an occupation is found, was also created. Occupations ranged from being represented in only one industry sector (e.g., Bailiffs are only in Industry Sector 99, "Federal, State, and Local Government") to being represented in all 20 sectors (e.g., Customer Service Representatives). The mean number of industry sectors in which an occupation was present, was 10.62.

6. Projected Step: Continuing with BLS data, the next step will be to address the criterion concerning high employment level projected into the future. This criterion is defined as including occupations which cover a large proportion of jobs and job openings and should not be projected to decline in the future. This actually involves three variables tracked by BLS. Specifically, BLS provides (1) projected employment in 2016 for each occupation, (2) projected job openings due to growth 2006-2016, and (3) projected net replacement due to growth 2006-2016. The last two variables will be added together to provide a measure regarding job openings (both values are provided in the same metric: thousands). No occupations will be removed from the working list at this point. Rather, the data will be sorted so that the occupations projected to have high employment in 2016 and a large number of openings in 2016 are at the top of their respective industry lists.

   Completed Step: Projected job openings due to growth is the difference between the number of employees in an occupation in 2006 and the projected number in that occupation in 2016. Projected job openings due to net replacements estimates the number of workers leaving an occupations (e.g., retirement) who will need to be replaced by relatively younger workers. Added together, projected job openings due to growth and net replacements estimates the opportunities for workers entering an occupation for the first time. ACT staff created a variable in the working dataset titled "projected job openings due to growth and net replacements" which reflected this data. We also added a column to provide the projected employment in 2016 for each occupation. Subsequent to this initial analysis, BLS released new data covering the period 2008 to 2018. The data for 2008-2018 were compared to those for 2006-2016 and, while some values had changed, the changes in these values did not significantly modify the rank order of the occupations.

7. Projected Step: One of the remaining criteria indicates the occupations should be familiar to the public. In discussing ways to make this as objective as possible, we will use the number of individuals employed in an occupation (from the BLS) as a proxy for familiarity. The logic is that the greater the number of individuals employed in an occupation, the more likely the public is to be familiar with the occupation. At this stage of the project, the list of occupations that meet the criteria thus far will be sent to COR for screening.

   Completed Step: ACT staff downloaded data from BLS regarding the number of individuals employed in an occupation in 2006 and added this as a new variable in the dataset. The dataset with all the variables described above was sent electronically to the COR on December 19, 2008. Also included was a document which explained the variables in the dataset.

   As the dataset consisted of 197 occupations at this point in time, ACT staff suggested selecting a working list of occupations which would be a subset of the larger list. This would allow subsequent work to focus on those occupations highest on the specified NAGB criteria. In brief, ACT suggested sorting the 197 occupations by the

key variables (highest percentage of job growth, highest employment level projected for the future and highest level of current employment) and selecting the top 40 occupations as the occupations to use in Activity 2 of the project. The proposed methodology was deemed reasonable by the COR on December 23, 2008 and ACT was instructed to proceed with selecting the 40 occupations. Later that day (December 23, 2008) a dataset containing the 197 occupations with the occupations that we selected using the proposed methodology, was sent to the COR for his review.

8. <u>Projected Step</u>. The last criterion relates to the occupations, taken as a whole, representing a range of reading and mathematics skills along the NAEP reporting scale. Thus, the goal is that the 20 occupations should not all be on the low, middle or high end of the NAEP scales, but represent variability across the scales. The initial source of data to address this will come from the WorkKeys job analysis database. While the statistical correspondence between ACT's WorkKeys scales and NAEP scales has not been determined, the WorkKeys job analysis data would provide insight to the extent to which the range of occupations vary in the reading and mathematics requirements. If job analysis data is not available for a subset of the occupations, O*NET data will be referenced to determine to what extent reading and mathematics are important to the remaining occupations.

<u>Completed Step</u>: ACT staff downloaded available data from the WorkKeys job analysis database on the median reading and mathematics skill levels required for entry into each of the recommended 42 occupations and added these data to the dataset (in an effort to include as many O*NET job families as possible, 42 occupations were sent to the COR in Step 7). WorkKeys job analysis data was available for 36 of the 42 (86%) occupations in the working dataset. Both WorkKeys reading and mathematic skill levels range from 3-5 (on a WorkKeys scale of 3-7) for the occupations. More than likely the higher skill levels are not represented as a result of the restriction of range caused by other criteria (i.e. O*NET Job Zones 2 & 3, does not require a bachelors degree, etc.).

The final outcome of Activity 1 was that the COR provided ACT with a list of 20 occupations with which to continue the project. This list is provided on the next page.

Table 1: Final List of Exemplar Occupations for Subtask 4.2.1

Automotive master mechanics
Bookkeeping, auditing, accounting clerks
Civil engineering technicians
Computer support specialists
Customer service representatives
Dental hygienists
Electrical engineering technician
Electrician
Hairdressers, hairstylists, and cosmetologists
Licensed practical and licensed vocational nurses
Medical records and health information technician
Nursing aides, orderlies, and attendants
Paralegals and legal assistants
Pharmacy technicians
Plumber
Police patrol officers
Preschool teachers, except special education
Radiologic technologists
Real estate sales agents
Registered nurses

Activity 2: Identify Comparable Military Occupations

Matching Civilian Occupations to Military Occupations Based on Titles

The initial portion of this activity involved the matching of the exemplar civilian jobs to military occupations based on job title using readily available resources on the internet. The primary internet-based information we used was O*NET's Code Connector Search Engine, and the Department of Defense's and the National Crosswalk Service Center's (NCSC) Military Crosswalk Database. This step of the process was relatively straight forward as either there was a clear title match or no match could be found. For example, the civilian occupations of "Plumber" and "Computer support specialist" correspond to the military occupations of "Plumber" and "Information technology specialist" respectively. The civilian occupations of "Customer service representative," "Preschool teachers," and "Real estate sales agents" did not correspond to any military job title. Matching at the title level resulted in fourteen civilian occupations that had military counterparts and six that did not. The six civilian occupations that did not have military matches are listed in Table 2 on the next page. Please note that for these occupations,

research was conducted to determine if there were related military occupations, but none could be found at this time. For example, our research indicated that Electrical engineering technician had been a military occupation at one point in time, but this is no longer the case and no alternative could be found.

Table 2: Civilian Occupations without Military Counterparts

Customer service representatives
Electrical engineering technicians
Hairdressers, hairstylists, and cosmetologists
Nursing aides, orderlies and attendants
Preschool teachers, except special education
Real estate sales agents

Matching Civilian Occupations to Military Occupations Based on Tasks

For those civilian occupations which had military counterparts, the next step was to compare available tasks for the civilian and military occupations in order to determine the similarity of the occupations. In other words, is there enough similarity between a specific civilian occupation and the corresponding military occupation to conclude that they are the same occupation?

ACT gathered task lists for civilian occupations from O*NET. As stated in the planning document for this subtask, the ten most critical tasks in each civilian occupation were used to match to the corresponding military occupation. In some cases, an occupation had fewer than 10 tasks listed for it and, in those circumstances, all the tasks listed were used in the comparison to the military tasks. Military task lists were from the U.S. Army's official website (goarmy.com) or the Army Credentialing Opportunities On-line (COOL) website. No data regarding criticality of the military tasks were provided on the cited websites so all tasks provided for a particular military occupation were used.

As we reviewed the task lists, we found that there was a large degree of variability in the specificity at which tasks were written (in both the civilian and military task lists). That is, a task can essentially describe the entire job, or a very specific activity. For example, below are two tasks for the civilian occupation "Police patrol officers":

1. Provide for public safety by maintaining order, responding to emergencies, protecting people and property, enforcing motor vehicle and criminal laws, and promoting good community relations.
2. Render aid to accident victims and other persons requiring first aid for physical injuries.

Task #1 above is a very broad task and describes the entire occupation while Task #2 is a more specific task concerning "rendering aid to accident victims." These tasks are related in that Task #2 (rendering aid) could be considered part of Task #1 (responding to emergencies). There is similar variability within occupations on the military side. As a result of this variability regarding the specificity at which the tasks were written, some assumptions had to be made when determining if there was a match or a link between a civilian task and a military task.

In order to make sure that the assumptions made (thus our linking technique) were viewed as appropriate by the COR, we matched the tasks from the civilian occupation "Police patrol officers" to its military counterpart "Military police (Army - Enlisted)." In this sample, aside from indicating which O*NET task a military task can be linked to, we also took the additional step of color coding the links based on the assumptions we had to make in the linking. The level of confidence was based on the level of inference or assumptions we felt were needed to make the linking. This file was sent to the COR for his review in early January, 2010.

The COR reviewed the linkings and met with ACT staff on January 11, 2010 to obtain a better understanding of the assumptions underlying the various linkings and the degree to which the application of those assumptions was consistent. Based on the discussion with ACT staff, the COR proposed that, given the data, a "reasonable person" test of the linking assumptions might be appropriate—ACT staff agreed with this proposal.

Following this meeting, the ACT staff continued with the agreed methodology for the remaining fifteen civilian occupations which had military counterparts. The methodology is as follows for each civilian/military titled matched occupation:
- Read the first military task statement.
- Read the first (most critical) civilian task statement.
- Determine if the tasks are similar/related.
- If tasks are related, write the civilian task number in the column titled, "Linked O*NET Tasks" for that specific military task.
- Compare the first military task to each of the remaining civilian tasks and write the civilian task number in the column titled, "O*NET Tasks Linked to Military Task" if there is a match. The file with this information is provided in Appendix A.
- Continue this process for each military task in the occupation.
- Where no civilian task statement was similar, "none" was written to indicate that no civilian task statements matched that particular military task statement
- This method was continued for the remainder of the occupations which had military titled matches.
- The civilian and military occupations were considered to "match" when the military task list included a minimum of 70% of the 10 most critical tasks from the civilian task list and the civilian task list included a least 70% of the military tasks.

Results of Matching Civilian Tasks to Military Tasks

In this section, a summary of the matching process is provided for each civilian exemplar occupation which had a military counterpart. The detailed results of the matching can be found in Appendix A which also provides the tasks for the six civilian occupations which did not have military matches at the job title level.

Twelve of the civilian occupations were found to match at the task level to their military counterparts. The civilian occupation of Dental hygienist did not match to the military counterpart of Dental specialist. It was not possible to determine if the civilian occupation of Registered nursed matched to the military occupation of Generalist nurse as no tasks could be found for the military occupation. In addition, the information we could locate indicated registered nurses in the military are officers which generally requires a bachelors degree and thus would be outside the criteria set for this project as described under Activity 1.

Civilian Title: **Automotive master mechanic**
Military Title: **Wheeled vehicle mechanic (Army-Enlisted)**
80% of the military tasks are found in the civilian task list. The one task in the military task list that is not included in the civilian task list is: *Perform wheeled vehicle recovery operations.* **100%** of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: **Bookkeeping, accounting, and auditing clerks**
Military Title: **Financial management technician (Army-Enlisted)**
100% of the military tasks are found in the civilian task list. **100%** of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: **Civil engineering technicians**
Military Title: **Technical engineer (Army-Enlisted)**
75% of the military tasks are found in the civilian task list. The two tasks in the military task list that are not included in the civilian task list are: (1) *Build scale models of land areas that show hills, lakes, roads, and buildings*; and (2) *Piece together aerial photographs to form large photomaps.* **87.5%** of the civilian tasks are found in the military task list. The one task in the civilian task list that is not included in the military task list is: *Respond to public suggestions and complaints.*
Conclusion: Match

Civilian Title: **Computer support specialists**
Military Title: **Information technology specialist (Army-Enlisted)**
100% of military tasks are found in the civilian task list. **100%** of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: Dental hygienists
Military Title: Dental specialist (Army-Enlisted)
46% of the military tasks are found in the civilian task list. **40%** of the civilian tasks are found in the military task list. The seven tasks in the military task list that are not on the civilian task are list are: *(1) Receive and seat patients; (2) Assist with administration of anesthesia and in placement and removal of sutures; (3) Prepare restorative and impression materials; (4) Perform cardiopulmonary resuscitation and operate resuscitative equipment; (5) Dispose of contaminated waste and dental radiography; (6) Receive, store, pack, unpack and safeguard dental supplies and equipment; and (7) Sets up, maintain, disassemble and pack dental field equipment shelters.* The six tasks in the civilian task list that are not included in the military task list are: *(1) Clean calcareous deposits, accretions, and stains from teeth and beneath margins of gums, using dental instruments; (2) Examine gums, using probes, to locate periodontal recessed gums and signs of gum disease; (3) Feel and visually examine gums for sores and signs of disease; (4) Chart conditions of decay and disease for diagnosis and treatment by dentist; (5) Apply fluorides and other cavity preventing agents to arrest dental decay; (6) Feel lymph nodes under patient's chin to detect swelling or tenderness that could indicate presence of oral cancer.*
Conclusion: No Match

Civilian Title: Electricians
Military Title: Interior electrician (Army-Enlisted)
100% of the military tasks are found in the civilian task list. 80% of the civilian tasks are found in the military task list. The two tasks in the civilian task list that are not included in the military task list are: (1) *Maintain current electrician's license or identification card to meet governmental regulations*; and (2) *Direct and train workers to install, maintain, or repair electrical wiring, equipment, and fixtures.*
Conclusion: Match

Civilian Title: Licensed practical and licensed vocational nurses
Military Title: Healthcare specialist (Army-Enlisted)
100% of the military tasks are found in the civilian task list. 100% of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: Medical records and health information technicians
Military Title: Patient administration specialist (Army-Enlisted)
92% of the military tasks are found in the civilian task list. The one task in the military task list that is not included in the civilian task list is: *Account for and safeguard funds received for deposit in medical services account.* 100% of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: **Paralegal and legal assistants**
Military Title: **Paralegal specialist (Army-Enlisted)**
100% of the military tasks are found in the civilian task list. **100%** of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: **Pharmacy technicians**
Military Title: **Pharmacy specialist (Army-Enlisted)**
88% of the military tasks are found in the civilian task list. The one task in the military task list that is not included in the civilian task list is: *Evaluate completed orders to ensure integrity of final product*. **80%** of the civilian tasks are found in the military task list. The two tasks in the civilian task list that are not included in the military task list are: (1) *Answer telephones, responding to questions or requests*; and (2) *Clean, and help maintain, equipment and work areas, and sterilize glassware according to prescribed methods.*
Conclusion: Match

Civilian Title: **Plumber**
Military Title: **Plumber (Army-Enlisted)**
100% of the military tasks are found in the civilian task list. **90%** of the civilian tasks are found in the military task list. The one task in the civilian task list that is not included in the military task list is: *Direct workers engaged in pipe cutting and preassembly and installation of plumbing systems and components.*
Conclusion: Match

Civilian Title: **Police patrol officers**
Military Title: **Military police (Army-Enlisted)**
87.5% of the military tasks are found in the civilian task list. The one task in the military task list that is not included in the civilian task list is: *Military Police working dog handler*.   **90%** of the civilian tasks are found in the military task list. The one task in the civilian task list that is not included in the military task list is: *Render aid to accident victims and other persons requiring first aid for physical injuries.*
Conclusion: Match

Civilian Title: **Radiologic technologists**
Military Title: **Radiology specialist (Army-Enlisted)**
85% of the military tasks are found in the civilian task list. The two tasks in the military task list that are not included in the civilian task list are: (1) *Inspect and perform operator maintenance on radiology equipment*; and (2) *Pack, unpack, load and unload radiology equipment, assemble and dissemble radiology equipment and shelters*. **100%** of the civilian tasks are found in the military task list.
Conclusion: Match

Civilian Title: **Registered nurse**
Military Title: **Generalist nurse (Army-Officer)**
This is an officer position which generally requires a bachelor's degree and we were unable to find any list of tasks for a generalist nurse. USMilitaryAbout.com states that AOC 66N (Generalist nurse) is a duty position only and is considered AN specialty immaterial. A Nurse Corps officer assigned to this duty AOC functions in a variety of staff positions through the Army Medical Department. Some of these unique duty positions include; (a) USAREC/ROTC Counselors, (b) PERSCOM ANC Staff, (c) DEMIS, (d) AMEDD Center & School, Teaching Positions, (e) Ch, Nursing Education and Staff Development, (f) Quality Assurance Officers, (g) Nursing Research Officers, (h) Ch, Clinical Nursing Service, (i) OTSG Staff, (j) MACOM/MEDCOM Headquarters Staff, (k) DOD AN Staff Officers, (l) ARPERCOM Staff Officers, (m) Infection Control Officers, (n) Special Projects Officers, (o) Ch, Nurse Admin Evenings/Nights, (p) Ch, Department of Nursing, and (q) Ch, Amb Nursing Service.
Conclusion: Could not be determined because (1) the military version of this job appears to require a bachelor's degree which is beyond the scope of this project and (2) we could find no tasks for a military registered nurse.

Activity 3: Associated Data for Occupations

For each of the identified civilian occupations, the table in Appendix B provides the knowledge, skill and ability (KSAs) statements from O*NET which have an importance value of 50 or above (using a scale of 1-100). O*NET includes mathematics in the list of knowledge statements that are reported for each occupation and includes mathematics and reading comprehension in the list of skills that are reported for each occupation. In the event that reading and/or mathematics are not listed as having an importance value of 50 or higher for one of the selected occupations, they are still included in the list in Appendix B. KSAs for military occupations are not available on the internet so without military involvement, this information can not be provided in this report.

Lastly, we have queried ACT's database of WorkKeys job profiles (job analysis data) to determine if there are profiles for the selected civilian occupations. When profiles do exist, in Table 3 beginning on the next page, we have provided the median Applied Mathematics (Math) and Reading for Information (Reading) skill levels for the occupations together with the range of skill levels for each occupation (each skill ranges from a low of Level 3 to a high of Level 7), and the total number of profiles for the occupation. Please note this database is a sample of convenience so there are occupations for which ACT does not have profile data.

Table 3. WorkKeys Job Profile Data

Job Title	Math Median	Math Range	Math # of profiles	Reading Median	Reading Range	Reading # of profiles
Automotive master mechanics	4	3-5	6	4	3-5	10
Bookkeeping, auditing, accounting clerks	4	3-6	17	4	3-6	19
Civil engineering technicians	No job profiles available for this occupation					
Computer support specialists	5	3-6	16	5	3-6	26
Customer service representatives	5	5-5	1	4	4-5	2
Dental hygienists	No job profiles available for this occupation.					
Electrical engineering technician	6	6-6	3	5	5-5	3
Electrician	5	3-7	59	5	3-6	59
Hairdressers, hairstylists, and cosmetologists	4	4-5	4	5	3-5	3
Licensed practical and licensed vocational nurses	4	3-6	9	4	3-5	9
Medical records and health information technician	3	3-4	4	5	4-5	7
Nursing aides, orderlies, and attendants	3	3-5	32	4	3-5	39
Paralegals and legal assistants	No job profiles available for this occupation					
Pharmacy technicians	5	4-5	8	5	3-5	7
Plumber	4	3-6	9	4	3-5	9
Police patrol officers	3	3-3	2	4	4-5	2
Preschool teachers,	3	3-4	2	4	3-5	3

Job Title	Math Median	Math Range	Math # of profiles	Reading Median	Reading Range	Reading # of profiles
except special education						
Radiologic technologists	4	3-5	5	4	4-5	5
Real estate sales agents	No job profiles available for this occupation					
Registered nurses	4	3-6	20	5	3-6	25

Activity 4: Identification of Civilian Training Programs

For each identified civilian occupation, ACT used multiple resources to collect information regarding the mathematics and reading requirements for entry into occupational training programs. As indicated in the planning document, up to three training programs were explored in an attempt to find one that reported math and reading requirements for program entry.

For all occupations, math and reading requirements were identified for at least one training program. However, the amount of information obtained varied from program to program. As many U.S. states as possible were included in the search process and were included in the results reported below.

Search Process for Training Programs

WorkKeys Profiles
ACT's database of WorkKeys profiles was searched for profiles related to training programs. The database includes data for thousands of jobs; however, the vast majority of profiles have analyzed specific jobs in specific companies rather than training programs. As a result, we located training program-related profiles for three of the exemplar occupations: Plumber, Electrician and Practical Nurse. WorkKeys skill levels needed to enter a training/apprenticeship program for each of the three occupations are reported in the next section of this document.

College/Community College Programs
Given the small number of profiles completed for training programs, the majority of the search effort focused on searching on-line resources. The search process for training programs at colleges or community colleges involved the following process:
- Search http://www.collegeboard.com using the following criteria: 2-year institutions (versus 4-year); public institutions (versus private); geographic region, and college major or keyword such as "practical nurse", in order to obtain a listing of schools which claimed to offer training for that job title.

- Using the list of schools from above, searched a minimum of three school websites focusing on the (a) program description page(s), (b) the admission requirements page(s), and (c) any page(s) devoted to student placement.
- Contact the school's placement office for clarification of website information, if needed.

For some training programs, no reading and/or mathematics prerequisites were mentioned. For other training programs, a prerequisite was mentioned, but not identified. Still others indicated the requirement (such as AccuPlacer testing) and may or may not have indicated a score requirement.

Apprenticeship Programs
Apprenticeship training programs were identified in one of two general ways: (a) query the U.S. Department of Labor's website to obtain information on registered apprenticeship training programs or to simply (b) conduct an online query for an occupation using the occupation title and the keywords "training program" as search criteria. Information for Electrician and Plumber apprenticeship programs is included in the following section of this report. One apprenticeship program (e.g., Fox Valley Technical College's Electrician Apprentice program) was identified while conducting a search through the college search sequence (via collegeboard.com).

Program descriptions and contact information (e.g., website info) are also provided in the following section of this document.

Results for Training Programs by Occupation

Please note that text provided in italics below is taken directly from an institution's website.

Automotive Master Mechanics

Umpqua Community College (Oregon) – has a curriculum in Automotive Technology which leads to an associate of applied science degree and to potential employment as an Automotive Technologist (Mechanic). UCC also offers certificate programs in Automotive Technology. UCC accepts all applicants, but requires completion of a Placement test to place students in content-appropriate classes. COMPASS (reading, writing, and math) is used to place incoming students into the appropriate level course. There is no minimum score required for entry.http://www.umpqua.edu/Admission/Start.htm

Athens Technical College (Georgia) – offers an Automotive Fundamentals diploma and an associate of science degree as part of their Automotive Technology program. These programs prepare students for careers in automotive service and repair http://www.athenstech.edu/Catalog/Programs/Automotive%20Technology.pdf
Their admissions criteria is as follows: "*Applicants must submit placement test scores as part of the admissions process. Prospective students may submit COMPASS, ASSET,*

16

SAT, or ACT scores, provided they took the test within five years of the early application deadline (see Early Application Deadline). Applicants seeking admission to diploma programs of study and most technical certificate programs must have minimum SAT scores of 430 critical reasoning (from SAT exams administered after March 1, 2005) or 430 verbal (from SAT exams administered before February 28, 2005) and 420 math, ACT scores of 18 English and 17 math, or comparable scores on a statistically validated test such as ASSET or COMPASS. Applicants for most associate degree programs must have minimum SAT scores of 450 critical reasoning (from SAT exams administered after March 1, 2005) or 450 verbal (from SAT exams administered before February 28, 2005) and 450 math, ACT scores of 20 English and 19 math, or comparable scores on a statistically validated test such as ASSET or COMPASS. If applicants cannot submit these minimum SAT or ACT scores, they must take the ASSET or COMPASS placement examination or submit official copies of ASSET or COMPASS test scores from another college (see ASSET and COMPASS Placement Examinations). Applicants who successfully complete equivalent program-level English and/or mathematics or who have earned an associate degree or higher credential at another postsecondary institution will not be required to submit placement test scores provided they submit official transcripts at the same time they submit their application for admission."

Coffeyville Community College (Kansas) - offers 9-month certificate programs in automotive technology; specifically, automotive service and auto collision repair. http://www.coffeyville.edu/columbus/programs/autoservice.htm

The COMPASS test is used for placement purposes. According to their website, the following placement rules apply as shown below:

Using COMPASS scores:
Reading – Students scoring below a 72 need to enroll in a reading course

Math
1-23:	*Prep 003 Elements of Math*
24-100	*PREP 005 Introductory Algebra*

Algebra Test
0-30	*PREP 005 Introductory Algebra*
31-44	*MATH 102 Intermediate Algebra*
45-100	*MATH 105 College Algebra*

http://www.coffeyville.edu/columbus/compass.htm

Using ACT Scores:
English
12 or below	*PREP-010 Developmental English*
13 through 15	*PREP-009 Written Communications*
16 or above	*ENGL-101 English Composition I*

Reading
14 or below   BCTC-163 Applied Communications

Math
12 or below   Take COMPASS for placement
13 through 15   PREP-005 Introductory Algebra
16 through 19   MATH-102 Intermediate Algebra
20 or above   MATH-105 College Algebra

A follow-up email from a Coffeyville representative provided this additional information: *"The students in the program attend a learning lab one day a week which covers basic math, reading and comprehension, fractions, decimals and measurements as well as resumes, interviewing skills, portfolios and things like balancing a check book and taxes. Aside from that there are no additional requirements."*

Bookkeeping, Auditing, Accounting Clerks

South University (Georgia) – offers an online associates degree program in Accounting. Admission requirements include satisfactory scores on the SAT I(minimum 900), ACT (minimum 19 composite), or Accuplacer with a minimum of 77 in Reading, 86 in Sentence Skills, 53 in Elementary Algebra and 36 in Arithmetic. South University also lists minimum requirements for incoming students who may require academic support. Those requirements are as follows: SAT I (minimum 660), ACT (minimum 14), Accuplacer Reading (54), Sentence Skills (60), and Arithmetic (36).
http://online.southuniversity.edu/academics/undergraduate/associate_accounting.asp

Gatlin Education Services (GES) – (Texas) GES works in partnership with colleges and universities to offer an online 6-month/140 hour certification program in Bookkeeping. Potential students must enroll in a partner school in order to complete the certification program and receive the certificate from the partner institution upon completing the program. The GES website includes a "Prerequisites" link, however, the site does not define any requisite skills, including reading and math, and only indicates that previous bookkeeping experience is not required. In a follow-up online chat with a GES representative, the following questions were asked: Are there any prerequisite requirements for admission? For example, an entrance exam or a placement test? And if so, are there minimum score requirements? The GES written response was:
There are not exams or tests that our student would need to take for our online program. Our programs are not accredited, they are career focused, online, self paced, and instructor mentored, certificate programs. They do not accrue or transfer any credits.

http://gatlineducation.com/bookkeeping.html

Herzing Business University - (online campus managed by Wisconsin location) – HBU offers a two-semester online diploma program Bookkeeping and Payroll Accounting which *provides students with an introductory understanding of accounting practices and the skills needed to set up and maintain basic accounting and payroll records. Courses*

include Payroll Accounting, Accounting I & II, Spreadsheets and Business Math, and 24 credit hours are required for graduation. A follow-up call with a Herzing representative indicated that all incoming students are required to take an 8-minute version of the Wonderlic assessment as a prerequisite, but no minimum score is required for entry, nor are any other requirements (such as reading or math requirements) in place.

http://choose.herzing.edu/Global/FileLib/PDFs/herzing_school_of_business.pdf

Civil Engineering Technicians

Bates Technical College (Washington) – offers an associate degree program in civil engineering. All students registering in their career education program are required to take the COMPASS reading, writing, and math tests. Comparable ASSET scores may be used in lieu of COMPASS scores; however, the required scores are not indicated. http://www.bates.ctc.edu/civilengineering/

A follow-up email was sent to BTC to request clarification/additional information and the BTC response is shown below: *"For Civil Engineering, a student has to be ready for 100 level academics in both English and math. They also need to have computer skills. Most of their studies will be dealing with mathematical equations and how to incorporate them into plans using CAD drafting. Unfortunately, textbooks are not the most exciting reading as opposed to fictional literature, so reading skills should be high to understand and put to use what they are reading."*

Central Maine Community College – offers an associate degree program in Architectural and Civil Engineering Technology. Program entry requirements include high school requirements (i.e., grades of *C or better in Algebra I & II, Geometry, Physics, along with "basic computer skills.") If the applicant has a minimum score of 480 on the* SAT or has already taken college level English and Mathematics courses and received a "C" or better, the placement test (Accuplacer) can be waived; otherwise, Accuplacer assessment scores (in reading, writing, math and algebra) are used for placement purposes. http://www.cmcc.edu/documents/2009-10Catalogfinal-4-13-09.pdf

Southeast Technical Institute (South Dakota) – offers an AAS degree program in Civil Engineering Technology. Entrance requirements include proof of high school diploma/equivalent and completion of the COMPASS test. STI also offers a 2-hour class to help students prepare to take the COMPASS test. The course includes the subjects of math and English. http://www.southeasttech.edu/Academics/Degrees/Engineering/Pages/CivilEngineeringTechnology.aspx

Industry Certification (post-licensure)
Certification in specialty areas of civil engineering is available through the Civil
Engineering Certification arm (CEC) of the American Society of Civil Engineers
(ASCE). CEC currently partners with the "*Environmental & Water Resources Institute
(EWRI), Geo-Institute (G-I), and Coastal Ocean Ports & Rivers Institute (COPRI) to
create three professional certification programs and will continue to partner, where
appropriate, with other professional organizations to implement specialty certification.
CEC created its first academy, the American Academy of Water Resources Engineers
(AAWRE) and the Diplomate, Water Resources Engineer (D.WRE) certification program
in October 2004. The Academy of Geo-Professionals (AGP) and the Diplomate,
Geotechnical Engineering (D.GE) certification program was established in November
2008. CEC launched its third academy, the Academy of Coastal, Ocean, Port &
Navigation Engineers (ACOPNE) in October 2009.*"

Computer Support Specialists

Bay Mills Community College (Michigan) offers an associate degree program in
Computer Information Systems. According to their website, "*students who graduate with
a Computer Information Systems degree with a Computer Systems Technology emphasis
will possess the skills necessary to install and manage computer networks, configure and
administrate servers, and provide software support.*" Entrance to the program is open to
those who provide proof of high school diploma or equivalent and complete the school's
placement test (ASSET). Potential students without the diploma/equivalent credential are
admitted as Special Status students and must complete their GED within the first year of
enrollment. More specific reading/math requirements for entry are not indicated.
http://www.bmcc.edu/ProgramsFaculty/associateprograms.html#cst

Cuyahoga Community College (Ohio – multiple locations around the state) – offers a
34-credit certificate program in Computer Maintenance Technology. According to
their website, "*Students will be prepared with the knowledge and skills essential for a
career as an entry-level service technician. They will be prepared to service computers
and peripherals by discovering how to install, configure, diagnose, repair, upgrade and
maintain microcomputers. Skills acquired will assist students in preparing to take
industry A+ Certification exams. A+ Certification is an industry recognized credential
that distinguishes one as a knowledgeable service professional.*" Entrance
requirements include completion of the COMPASS Math and English tests which can
be waived by providing a qualifying ACT test score (e.g., a score of 20). Students who
cannot provide proof of high school diploma or equivalent are also required to take an
Ability to Benefit test.
http://tri-c.edu/programs/computermaintenance/Pages/default.aspx

Industry Certification
Microsoft offers nearly 20 certification programs including their Microsoft Certified
Desktop Support Technician (MCDST) credential. According to their website, the
MCDST certification "*covers the skills of help desk technicians, customer support
representatives, computer support specialists, technical support representatives, and*

*technical support specialists as defined by the National Workforce Center for Emerging Technologies Skill Standards for Information Technology and by other research worldwide. The MCDST certification is for IT professionals who are working in the typically complex computing environments of small, medium-sized, and large organizations that use Windows XP. **An MCDST candidate should have six to twelve months of experience in supporting Windows XP end users**."* Successful completion of two exams is required for this credential.

To prepare for any of Microsoft's exams, direct hands-on experience is suggested, along with review/study of the resource materials that are listed for the particular credential being sought. Specific prerequisite skills (e. g., reading or math skills) are not indicated.

http://www.microsoft.com/learning/en/us/certification/mcdst.aspx

CISCO Systems Inc. (CISCO) - offers five levels of IT certification (i.e., entry, associate, professional, expert, and architect). According to their website, the entry level certification (or *CCENT™* - Cisco Certified Entry Networking Technician) "*validates the ability to install, operate and troubleshoot a small enterprise branch network, including basic network security. With a CCENT, network professional demonstrates the skills required for entry-level network support positions - the starting point for many successful careers in networking. The curriculum covers networking fundamentals, WAN technologies, basic security and wireless concepts, routing and switching fundamentals, and configuring simple networks. CCENT is the first step toward achieving CCNA, which covers medium size enterprise branch networks with more complex connections.*" http://www.cisco.com/web/learning/le3/le2/le45/learning_certification_level_home.html

According to the website (same link as above) and as confirmed in a follow-up call to a CISCO representative, there are no prerequisites required.

Customer Service Representative

Clover Park Technical College (Washington) – offers a Customer Service/Call Center Specialist certificate program (2 quarters) which prepares students *for customer service careers in a wide variety of businesses such as call centers for utilities, health maintenance organizations, banking centers, financial institutions, telephone, cable and internet service providers*. According to a CPTC representative, there are no prerequisites to enter this program.

http://www.cptc.edu/index.php/programs/degrees_certificates/customer_service_call_center_specialist/

Salt Lake Community College (Utah) – offers a non-credit program in Customer Service (or Customer Service/Receptionist, depending upon the campus) in their school of Applied Technology. (Depending upon the campus where enrolled, the duration of the program is between 300-390 hours and 6-9 courses.) Their website indicates that standardized tests may be used to ensure readiness for coursework (such as the Test of

Adult Basic Education/TABE; Accuplacer tests in Reading Comprehension, Sentence Skills, and Mathematics; ACT or SAT scores that are less than 2 years old; or math or English credit from another college).
http://www.slcc.edu/testing/

Paradise Valley Community College (Maricopa County, Arizona) offers a 35- credit occupational certificate in Customer Service Support. According to their website, no prerequisite courses are needed. ("**Program Prerequisites: None"**)
http://www.maricopa.edu/academic/ccta/programs/pv/pv5236c056.doc

Industry Certification
The Resource Center for Customer Service Professionals (RCCSP) – offers an online Service Representative certification program. According to their website "*This self-study, self-paced course is designed for new front-line service and support professionals. Participants will learn fundamental principles and techniques for delivering world class service. The course covers critical skills in professionalism, communication, call management, stress management and more*." For a $350 fee, students are allowed 60 days to complete the online course. The website states that "there are no prerequisites for this introductory course."
http://www.the-resource-center.com/SEMINARS/HD2-9.HTM

The American Institute of Banking (AIB) - offers multiple industry-specific certifications including a Customer Service Representative (CCSR) certification program. (http://www.aba.com/Training/aib_csacertificate.htm). According to their website:
"The AIB Customer Service Representative Certificate addresses the knowledge and skills necessary to achieve superior performance in this important position within the bank. Customer Service Representatives (CSRs) conduct basic banking transactions and cross-sell bank products and services. In addition to courses that address sales and customer service, the curriculum also emphasizes the banking regulations affecting the position, business ethics and banking fundamentals. Basic selling and cross-selling skills are covered as well."
The online course is available for $795 to nonmembers and $595 to members. Specific prerequisite skills are not indicated; however, the applicant must already have a minimum of 6 months of experience as a customer service representative in banking and submit a letter of recommendation from their supervisor, so some prerequisites are required, just not specifically defined as reading or math skills.

Dental Hygienists

Brevard Community College – (Florida) – offers an associate of science degree program in Dental Hygiene, which prepares students for a career as a Dental Hygienist. Entrance requirements include Accuplacer or paper/pencil test (FELPT/Florida Entry-Level Placement Test) to determine their math, English, and reading placement, and students may choose which of the two tests to take. Accuplacer subject workbooks are available and it is suggested that students study parts II and III in the Math review workbook to prepare for the algebra subtest. Further, the Brevard website's FAQs

indicate that "*Each test format has both advantages and disadvantages. There is no difference in the score you receive on either test. Both are scaled from 20-120. All campuses offer the FELPT but student must request this format.*"(http://www.brevardcc.edu/index.cfm?mainframe=/admissions/content/admissions_guidelines.html&subnavframe=/admissions/content/sub_nav.html). The TABE (Tests of Adult Basic Education) is used for placement for some of Brevard's vocational programs, but does not appear to be required for the Dental Hygiene program.

Placement tests can be waived if the applicant has taken the ACT or SAT within the last two years (and the scores are above the state-mandated levels – see table below); if the applicant already has a college degree, AAS or higher; or if the student can transfer college-level math or English courses to Brevard. (In the table below, CPT refers to Accuplacer and FELPT refers to the paper/pencil version of Accuplacer.

COLLEGE CREDIT COURSES			
Test Used for Placement:	**CPT or FELPT**	**SAT**	**ACT**
ENGLISH/COMMUNICATIONS			
ENC 1101 – Communications 1	Reading 83+ *and* Writing 83+	Critical Reading 440+	Reading 18+ *and* English 17+
MATHEMATICS			
MAT 1033 – Intermediate Algebra *or* MGF 1106 – Liberal Arts Math 1 *or* MGF 1107 – Liberal Arts Math 2	Elem Algebra 72+	Math 440+	Math 19+
MAC 1105 – College Algebra	Elem Algebra 95+	Math 520+	Math 20+

http://www.brevardcc.edu/pdf/catalog200910/200910_complete.pdf

Cape Cod Community College (Massachusetts) – offers an associate in science degree in Dental Hygiene. Qualifications for admission include (a) successful completion of algebra (e.g., MAT030 Elementary Algebra or its equivalent) within the 5 years prior to admission and (b) successful completion of chemistry with a lab within the last 5 years, as well as a high school diploma/equivalent or an acceptable score on an *Ability to Benefit* test. http://www.capecod.edu/web/admissions/requirements/dental

According to their website, preferred applicants are described as follows:
"*The **preferred applicant** will present with:*
1. An overall Grade Point Average (GPA) of 3.0 or better (on a 4.0 scale). An overall GPA of 3.0 or better in mathematics and science courses. Priority will be given to the candidate who has taken additional courses to fulfill the core requirements. Priority will also be afforded to candidates with related experience, motivation for the profession, and academic and professional potential."

And students can "***Enhance your chance for admissions by:***
2. Enrolling in biology, anatomy and physiology or algebra II classes.
3. Volunteering or becoming actively employed in any related health office, clinic or dental office."

Forsyth Technical Community College (North Carolina) – offers an associate in science degree program in Dental Hygiene. Recommended high school courses include biology, algebra, and chemistry. Minimum scores needed on the placement tests and other admissions information available at their website is shown below:

Placement Test Scores

CPT	*COMPASS*	*ASSET*
Sentence Skills 86	*Writing 70*	*Writing Skills 41*
Reading Comp. 80	*Reading 81*	*Reading Skills 41*
Arithmetic 55	*Pre-Algebra 47*	*Numerical Skills 41*
Algebra 55	*Algebra 46*	*Elem. Algebra 41*

Applicants not meeting these minimum scores should enroll in the appropriate developmental course course(s). All developmental courses must be completed by the deadline date. A college level English composition or algebra course with a grade of "C" or higher will be used to waive the tests once the transcript(s) has been received and reviewed. Likewise, acceptable SAT/ACT scores within the past five years may also waive some of the tests.

OLD SAT SCORES	**NEW SAT SCORES**	**ACT**
Verbal 440	*Critical Reading 440*	*Minimum composite of 18*
Math 410	*Math 410*	

http://www.forsythtech.edu/uploads/9c/37/9c378013a7043ed7307e2e4a11c6d273/2010-Dental-Hygiene-Packet.pdf

Additional Information

In an online article which summarizes typical features and requirements of dental assistant education programs, (http://continuingeducation.suite101.com/article.cfm/a_glimpse_into_dental_assistant_education), the author reports that training programs in dental assistance typically require a high school diploma, and some programs require other prerequisite skills/coursework such as science courses or computer-related training. Information on industry-specific certification programs, other than those associated with 2 and 4-year colleges, was not found.

Electrical Engineering Technician

Penn Foster – is a distance learning institution which is licensed by the Arizona State Board for Private Postsecondary Education and at its website it refers to itself as "*America's online community college.*" P-F's programs of study lead to associate of science degrees and career-specific diplomas.
http://www.pennfostercollege.edu/index.html

Penn-Foster offers an online associate degree program in Electrical Engineering Technology. http://www.pennfostercollege.edu/eleceng/index.html
Their website (http://www.workforcedevelopment.com/fundamentals/index.html) lists "foundational" courses that are available as standalone courses for skill development. In a follow-up call with an Enrollment Advisor from Penn-Foster, the Advisor said that they do not require the completion of any entrance exams (e.g., ACT, Accuplacer) nor do they

have any other specific competency requirements (e.g., reading or math) to enter their training programs.

Southwest Tennessee Community College – offers an A.A.S. degree in electrical engineering technology. Admission requirements include submission of ACT scores (if applicant is under the age of 21) or completion of the COMPASS/ASSET test (if over the age of 21, unless college level English and math have been completed. Students with ACT scores of 19 or higher can be placed in regular (non-developmental) courses. Students who take COMPASS/ASSET must attain at least an 80 on the Reading, 75 on the Writing, and 50 on the Mathematics test to be placed in regular-level courses.

http://www.southwest.tn.edu/admissions/gen-admis.htm

STCC, in accordance with the Tennessee Board of Regents, requires incoming students to have completed 14 units of requirements during high school including 4 units of English, 1 unit each of Algebra I and II, and 1 unit of Geometry or other advanced math which includes Geometry. Students who did not complete the requirements in high school can complete them while enrolled at STCC.

http://www.tbr.state.tn.us/policies/default.aspx?id=1010

Broome Community College (New York) – offers a two-year program in Electrical Engineering Technology. Program graduates are prepared to be an intermediary between design engineers and skilled craftsmen.
http://catalog.sunybroome.edu/preview_program.php?catoid=1&poid=53&bc=1&print
Admission requirements include a high school diploma or equivalent, or a passing grade on an *Ability to Benefit Test* in lieu of the former requirements. ACT or SAT scores are not required, but can be provided if the student so chooses. Also suggested, but not required for entry into the program, is math skill commensurate to the Level 3 competencies described in the table on the next page .Their website also includes the following about prerequisites for program entry: *This program may require more than two years to complete if an entering student has not completed the admissions requirements for the program. Students lacking any courses may be required to take developmental mathematics courses to prepare for MAT130 Applied Algebra and Trigonometry, and PHY090 Preparatory Physics.*

Math Equivalencies for Use in Admissions Decisions

Level of Mathematics Proficiency	Regents Course	Math A/B Exam Score	Applied Math Course	Other High School Course
Level 1	Regents Course I	Math A	Applied Math I and II	Algebra I
Level 2	Regents Course I and II	Math A with minimum score of 85	Applied Math I, II and III	Algebra I and Geometry
Level 3	Regents Course I, II, and III	Math B	Applied Math I through IV	Algebra I, Geometry, and Algebra II with Trigonometry
Level 4	Regents Course I, II, and III plus Math 12	Math B plus Math 12 (Pre-Calculus)	N/A	Algebra I, Geometry, and Algebra II with Trigonometry plus Advanced Algebra or Pre-Calculus

(from http://catalog.sunybroome.edu/content.php?catoid=1&navoid=22#req)

No additional information was found pertinent to an industry-related certification program at less than the bachelors (i.e., 4 years of college) level of training.

Electrician

WorkKeys Job Profiling Database: The ACT job profiling database contains one recent profile of an apprenticeship program for electrician. The profile was completed in 2009. Skill levels required for entry into the apprenticeship training program are Reading for Information Level 4 and Applied Mathematics Level 5.

Information found online about this apprenticeship program describes the program's entry requirements as, in brief, one full year of high school algebra, a high school diploma/equivalent, and/or an associate's degree; requirements which may be waived if work experience in the electrical field can be well documented. Those who meet the minimum qualifications described can be scheduled for an aptitude test (which consists of (Algebra and Functions, Reading Comprehension segments), and upon successful completion of the test may be scheduled for an interview as the next step in applying to the apprenticeship program.

Fox Valley Technical College (Wisconsin) – has an Electrician Apprentice program which consists of a combination of 5 years of on-the-job training and classroom instruction. http://www.fvtc.edu/public/academics/degree.aspx?plan=50-413-9

Admission requirements include proof of high school diploma/equivalent; Accuplacer test scores of 66 or higher on Reading Comprehension and 66 or higher on Arithmetic;

and a"C" or better in Algebra (one-year in high school or one-semester at Technical College).

Potential students must apply through the Associated Builders and Contractors (ABC) Wisconsin Chapter. According to the ABC website, "*Wisconsin is the only state in the nation that requires apprentices to be paid for both time in the classroom and time on the job. Apprentices are paid on a progressive scale throughout their apprenticeship. The State of Wisconsin sets the minimum wage, which averages at least 60% of the journey-level workers wages in that trade.*" http://www.abcwi.org/apprenticeship/index.asp

State of Idaho – According to the U.S. Department of Labor website (http://www.careervoyages.gov/apprenticeship-asl-listws.cfm), there are 44 sponsors (i.e., employers) participating in registered apprenticeship training and currently 208 enrollees (i.e., apprentices). Entrance requirements may vary and are not posted at the DOL site.

Apprenticeship Contact Information for Idaho
USDOL/ETA/OA
William Kober
State Director
USDOL/ETA/OA
Suite 204
1150 North Curtis Rd.
Boise, Idaho 83706-1234
208/321-2972
E-Mail: kober.william@dol.gov

Hairdressers, Hairstylists, and Cosmetologists

Identifying the math and/or reading skill requirements needed to enter cosmetology programs is particularly challenging, and an online article entitled *Cosmetology: Summary of Educational Requirements to Become a Cosmetologist* (http://education-portal.com/articles/Cosmetology%3A_Summary_of_Educational_Requirements_to_Become_a_Cosmetologist.html) demonstrates this point. Specifically, the article reports the following:

Educational Requirements to Become a Cosmetologist:

Formal training and education is required for this career. Cosmetologists are required to be licensed and in order for a student to qualify for licensure, he or she must attend cosmetology classes. These classes are available at various community colleges, technical schools and cosmetology schools. The length of the programs varies by school, though most last from nine to 24 months.

The bottom-line is that the majority of cosmetology programs researched for this project do not list specific reading or math requirements to enter their training program. Following are 3 programs which vary in their entry requirements.

Seward County Community College (Kansas) – admission requirements into the cosmetology program include "acceptable" performance on COMPASS (or submission of their ACT scores, according to the application to the Cosmetology Program). Specific cutoffs needed on those assessments are not indicated on the application nor in the program requirements description at their website. The program requirements description also includes the following statement: "*The applicant may need to upgrade reading and writing skills prior to being admitted to the program.*"
http://www.sccc.edu/academics/divisions/business/cosmetology/admission.html
In a follow-up conversation with an SCCC representative, they indicated that an ACT of 18 can place a student in a regular English class or a score of 20 or above can place them in college-level algebra.

Butler County Community College (Pennsylvania). offers a Cosmetology Management associate degree program. According to the BC3 website, (http://bc3.edu/pdf/catalog/academic_programs.pdf) "*This program prepares students for careers in the Cosmetology industry. The curriculum enables students to receive credit for their cosmetology license while being offered theoretical management and marketing skills required to successfully own and/or manage a salon. Courses provide skill development in all facets of managing a salon and salesmanship, with emphasis in customer service and communication skills. Typical employment positions are salon owner, salon manager, salon sales consultant, manufacturer sales representative, or distributor's sales representative.*" The Compass assessment is used for placement purposes and practice tests are provided for applicants. "*Neither ACT nor SAT exams are required for admission*" according to their website.
http://academic-catalog.bc3.edu/content.php?catoid=3&navoid=105

Virginia College (13 locations in 7 southern states) – offers a certificate or diploma (depending upon the location) program in Cosmetology. A high school diploma or equivalent is required for entry.
http://www.vc.edu/virginia-college/admissions.cfm

Licensed Practical and Licensed Vocational Nurse

WorkKeys Job Profiling Database: A profile of a practical nursing training program in Pennsylvania was conducted in 2006 to document the skill levels needed to enter the 2-year program. Results indicated Level 3 skills in Applied Mathematics and Level 3 skills in Reading for Information are required to enter the training program. Over the course of the program skills may increase through training (such as from Level 3 Applied Mathematics to Level 4), but Level 3 skills are sufficient for successful performance upon entry.

Lincoln Technical Institute (multiple locations nationwide) – offers a program in practical nursing at its many campuses. Entrance to the program appears to be a high school diploma or its equivalent and entry requisites for reading and/or math skills are not defined in their online materials.
http://www.lincolnedu.com/careers/health-sciences/nursing

<u>Oklahoma State University</u> – offers a program in practical nursing (AAS degree program). Entrance to the program includes receiving a score of 50% (or above) on the *Kaplan Admission Test for Reading and Math,* and the exam can be taken one time only. http://www.osuit.edu/academics/nursing/advisement.php

<u>Pennsylvania College of Technology</u> – offers a certificate program in practical nursing. This 3-semester program is designed to prepare students to sit for the Practical Nursing licensing exam or to pursue an advanced degree in nursing. Recommended high school subjects include: "Three units of science (at least one unit should be Biology with a lab); math every year, including Algebra II; English and social studies every year; courses that help develop good oral and written communication skills."

http://www.pct.edu/catalog/majors/nu.shtml

A follow-up call to a PCT representative indicated that placement tests in math, reading, and writing are required; however, PCT has developed their own tests in each of these three areas (designed by relevant department faculty). The math test includes algebraic concepts, the reading test assesses reading comprehension, and the writing test is an essay. Their website indicate that an applicant may apply coursework from another institution or provide their SAT scores, however, the representative could not indicate a specific minimum SAT score to be used for entry/placement consideration. The website also indicated that a ranking system is used to determine entry which includes consideration of high school GPA and rank, and SAT scores.

Medical Records and Health Information Technicians

<u>Ogden-Weber Applied Technical College</u> (Utah) – offers certificate programs in their Health Technology division which include programs such as Medical Coder (7.5 month program), Medical Office Administration (12.5 months) and Medical Transcription (12 months). Specific entry requirements for math and reading skills are not indicated at their website. http://www.owatc.edu/academics/programs/health-occupations/

An online request for further information regarding skill requirements for incoming students was sent to OWATC and the email sent in response reiterated the fact that reading and math placement tests are used. A final email requesting clarification provided the following information:

> <u>Reading – Accuplacer scores:</u>
> Minimum score of 77 = no course restrictions
> Score ranging from 52-76 = recommendation of support in English and/or Reading
> Scores ranging from 0-51 = required support in English and/or Reading.
>
> <u>Math – Accuplacer scores:</u>
> Minimum score of 65 = no course restrictions
> Score ranging from 31-64 = recommendation of support in Math 1
> Scores ranging from 0-30 = required support in Math 1

McKinley College (Colorado) – offers online Associates degree programs including an AAS degree in Health Information Management (HIM). According to their website, HIM graduates are prepared for careers that include *health information technician, medical biller,* or *medical coding specialist*. Depending upon the student's qualifications and background, program admission requirements include proof of high school diploma or equivalent, proof of 15 hours of other college coursework; successful completion of a standardized verbal test if home-schooled; and the stated requirement to read and write in English. More specific math and reading requirements for entry into the program are not identified.
http://online.mckinleycollege.edu/file.php/1/McKinleyOnlineCatalogFallSchedules.pdf

Arapahoe Community College (Colorado) – according to their website, ACC offers the only accredited Health Information Technician (HIT) course in the state of Colorado (http://www.arapahoe.edu/departments-and-programs/a-z-offerings/health-information-technology-hit). The requirements for entry into the HIT program include "*CPT(Accuplacer) scores of 95 on sentence skills, 83 on reading comprehension and 36 on arithmetic*." And if the required math score is not achieved the student must complete ACC's MAT 030 course.

Industry certification (post-training)
The American Health Information Management Association (AHIMA) – offers certificate programs in multiple health information specialties including Registered Health Information Technician (RHIT). Individuals can qualify to sit for the RHIT exam after successfully completing an accredited associate's degree program in health information management.
http://www.ahima.org/certification/credentials.aspx

Nursing Aides, Orderlies, and Attendants

Kentucky Community and Technical College System (KCTCS) – offers a Nursing Assistant certificate program. Proof of high school diploma or equivalent is required for admission. Specific reading and math requirements for entry are not indicated.
http://legacy.kctcs.edu/catalog/curric/index.cfm?action=s

St. John's Lutheran Ministries (Montana) – provides "*an accredited nursing assistant training program for individuals who are interested in pursuing a career in healthcare. St. John's conducts this training as a community benefit. The program offers 80 hours of training over a two week period. The class consists of both classroom and clinical training and is taught by qualified licensed nurse instructors. All practical training is performed side by side with healthcare professionals at St. John's. After successful completion of the course, students are eligible to test for the Montana State Certification and are also eligible to apply for employment at St. John's*." High school diploma/equivalent does not appear to be required and additional skill requirements for entry (i.e., reading and math) are not indicated, however, background checks (such as criminal history or credit history) may be conducted.
http://www.sjlm.org/cna_training.html

Highland Community College Northeast Kansas Technical Center – offers several certification programs in Allied Health including Certified Nurse Assistant (90 clock hour program), Certified Medication Aide (75 clock hours), and Home Health Aide (20 clock hour program). Admission requirements include a minimum score of 33 on the ASSET reading test (as stated in a call with a representative of the center).
http://www.nektc.net/index.php?option=com_content&view=article&id=56&Itemid=110

HCC (which is a separate entity from the Technical Center) uses WorkKeys tests (Reading for Information and Applied Mathematics) for entry into its degree programs, however, a specific minimum score is not required. Prior to graduating, some programs require that a specific level of skill be demonstrated. See the following link for guidelines:
http://www.nektc.net/index.php?option=com_content&view=article&id=50&Itemid=100

Paralegal and Legal Assistant

Angelina College (Texas) – offers a Legal Assistant associate in applied science degree program to *"prepare students for employment as a legal assistant/paralegal, with the knowledge and skills necessary to perform legal research, drafting, investigation, record-keeping and related administrative functions under the guidance and supervision of a licensed attorney."* Tests required for entry into the program include the THEA (Texas Higher Education Assessment), Accuplacer, or proof of exemption from these exams.
http://www.angelina.edu/technology/legal_assistant_paralegal.html

Cuyamaca Community College (California) – offers a Paralegal Associate in Science degree through their Paralegal Studies program; a program which is approved by the American Bar Association. Entrance requirements into the program include the completion of an English and Math placement exam (not named on their website) or show proof of acceptable scores on an Advanced Placement exam. Their website also includes the following statement: *"Scores from assessments such as ELM, SAT, ACT, and EPT are not used to exempt students or clear prerequisites."* Note: Neither the ELM nor EPT tests are defined at the website, but those acronyms may stand for an entry-level math test (i.e., ELM) and an English placement test (EPT) developed by ETS.
http://www.cuyamaca.edu/paralegal/

Minnesota School of Business – offers a Paralegal associates degree. Entry requirements other than a high school diploma or equivalent are not indicated.
http://www.msbcollege.edu/college-admissions/apply-for-college/

Pharmacy Technicians

Spokane Community College (Washington) – provides a nine-month Pharmacy Technician certificate program, and an associates degree if additional coursework is completed. Proof of high school graduation or equivalent is required, or admission may be granted by the Vice President of Enrollment Services and Student Development. COMPASS tests are used for placement purposes and as described on their website, students may be counseled *"…into classes other than those you may want to take if your scores are not high enough."*
http://www.scc.spokane.edu/?pharm

Central New Mexico Community College – offers a Pharmacy Technician certificate program. Entrance requirements include a high school diploma/equivalent as well as additional requirements for its health training programs such as proof of a recent physical exam, drug and criminal background screenings, and being able to lift a minimum of 50 pounds. (Accommodations may be made for students with disabilities; however, some disabilities may preclude a student from completing program-specific competencies.) Also required is the Accuplacer test or the completion of four pre-requisite courses (ENG 1101, MATH 930, RDG 950, and a chemistry course - CHEM 950 or CHEM 1410).
http://www.cnm.edu/depts/hwps/progs/allied/pharmtech/index.php

Bossier Parish Community College (Louisiana) – offers Pharmacy Technician certificate and associate degree programs. All students must meet entrance test requirements and according to the BPCC website, *"Placement tests are designed to determine levels of proficiency in the basic skills of English, mathematics, and reading. BPCC utilizes the COMPASS Placement Test for all students entering BPCC. Students may submit standardized test scores (i.e. ACT or SAT) to assist in placement in academic courses; however, use of those scores may not preclude a student from taking the placement test.*"
http://bpcc.edu/catalog/current/sciencealliedhealth/pharmacytechnicianprogram.html

Industry Certification
The mission of the Pharmacy Technician Certification Board (PTCB) is to "*develop, maintain, promote, and administer a nationally accredited certification and recertification program for pharmacy technicians to enable the most effective support of pharmacists to advance patient safety.*"
https://www.ptcb.org/AM/Template.cfm?Section=Mission_and_Vision&Template=/CM/HTMLDisplay.cfm&ContentID=3561

As such, they offer certification and recertification exams for this occupation. To be eligible to take the exam, a high school diploma or equivalent are required as well as other criteria (e.g., no felony or drug-related convictions), however, guidelines for specific reading or math skills nor any other skills are indicated. Further, specific guidelines for **any** formal training as a pharmacy technician were not mentioned in the PTCB guidelines.

Plumber

WorkKeys Job Profiling Database: The ACT job profiling database contains 3 training-related profiles for this occupation. All three have been conducted since 2007. Two profiles were conducted on behalf of a union and the third was conducted on behalf of an apprenticeship program. All three profiles were completed in different states. Skill levels required for entry into the apprenticeship training programs are:

Reading for Information: Level 3 (1 profile); Level 4 (1 profile); and Level 5 (1 profile).

Applied Mathematics: Level 4 (2 profiles), and Level 5 (1 profile)

Ilisagvik College (Barrow, Alaska) is a two-year tribal college offering post-secondary academic, vocational and technical education aimed at matching workforce needs. (www.ilisagvik.cc) All students must take the Compass math test as a prerequisite for acceptance into the college. Additional requirements include being "able to read and understand task descriptions, safety manuals, and safety and warning signs." Ilisagvik offers 2 certificate programs in plumbing, both of which include some instruction in mathematics (e.g., Introduction to Mathematics for Plumbing) ftp://webspace.ilisagvik.cc/Catalog%20and%20Schedules/catalog.pdf

Building & Fire Academy (Illinois) offers a 4-year apprenticeship in plumbing (http://www.bfcacademy.com/plumbing/), but does not mention reading or math prerequisites required for entry into the program.

State of Arizona – According to the U.S. Department of Labor website (http://www.careervoyages.gov/apprenticeship-asl-listws.cfm), there are 17 sponsors (i.e., employers) participating in registered apprenticeship training and currently 280 enrollees (i.e., apprentices). Entrance requirements may vary and are not posted at the DOL site. An email was sent to the DOL to request more information regarding skill requirements and the response to that email suggested that "the Plumbers union or their international" be contacted. Email communications from a 36-year union representative included this website (www.ua.org) and the following comment:
"I am a 36 year member of the plumbing, pipefitting, welding, HVAC trades. I feel confident Math is a definite. We do not require prior skill or experience, however it helps. Most, not all, have a math test to take prior to being accepted. Some require algebra, it is a help. Math is something used every day in the trade. Highly important and useful. Basically, the tests are basic math, adding, subtracting, multiplying, dividing whole numbers, fractions, decimals etc. Some portions of the pipefitting trade are more complex with the trig, geometry, angles, etc. One needs to embrace this, using math daily, not just getting into the program or passing the program. But using this daily. A very math oriented business.
Reading is not pushed, but how will you get through the courses if you cannot read? Tests you questioned about are not necessary.(i.e., ACT, SAT). *Most programs do require high school diplomas or GEDs."*

Apprenticeship Contact Information for Arizona
Dennis Cahill
Director, Apprenticeship Services
Arizona Department of Commerce
1700 West Washington, Suite 220
Phoenix, AZ 85007
602/771-1183
602/771-1205 fax
E-Mail: dennisc@azcommerce.com
USDOL/ETA/OA
Colleen Henry
Acting State Director
USDOL/ETA/OA
230 N. 1st Avenue
Suite 510
Phoenix, Arizona 85025
602/514-7007
E-Mail: henry.colleen@dol.gov

Police Patrol Officers

Jefferson State Community College (Alabama) – offers two associate degree programs in law enforcement (i.e., a Criminal Justice Associate in Arts Degree and a Law Enforcement Associate in Applied Science Degree) and a Certificate in Law Enforcement. Admission requirements can include a high school diploma, as well as a minimum ACT score of 16 or a score of 790 on the SAT for some applicants, e.g., those who hold a high school diploma equivalent. Some applicants, e.g., those who attended a non-public high school, may be required to have a passing score on the Alabama Public High School Graduation Exam. Specific reading and math requirements are not indicated for these programs
(http://www.jeffstateonline.com/Catalog/PDFs/0910JSCCCatalog.pdf)

Aims Community College (Colorado) – offers two associate degree programs in Criminal Justice and a Basic Peace Officer Academy Certificate. Entrance requirements as reported by their website (http://www.aims.edu/considering/getStarted-new.htm) include:

- *ACT scores (Reading 17, Sentence Skills 18, Math 19), or*
- *SAT scores (Verbal 430, Math 460), or*
- *Successful completion of college-level math and English courses, or*
- *Taking the Accuplacer computer placement test*

According to their website (http://www.aims.edu/academics/catalog/criminal_justice.pdf) *Degree seeking students who do not assess at the college level in English, math or reading will take the required remedial coursework within the first 30 semester hours after declaring the degree in any deficient area or demonstrate proficiency through Aims*

assessment policy. Remedial courses may be taken concurrently with criminal justice courses as long as the 30 semester hour requirement is met. Contact your advisor or the Aims Assessment Center for additional information of college level assessment.

Asheville-Buncombe Technical Community College (North Carolina) – A-B Tech's Law Enforcement Academy offers 3 related programs; a 19-hour Basic Law Enforcement Training certificate program and two associate degree programs in criminal justice. (http://abtech.edu/ah/lea/default.asp). Entrance requirements for all students at AB Tech include completion of the Accuplacer test or providing either an Accuplacer score of the test taken at another college or their SAT or ACT scores (i.e., *"a score of 500 on both the reading, writing and mathematics portions of the SAT or 21 on ACT English and 20 on ACT Math"*). http://abtech.edu/Student_Services/admissions/placement_testing.asp

Industry certification**:** According to Education-Portal.com, the education requirements to enter police officer certification programs include a high school diploma/equivalent and perhaps a physical examination and/or a personal interview. Other prerequisite skills (such as reading or math) are not mentioned in this article as being typically required. http://education-portal.com/police_officer's_certification.html

Preschool Teachers, except Special Education

Santa Fe Community College (New Mexico) – offers an associate in arts and an associate in applied science degree in Early Childhood Education. Accuplacer is used for placement purposes. Their website also reports that "*Recent ACT or SAT scores may be used to determine placement. If you score a 19 or higher on the ACT English and Reading sections or a 450 or higher on the SAT Critical Reading section, you may enroll in English 111 or any course for which English 109 is a prerequisite. In some cases, you will still be required to write an essay. If you score from 16-23 on the ACT Math section or from 400-590 on the SAT Mathematics section you may enroll in Math 109 (Intermediate Algebra). If you score 24 or higher on the ACT Math section or 600 or higher on the SAT Mathematics section, you may enroll in Math 121 (College Algebra). Scores from tests taken more than three years ago cannot be used for placement purposes. Students may also provide unofficial transcripts showing math and English courses completed within the last three years. These courses can sometimes be used to determine placement.*"
http://sfccnm.edu/testing_center/placement_testing
http://sfccnm.edu/programs/early_childhood_education

Duchess Community College (New York) – offers a degree program (A.A.S) and a certificate program (29 credit hours) in early childhood education. COMPASS/ASSET tests are used for placement purposes; however, more specific information regarding the reading and math requirements for entry is not indicated
http://www.sunydutchess.edu/academics/departments/behavioralsciences/behavioralscien cesprograms/earlychildhood.html

Gadsden State Community College (Alabama) – offers a degree program (A.A.S) and a certificate program in child development. Admission requirements for degree programs can include a passing score on the Alabama Public High School Graduation Exam and a minimum score of 16 on the ACT or 790 on the SAT (more specific information on these requirements, such as which tests, was not provided). Admission requirements for non-degree programs include the COMPASS test.
http://catalog.gadsdenstate.edu/content.php?catoid=1&navoid=33#admi_requ_proc

Industry certification:
According to Education-Portal.com, the Education Prerequisites for entry into preschool training programs can be summarized as follows:
"*Most certificate programs in preschool teaching and child developments only require that applicants have completed a high school diploma in order to enroll. High school grades and transcripts are often taken into consideration*."   http://education-portal.com/preschool_teacher_certification.html

Radiologic Technologists

Anthem Institute (New Jersey) – offers an X-Ray Technician diploma and associate of applied science degree programs.   Entrance requirements include a passing score on their Entrance Assessment Test (unnamed on their website).
http://www.anthem.edu/admissions/index.php

Community College of Rhode Island – offers a 24-month associates degree day program in Radiography Technology which includes classroom instruction and clinical practice. Entrance requirements include Accuplacer testing (and receiving a score of 80 or above or completing ENGL 0890: Critical Reading, with a grade of B- or better); completing MATH 1700: Algebra for Technology with a grade of C or better; completing ENGL 1010: Composition I with a grade of C or better; completing XRAY 1000: Introduction to Radiography with a grade of C or better; completing Preadmission Degree Evaluation; and completing and submitting Performance-Based Health Sciences Application Form.
http://ccri.edu/dean-hrs/word-docs/job_opportunities_for_ccri_files/guidelines_2009-2011/xrayadmiss.doc

Delaware Technical and Community College – offers a degree program in radiologic technology. Admission requirements include Accuplacer testing (in Writing, Reading, and Math) and submission of ACT or SAT scores.
http://www.dtcc.edu/admissions/index.html

Real Estate Sales Agents

Lane Community College (Oregon) – offers pre-license courses in real estate through their continuing education (non-credit) program. Two courses of study are available: Real Estate Broker (150 classroom hours) and Real Estate Property Manager (60 hours). For-credit courses requiring the completion of one or more placement exams (e.g., Accuplacer tests in Reading Comprehension, Sentence Skills, Arithmetic or Algebra

Placement Test). **Requirements for entry are not indicated for the non-credit courses.** The only requirements mentioned on their website relate to the process of obtaining a license **after** courses are completed, i.e., to provide an official Lane transcript with the license application and to submit their fingerprints and any criminal offender information.
http://www.lanecc.edu/ce/RealEstate/

Kishwaukee Community College (Illinois) – offers *Real Estate Saleperson and Brokerage* courses through their continuing education program. (For example, the college offers a Real Estate Transactions course for two hours each Wednesday evening from February to April 2010). The college uses the COMPASS test for placement into its credit courses (no information regarding scores is provided) while no requirements are indicated for their non-credit courses.
https://www.kishwaukeecollege.edu/business_community/continuing_education/register.php?page=283

Sinclair Community College (Ohio) – offers certificate and degree programs in real estate. Sinclair offers two certificate programs: Real Estate Sales Associate (12 hours) and a Real Estate Broker Certificate (29 hours), the latter of which is for students who already have the equivalent of a two-year degree and meet the experience requirement to sit for the state brokers licensing exam, but lack the necessary coursework. Sinclair's Real Estate/Property Management degree program (97 hours) confers an AAS degree.
http://www.sinclair.edu/academics/bps/departments/res/?searchTerm=real%20estate

Incoming students are required to take the Accuplacer placement test, but can be exempted from the test if their ACT scores are at or above the following: Math >= 22, Reading >= 21, Writing >= 18.
http://www.sinclair.edu/services/enroll/howtobegin/degree/

Dakota County Technical College (Minnesota) – offers a diploma program (Real Estate Property Management), two certificate programs, and an AAS (Real Estate Property Management) program in real estate. Potential students should possess a high school diploma/equivalent or received a qualifying score on the Accuplacer test.
http://www.dctc.edu/future-students/admissions.cfm

Registered Nurses

Western Wyoming Community College - According to their website, "*Western Wyoming Community College offers a three-year program (7 semesters) leading to an Associate Degree in Nursing with a practical nursing spin-off option. Successful completion of the program allows the graduate to take the National Council Licensure examination for registered nursing (NCLEX-RN).*" http://www.wwcc.wy.edu/academics/nursing/

Students must meet the school's general requirements as well as the requirements of the nursing program; therefore, applicants must take the COMPASS test for placement purposes. Neither the ACT nor the SAT are required for admission, however, students

with qualifying scores on the ACT or SAT (which are not defined on their website) may be exempted from the placement test.
http://admissions.wwcc.wy.edu/admissions/apply

Requirements for entry into the nursing program include (a) completion of the TEAS® entrance test, (b) 2.5 GPA (4.0 scale) in prerequisite courses, and (c) completed general education courses. According to their website, "*The Test of Essential Academic Skills (TEAS) measures basic essential skills in the academic content area domains of reading, mathematics, science, and English/language usage.*"
http://www.wwcc.wy.edu/academics/nursing/criteria.htm

Alabama Southern – offers an associates degree in nursing (ASN). According to their website, among other admissions qualifications, students must be *eligible for: (a) English 101 and Math 116 as determined by college policy, and (b) BIO 201 during the first term of nursing courses*.
http://www.ascc.edu/?DivisionID=639&DepartmentID=829&ToggleSideNav=ShowAll

Their website includes the following description of their Placement requirements for applicants:
The Asset/ Compass Placement Test is required of all new degree seeking or vocational/occupational students and any transfer student who has not had an English or mathematics course and wishes to take one. Exceptions: If a student has had the ACT and has scored 20 or above in English and 20 or above in math, the student is exempt from taking the Asset/Compass Placement Test. However the 20 in Math does not place students in transfer math coursework.
http://www.ascc.edu/?PN=Pages&SubP=Level1Page&L=1&DivisionID=640&PageID=909&ToggleSideNav=ShowAll

Arkansas Northeastern College – offers an associate in applied science degree in nursing. According to their website, in addition to providing proof of high school diploma/equivalent and maintaining a minimum 2.5 GPA in their coursework, successful applicants to the nursing program provide recent ACT or ASSET/COMPASS scores (taken within the last four years) which meet the minimum skill level in reading (ACT 19/ASSET 45) and score at least 100 on the NLNAC Pre-Admission Test for Registered Nurse (PAX-RN).
http://www.anc.edu/allied_health/pdf/ADN/admission_requirements_traditional.pdf