

1-23-2020

## In-Class Hard-Copy Worksheets

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### Recommended Citation

Jorgensen, Ed, "In-Class Hard-Copy Worksheets" (2020). *UNLV Best Teaching Practices Expo*. 102.  
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# In-Class Hard-Copy Worksheets

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Best Teaching Practices Expo 2020

## The practice and the need it addresses

### Hardcopy Worksheets

This teaching practice is the use of hard-copy in-class worksheets for **guided note taking** and simple **practice exercises** primarily targeted for lower division classes. The worksheets are distributed at the beginning of class and completed in hard-copy requiring the student to actually write an answer which *helps reinforce the topic or concept*.

Answers are provided to the students (either as part of the lecture or after a brief discussion of the topic). As such, the worksheets help **highlight key topics** and familiarize the students with how questions on the topic are asked and how they should be answered. Depending on the topic, most worksheets include questions or simple exercises which are completed in class.

Exercises are typically worked at the end of class and **students are allowed and encouraged to work together** and help each other as needed to ensure they understand the problem and the approach used to obtain the solution. This **encourages peer-to-peer interaction** especially when a student is unclear regarding how to approach the problem.

This **addresses a common issue** in technical classes where a **student feels they understand the material yet lack the ability to applying such knowledge to practical problems**.

The worksheets **provide key additional study material for tests**.

As the semester progresses, **students are able to gain experience and build confidence** applying skills to practical problems prior to test situations.

Additionally, the worksheets provide an **informal attendance mechanism** allowing attendance to be tracked and encouraged in a more meaningful manner.

## Evidence this practice benefits UNLV Students

### Evidence – From Students

The in-class worksheets have been used in a series of CS classes over the last several semesters. Over 90% of the students surveyed (~91%) feel their **understanding of the material was improved and that their final grade was higher** as a result of the worksheets.

Other CS instructors using the worksheets consider the worksheets to be valuable and have implemented this practice in other lower division courses. Students often request such worksheets as they recognize the benefits.

## Resources and where to find them

### Resources

**Minimal or no additional external resources are required**. A key reference would include the class text, which typically has such questions, exercises and/or examples. However, the primary resource is the instructors experience with key topics, concepts, or problems that should be reinforced or practiced which would be placed on the applicable worksheets and ultimately help student performance.

## How other UNLV teachers might adopt this practice

### Worksheet Development

The initial development of the worksheets is a significant overhead for the instructor. Once developed, the same worksheets can be used for future semesters with minimal changes (assuming no syllabus changes). If the worksheets are created to cover syllabus based topics, they can be used by different instructors for the same class.

While the worksheets could be placed on-line, the **key value is obtained by students working problems in-class with assistance from the instructor and other students**.

CS 218 – Worksheet #3

Name: \_\_\_\_\_ Section: \_\_\_\_\_

1) What is the hex, double-word size, two's complement representation of  $-11_{10}$ ? (2 pts)

2) What is the decimal representation of  $\text{FFFFFFD}_{16}$  (hex, double-word size, two's complement)? (2 pts)

3) What is the IEEE 32-bit floating point representation of  $11.125_{10}$ ? Show final answer in *hex*. Must show all work for credit. (4 pts)

Example Worksheet (partial) with Questions

CS 218 - Worksheet #4

Name: \_\_\_\_\_ Section: \_\_\_\_\_

1) Given the code fragment:

```
lst    dd    2, 3, 5, 7, 9
mov    rsi, 4
mov    eax, 1
mov    rcx, 2
lp:    add    eax, dword [lst+rsi]
        add    rsi, 4
        loop lp
        mov    ebx, dword [lst]
```

What would be in the **eax**, **ebx**, **rcx**, and **rsi** registers after execution (in hex)?  
*Note*, pay close attention to the register sizes (32-bit vs 64-bit). (1 pt each)

Example Worksheet (partial) with Exercise