

## Results of POCAT, Sp '18

**Note:** Three versions of the test were used in Sp'18. Although most questions were common to the different versions, a few were tweaked from one version to the next to allow us to pin down the specific difficulties students might be having related to the particular topics. There were 24 questions in each version of the test, many of which were based on the required courses; the ones that were based on electives had an option "I have not taken the course" that students were asked to pick if they had not taken the course. In addition, there were two questions about the test, the first about the length of the test ["too long", "too short", or "just right" being answers (a), (b), (c) respectively], the second about the difficulty of the test ["too difficult", "too easy", or "just right" being answers (a), (b), (c) respectively]. Most students felt the test was the right length and difficulty; the answers to these questions are not included in the tables below.

Students whose two-letter code starts with "B", "C", "D" or "E" took version 1 (V1) of the test; those whose code starts with "F", "G", "H" or "I" took version 2 (V2) of the test; those whose code starts with "J" or "K" took version 3 (V3) of the test. The students who took V1 or V2 were all BS-CSE majors; those who took V3 were all BS-CIS majors; but, given that the CS portion of the two programs are (nearly) identical, this fact should not make a difference. Below, we refer to the groups of students who took V1, V2, V3, respectively, as Group 1, Group 2 and Group 3 (also as G1, G2, G3).

One change from previous POCATs is that the results of all groups is reported in this common page rather than in separate pages as was done previously. BA-CIS students also took the POCAT. Their results are and will continue to be reported separately since the CS portion of their program is rather different from that of the BS-CSE and BS-CIS students and the test, correspondingly, quite different from the one for BS-CSE and BS-CIS students. One other change is that the comments that some students wrote in their POCATs are included in this page near the end; comments that duplicate what is contained in the other comments are not included.

The results, for each group, are reported in three tables below. (The *print version* includes only the comments and the second of the three tables since the print version is mainly used during the discussion in the Undergrad Studies Comm. and that discussion is based mainly on the information in the second table and the comments.)

The first table (for each group) is organized by student code. The first column lists the code of each student. Following this are columns, one for each question on the test; the answer picked by each student for that question is listed; the answer is in **boldface** if it is correct. The last column is a summary column that specifies the percentage of questions that each student answered correctly.

The second table (again, for each group) is organized by question. For each question, the first row lists the course(s) most closely related to the question. The second row lists the program outcomes that the question corresponds to; the full set of program outcomes is available [elsewhere](#). The next several rows list, for each possible answer for each question, the number of students who picked the particular answer. For each question, the number of students who picked the right answer is in **boldface**; note that for some questions, because of ambiguity in the question or due to other reasons, more than one answer may be considered correct and, in this case, each of the corresponding numbers is in boldface. Note also that in the case of some questions, one of the possible "answers" that a student could choose was along the lines of "I have not taken the course and have no idea". Students who picked such an answer were not counted in computing these percentages; the number of students who picked such an answer is listed in parentheses.

The third table lists, for each question, the percentage of students who picked the correct answer for that question; or, in the case of questions that have more than one correct answer, picked any of the correct answers. The next row lists the percentage of students *expected* to answer this question correctly; this is a figure provided by the faculty member who designed the question, based on his or her experience with the course(s) in question. In those cases where the percentage of students answering a question is substantially different from the expected figure, especially if the problem seems to recur for similar questions over a number of offerings of POCAT, coordinator(s)

for the course(s) and the faculty who regularly teach the course(s) will be expected to look into the problem and make any needed changes. The Undergraduate Studies Committee and the Curriculum Committee will coordinate these efforts.

In addition, the second table includes *discrimination analysis* of the results. The discrimination value of a question's response is, roughly, the fraction of "top" students that select it, minus the fraction of "bottom" students that select it. More precisely, for each answer for a question:

$$\text{Discrimination} = X_t/N_t - X_b/N_b$$

where  $X_t$  ( $X_b$ ) is the number of students from the top (bottom) quartile who selected that answer, and  $N_t$  ( $N_b$ ) is the number of students in the top (bottom) quartile who answered the question; so  $N_t/N_b$  can be different for different questions. In general, a good question should have a correct answer with a large positive discrimination value; and all other answers (i.e., distractors) with negative discrimination values.

In the table, in order to focus on answers that either violate these requirements or meet them especially well, if the discrimination value for a correct answer is below +0.0 or above +0.5, it appears next to the number of students who chose that answer in square brackets or in parentheses respectively; if the discrimination value for a distractor is above 0.0 or below -0.2, the value appears in square brackets or in parentheses respectively. (So values in square brackets may indicate problems; values in parentheses may indicate a good question/distractor.) If the value for a correct answer is near or below 0, that suggests, depending on how many students chose the answer, either it is too simple a question or it is one where even good students are having trouble. In the former case, the question may need to be revised; in the latter, the course may need to be revised. If the value is above 0.5, depending on how many students chose the right answer, it may just be a good question or the topic may be getting across only to the best students (in which case the course needs to be revised). Similar explanations may be given in the case of distractors.

The third table (again, for each group) is organized by program outcome. For each outcome, the first row lists the numbers of the questions related to the outcome. The next row lists, for each outcome, the percentage of students who answered the questions related to the outcome, averaged over those questions. There is no "expected" row in this table. The Undergraduate Studies Committee will consider any corrective actions that may be needed based on the achievement figures in this table.

Table 2: Summary Results( for G1 )																								
Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
<b>a</b>	12	<b>72</b> <b>(0.6)</b>	8	0	(32)	<b>67</b>	2	(16)	15	19	2	<b>47</b>	(64)	3	(10)	3	<b>43</b>	<sup>24</sup> <b>(-0.4)</b>	(13)	(14)	(51)	(50)	(63)	(58)
<b>b</b>	<sup>24</sup> [0.1]	0	8	12	2	1	<b>90</b>	10	<b>44</b>	3	17	5	2	1	29	15	4	5	2	16	0	3	0	1
<b>c</b>	14	11	<b>40</b>	<b>60</b>	<b>49</b>	1	0	3	21	<b>72</b>	<b>75</b>	12	<b>17</b>	3	18	24	12	<b>59</b>	13	<b>39</b>	2	<sup>7</sup> [0.1]	<b>22</b>	7
<b>d</b>	<b>39</b>	4	43	13	3	4	3	3	12	3	3	5	2	<b>85</b>	<sup>5</sup> [0.1]	16	<sup>36</sup> <b>(-0.4)</b>	6	2	1	0	1	5	<b>31</b>
<b>e</b>	1	6	1	1	9	17	0	<b>64</b>	8	2	3	12	7	7	<b>12</b>	1	0	2	<b>65</b>	7	<b>43</b>	<b>36</b> <b>[-0.1]</b>	8	0
<b>f</b>	10	7	0	8	5	2	5	4		1		11	1	1	15	<b>38</b>	5	4	3	11	3	3	1	0
<b>g</b>		0		6		8						8	7		11	1			2	12	0	0	1	0
<b>h</b>																2					1	0		3
<b>i</b>																								
% Correct	39	72	40	60	72	67	90	76	44	72	75	47	47	85	13	38	43	59	74	45	87	72	59	73
% Expected	60	80	50	70	60	70	80	60	60	60	80	60	80	80	50	80	80	60	70	70	70	70	60	70

Table 2: Summary Results( for G2 )																									
Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	
<b>a</b>	5	<b>39</b>	3	0	(20)	<b>37</b>	2	(17)	6	17	6	<b>31</b>	(37)	3	(11)	4	<b>19</b>	9	(13)	(14)	(33)	(31)	(50)	(39)	
<b>b</b>	16	0	7	0	0	2	<b>60</b>	7	<b>38</b>	0	11	1	4	2	12	11	36	0	2	<sup>10</sup> <b>(-0.4)</b>	0	3	0	0	
<b>c</b>	14	19	<b>32</b>	<b>62</b>	<b>39</b>	1	0	3	14	<b>48</b> <b>(0.6)</b>	<b>49</b>	9	<b>15</b>	4	9	9	2	<b>36</b>	6	<b>27</b>	0	7	<b>14</b> <b>(0.6)</b>	<sup>8</sup> [0.3]	
<b>d</b>	<b>27</b> <b>(0.6)</b>	6	27	0	<sup>2</sup> [0.1]	4	1	1	12	7	5	2	3	<b>58</b>	<sup>2</sup> [0.1]	<sup>7</sup> [0.1]	14	0	1	1	0	1	3	<b>18</b>	
<b>e</b>	1	3	3	7	2	19	0	<b>42</b>	2	0	1	<sup>17</sup> <b>(-0.4)</b>	8	5	<b>16</b>	1	0	25	<b>39</b>	<sup>10</sup> [0.2]	<b>30</b>	<b>23</b>	3	1	
<b>f</b>	9	3	0	2	9	4	9	2		0		6	0	0	15	<b>36</b> <b>(0.6)</b>	1	2	6	4	8	<sup>7</sup> [0.2]	1	0	
<b>g</b>		2		1		5						6	5		7	0			5	<sup>6</sup> [0.1]	0	0	1	2	
<b>h</b>																4						1	0		4

<b>i</b>																								
% Correct	37	54	44	86	75	51	83	76	52	66	68	43	42	80	26	50	26	50	66	46	76	56	63	54
% Expected	60	80	50	70	60	70	80	60	60	60	80	60	80	80	50	80	80	60	70	70	70	70	60	70

Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
<b>a</b>	2	<b>23</b> (0.7)	3	0	(9)	<b>27</b> (0.6)	1	(7)	<b>32</b>	5	1 [0.1]	<b>9</b>	(20)	4	(7)	6	<b>11</b>	4	(3)	(4)	(19)	(23)	(20)	(19)
<b>b</b>	11	0	3	0	1	1 [0.1]	<b>28</b>	4	0	1	6	5	1	2	3 [0.2]	4	15 (-0.4)	0	0	2	0	0	0	0
<b>c</b>	5 [0.1]	3	<b>18</b> (0.7)	<b>27</b>	<b>17</b>	0	0	2	2	<b>27</b>	<b>27</b>	4	<b>7</b> (0.8)	1	1	6	1 [0.1]	<b>14</b> (0.6)	8	<b>19</b>	0	1	<b>10</b>	2
<b>d</b>	<b>11</b>	2	9	0	1	0	2	1	1	2	0	0	3	<b>26</b> (0.7)	0	5 [0.1]	6	0	1	1	0	0	2	<b>12</b>
<b>e</b>	0	3	1	6 [0.1]	2	6 (-0.6)	0	<b>20</b>	0	0	1	12	1	1	<b>7</b> (0.7)	3 [0.1]	0	11	<b>21</b>	2	<b>13</b>	<b>10</b>	1	1
<b>f</b>	6	0	1	2	5	1	4 [0.1]	1		0		5 [0.2]	0	1	9	<b>9</b>	2	6	1	2 [0.1]	3 (-0.5)	1	2	0
<b>g</b>		4		0		0						0	3 (-0.4)		8 (-0.4)	2			1	5 (-0.4)	0	0	0	1
<b>h</b>																					0	0		0
<b>i</b>																								
% Correct	31	65	51	77	65	77	80	71	91	77	77	25	46	74	25	25	31	40	65	61	81	83	66	75
% Expected	60	80	50	70	60	70	80	60	60	60	80	60	80	80	50	80	80	60	70	70	70	70	60	70

## Student comments

- Comments
- When you write the course number, put the name with it because some classes I only knew by name not by number; several more comments similar to that.
- Maybe too short, no questions were asked about some core classes like 3461 [which is not a core class?].
- [After answering "too difficult":] Maybe more required. core course questions.
- Hashing is a great concept and should be talked about more;  
Ethics was my favorite class :) [happy-face or sarcasm?];  
Networking is a terrible class ... Read the reviews online! Save the future kids and restructure; but this comment was after a question about 3421