PSYC 441
COGNITIVE PSYCHOLOGY II

STUDY GUIDE
For Undergraduates Level 400

2016/17 – 2017/2018 Academic Year

Dr. Benjamin Amponsah, Department of Psychology,
College of Humanities, University of Ghana
Acknowledgements

Many thanks to colleagues at the Department of Psychology who assisted me in diverse ways in the development and editing of this study guide and the development of the course slides and presentation of the course module on the University of Ghana Sakai Learning Management System.
CONTENTS

COURSE DESCRIPTION ............................................................................................................. 5

1. COURSE WEBSITE ........................................................................................................... 5

2. INSTRUCTORS .................................................................................................................. 5

3. Support Contact Information .......................................................................................... 5

5. PROBLEM-BASED LEARNING APPROACH .................................................................... 6

7. LEARNING OUTCOMES ..................................................................................................... 7

7.1 KNOWLEDGE .................................................................................................................. 7
7.2 SKILLS .................................................................................................................................. 7
7.3 COMPETENCE .................................................................................................................. 7

8. ASSESSMENT ...................................................................................................................... 8

8.1 Individual Assignments ................................................................................................. 8

9. RECOMMENDED TEXT .................................................................................................... 8

DETAILED CLASS SCHEDULE ............................................................................................. 9

10. SCHEDULE OF SESSIONS .............................................................................................. 9

11. SESSION 1 – BRIEF HISTORY OF COGNITIVE PSYCHOLOGY ...................................... (9

11.1 Overview ....................................................................................................................... 9
11.2 Goals and Objectives ..................................................................................................... 9
11.3 Activities and Assignments .......................................................................................... 9

12. SESSION 2 – EMERGENCE OF CONTEMPORARY COGNITIVE PSYCHOLOGY ....... 10

12.1 Overview ....................................................................................................................... 10
12.2 Goals and Objectives ..................................................................................................... 10
12.3 Activities and Assignments .......................................................................................... 10

13. SESSION 3 – PARADIGMS AND RESEARCH METHODS ............................................. 10

13.1 Overview ....................................................................................................................... 10
13.2 Goals and Objectives ..................................................................................................... 10
13.3 Activities and Assignments .......................................................................................... 10
14. SESSION 4 – BACKGROUND OF OBJECT RECOGNITION

14.1 Overview
14.2 Goals and Objectives
14.3 Activities and Assignments

15. SESSION 5 – THEORIES OF PERCEPTION

15.1 Overview
15.2 Goals and Objectives
15.3 Activities and Assignments

16. SESSION 6 – PSYCHOPHYSICS

16.1 Overview
16.2 Goals and Objectives
16.3 Activities and Assignments

17. SESSION 7 – DETECTION AND DECISION MAKING

17.1 Overview
17.2 Goals and Objectives
17.3 Activities and Assignments

18. SESSION 8 – ATTENTION

18.1 Overview
18.2 Goals and Objectives
18.3 Activities and Assignments

19. SESSION 9 – PRACTICE EFFECTS ON ATTENTION

19.1 Overview
19.2 Goals and Objectives
19.3 Activities and Assignments

20. SESSION 10 – THINKING AND PROBLEM SOLVING

20.1 Overview
20.2 Goals and Objectives
20.3 Activities and Assignments

21. SESSION 11 – OVERCOMING PROBLEM SOLVING OBSTACLES

21.1 Overview
21.2 Goals and Objectives
21.3 Activities and Assignments

22. SESSION 12 – HISTORY AND SUBJECT MATTER OF IMAGERY
23. SESSION 13 – EMPIRICAL INVESTIGATIONS OF IMAGERY

APPENDIX A
COURSE DESCRIPTION

1. COURSE WEBSITE
   http://sakai.ug.edu.gh/XXXXXXXXXXX

2. INSTRUCTOR
   Dr. Benjamin Amponsah
   Dept. of Psychology
   University of Ghana
   P. O. Box LG84
   Legon, Accra

   Email: bamponsah@ug.edu.gh
   Office: Folson's Block Rm 4,
   Department of Psychology

   Dr. Benjamin Amponsah is the corresponding instructor.

3. Support Contact Information
   School of Continuing and Distance Education
   University of Ghana
   P. O. Box XXXXXXX
   Legon, Accra

   Phone: XXXXXXXXXX
   Email: XXXXXXXXXXXXX
4. OVERVIEW

Cognitive Psychology II covers topical and contemporary issues in Cognition that bears on higher-order processing. The history of mental processes in psychology is basically the history of Cognitive psychology, which has a long but a short history. Coming to limelight in the late 1950s and the 1960s, Cognitive Psychology combines theory and data in the modern, scientific study of mind. It is an exciting study that has extended greatly our knowledge of how the mind works, and it does so importantly, through careful experimentation and observation rather than purely philosophical speculation. Students studying the course have different reactions to the field of cognitive psychology. While some find it exciting, others find it technical and abstract, filled with complicated models and theories far removed from everyday life.

Cognitive psychology is an area in psychology that raises questions about how the mind works – how we perceive people, events, how and what we remember, how we mentally organize information and how we call on our mental resources to make important decisions. The course then is intended for use with undergraduate cognitive psychology students having in mind that such students in psychology may have taken courses in Research methods, Cognitive Psychology I or Psychology of Learning at Level 300.

Topics that would be covered in this course include history of the discipline as well as factors that led to the emergence of interest in the study of cognition after a long “suppression” by the behaviorist school of psychology. Other topics that would be covered in the course include perception, measurement of sensory capacities, attention, thinking and problem solving and visual imagery.

The course is rich with a lot of practical examples and research findings from several renowned cognitive psychologists which I acknowledge. I hope you will enjoy the course because it is intended to help you understand some of the higher-order processes and everyday life experiences.

5. PROBLEM-BASED LEARNING APPROACH

Problem-based learning (PBL) is a student-centered pedagogy in which students learn about a subject through the experience of problem solving. The goals of PBL are to help the students develop flexible knowledge, effective problem solving skills, self-directed learning, effective collaboration skills and intrinsic motivation. This course will use a problem-based learning approach.

Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem. The role of the instructor/lecturer/tutor is to facilitate learning by supporting, guiding, and monitoring the learning process. The tutor will help build students’ confidence to take on the problem, and encourage the students, while also stretching their understanding.

6. COURSE FORMAT

The course content will be delivered online through the SAKAI Learning Management System (Sakai LMS). The Sakai LMS will be used to deliver

• Video Lecture Sessions
• Session Slides
• Session Reading Materials
Announcements will be posted to the course website and/email accordingly. It is the responsibility of students to check on announcements made in class, on the Course Website, and through email.

7. LEARNING OUTCOMES

The learning outcomes for the course are outlined along three strands: knowledge, skills and outcomes.

7.1 KNOWLEDGE

Students must have knowledge on

1. General orientation of the course covering historical antecedents of the study of cognition and its current status as a discipline in psychology.
2. The basic processes in perception and recognition of objects.
3. How we measure our sensory capacities and make decisions in psychology.
4. The basic processes in attention - which is concerned with how we manage to mentally focus on some things in the environment and to tune out others.
5. The subject of thinking and problem solving.
6. Visual imagery, which involves the role images play in human memory.

7.2 SKILLS

Students must be able to

1. Apply the knowledge in cognitive psychology in understanding of everyday practical problems.
2. Design simple experiments in the field of cognition.
3. Develop critical thinking skills in terms of thinking and reasoning.
4. Apply the knowledge to improve learning strategies and to evaluate information.
5. To understand the link between neural and organic structures and behaviour.
6. To understand the functions of the human sensory modalities – their capacities and limitations.
7. Appreciate the nature of attention – selective attention, development of automaticity and divided attention.
8. Evaluate researches in general and human mental functioning as an area for research.

7.3 COMPETENCE

Students should in the future be able to

1. Initiate and lead the conduct of research in human cognition.
2. Able to explain and advice on problem solving skills.
3. Apply some of the findings in cognitive psychology to improve acquisition of information, storage and retrieval of such information.
4. Provide general critical thinking skills in everyday life situations.
8. ASSESSMENT

The assessment for this course has been designed to help all students to maximize their individual and group/team learning opportunities. A summary of the assessment tasks is provided below.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>FORM OF ASSESSMENT</th>
<th>DELIVERED</th>
<th>MARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Assignments</td>
<td>Multiple Choice Questions (MCQs)</td>
<td>Alongside Sessions</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Short Essays</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Term Paper/Presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Assignments</td>
<td>Term Project/Paper/Presentation</td>
<td>Beginning of Semester</td>
<td>15%</td>
</tr>
<tr>
<td>Written Examination</td>
<td>Semester Examination</td>
<td>End of semester</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

8.1 Individual Assignments

Individual assignments will be provided at end of sessions. These assignments may be in the form of Multiple Choice Questions (MCQs), Short Essays and/or a Term paper or presentation. Deadlines will be provided for each assignment with respect to scheduling of the sessions.

9. RECOMMENDED TEXT

Akotia, C. S. & Mate-Kole, C. C. (2014, Eds.). Contemporary Psychology: Readings from Ghana (Chapter 4, p. 53 - 69)
DETAILED CLASS SCHEDULE

The course is organized into 13 SESSIONS along the following lines: (1) Overview; (2) Goals and Objectives; and (3) Activities and Assignments.

10. SCHEDULE OF SESSIONS

<table>
<thead>
<tr>
<th>Week</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Session 1</td>
</tr>
<tr>
<td>2</td>
<td>Session 2</td>
</tr>
<tr>
<td>3</td>
<td>Session 3</td>
</tr>
<tr>
<td>4</td>
<td>Session 4</td>
</tr>
<tr>
<td>5</td>
<td>Session 5</td>
</tr>
<tr>
<td>6</td>
<td>Session 6</td>
</tr>
<tr>
<td>7</td>
<td>Session 7</td>
</tr>
<tr>
<td>8</td>
<td>Session 8</td>
</tr>
<tr>
<td>9</td>
<td>Session 9</td>
</tr>
<tr>
<td>10</td>
<td>Session 10</td>
</tr>
<tr>
<td>11</td>
<td>Session 11</td>
</tr>
<tr>
<td>12</td>
<td>Session 12</td>
</tr>
<tr>
<td>13</td>
<td>Session 13</td>
</tr>
</tbody>
</table>

11. SESSION 1 – BRIEF HISTORY OF COGNITIVE PSYCHOLOGY

11.1 Overview

This section introduces you to the historical antecedents of the field of Cognitive Psychology which provides you with a useful framework to enable you to follow contemporary issues in the course. Moving through historical roots, the field emerged first, out of philosophy and through the mainstream psychology in terms of the development of its schools.

11.2 Goals and Objectives

At the end of the session, the student will be able to

1. Describe the roots of cognitive psychology from the classical Greek philosophers
2. Describe how the field was influenced by the developments in the nineteenth and twentieth century psychology
3. Mention the fathers of the field
4. Show how contemporary researchers emerged and the future of the discipline

11.3 Activities and Assignments

This week, complete the following tasks:

1. Log on to the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Visit the Chat Room and introduce yourself while discussing expectations for the course
3. Read Chapter 1 ****
4. Review Lecture Slides: Session 1 – Brief history of Cognitive Psychology
5. Visit the Chat Room, introduce yourself and discuss expectations for the course
6. Complete the Individual Assignment for Session 1

12. SESSION 2 – EMERGENCE OF CONTEMPORARY COGNITIVE PSYCHOLOGY

12.1 Overview
This section aims at helping you to appreciate the events leading to the birth of cognitive psychology. From the early 1950s, psychologists began to reject the behaviorist emphasis on observable stimuli and the responses. Their responses were captured as cognitive revolution. By going through such historical events, you will be able to appreciate the subject matter and the contemporary status of the discipline.

12.2 Goals and Objectives
At the end of the session, the student will
1. Explain the events leading to the birth of cognitive psychology
2. Explain the cognitive revolution
3. Appreciate the subject matter of the discipline

12.3 Activities and Assignments
This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site
2. Review Lecture Slides: Session 2
3. Visit the Chat Room and discuss the Forum question for Session 2
4. Complete the Individual Assignment for Session 2

13. SESSION 3 – PARADIGMS AND RESEARCH METHODS

13.1 Overview
This session will focus on the various frameworks used by cognitive psychologists in planning and executing their research. These are referred to as paradigms and we shall discuss four of such paradigms. We shall also discuss the major methodological approaches to the study of cognitive psychology. The choice of a particular method is determined largely by the logic of the method in answering the research questions and to a smaller extent, the type of data generated.

13.2 Goals and Objectives
At the end of the session, the student will be able to
1. Discuss the paradigms used in the study of cognition
2. Compare the paradigms in terms of their strengths and weaknesses
3. Discuss the major methodological approaches to cognitive psychology
4. Discuss some of the strengths and weaknesses of the methods.

13.3 Activities and Assignments
This week, complete the following tasks:
1. Log on to the UG Sakai LMS course site
3. Visit the Chat Room and discuss the Forum question for Session 3
4. Complete the Individual Assignment for Session 3
14. SESSION 4 – BACKGROUND OF OBJECT RECOGNITION

14.1 Overview
The section aims at helping you to understand the background of how we come to recognize objects and patterns. We shall look at the background of object recognition and examine two important processes of pattern recognition (bottom-up and top-down) processes.

14.2 Goals and Objectives
At the end of the session, the student will
1. Understand the background of object recognition.
2. Be able to explain the process of pattern recognition – Bottom-up process
3. Be able to explain the process of pattern recognition – Top-down process
4. Understand some theories of perception

14.3 Activities and Assignments
This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 4 – Background of Object Recognition
4. Visit the Chat Room and discuss the Forum question for Session 4
5. Complete the Individual Assignment for Session 4

15. SESSION 5 – THEORIES OF PERCEPTION

15.1 Overview
In this section, we will try to answer whether we see reality or what we see is guided by expectations. We will be studying two important theories of visual perception such as Gibson’s theory of Direct Perception and Gregory’s Constructivist theory of perception. A third theory of historical importance that will also be looked at is the Gestalt theory.

15.2 Goals and Objectives
At the end of the session, the student will be able to
1. Explain the theory of direct perception
2. Describe the constructivist theory of perception
3. Compare the two theories
4. Discuss the contribution of Gestalt psychologists to the understanding of visual perception

15.3 Activities and Assignments
This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 5 – Theories of Perception
3. Read Chapter 5***
4. Visit the Chat Room and discuss the Forum question for Session 5
5. Complete the Individual Assignment for Session 5
16. SESSION 6 – PSYCHOPHYSICS

16.1 Overview

In this section, we are going to look at measurement of sensory capacities or how we measure and make decisions in psychology. We look at how we sense the world or detect stimuli and how these are measured. We shall look at the earlier attempts at measurement in the area of psychophysics. This constitutes the first part of psychological measurements.

16.2 Goals and Objectives

At the end of the session, the student will be able to

1. Describe the concepts of sensation and perception
2. Discuss the basic concepts used in earlier psychophysical measurement.
3. Discuss the representative values provided for the sensory limits

16.3 Activities and Assignments

This week, complete the following tasks:

1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 6 – Psychophysics
3. Read Chapter ****
4. Visit the Chat Room and discuss the Forum question for Session 6
5. Complete the Individual Assignment for Session 6

17. SESSION 7 – DETECTION AND DECISION MAKING

17.1 Overview

Based on our knowledge in Session 6, we are now in a position to examine how detection is made and subsequent decision making. We will discuss the concepts of Response bias, a new influential way of measurement known as Signal Detection and the pay-off matrix. These are all important concepts that must be understood in order to detect and decide whether there is presence or absence of stimuli.

17.2 Goals and Objectives

At the end of the session, the student will

1. Describe the detection and decision processes in the presence of stimulation
2. Explain the concept of response bias which affect how people make decisions
3. Justify the rationale for a new theory of detection which is the Signal Detection theory
4. Discuss some of the factors that explain the concept of response bias.
5. Signal detection and the decision process
6. Applications of signal detection theory to other fields.

17.3 Activities and Assignments

This week, complete the following tasks:

1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 7 – Detection and Decision making
3. Read ***
4. Visit the Chat Room and discuss the Forum question for Session 7
5. Complete the Individual Assignment for Session 7
18. SESSION 8 – ATTENTION

18.1 Overview
You would be introduced to yet another basic process in Cognition, that is attention. Its concerned with how we manage to mentally focus on some things in the environment and to tune out others. Attention may be seen as a link between the enormous amount of information that impinges our senses and the limited amount that we actually perceive. It enables us to perceive things we need to be aware of and to ignore others.

18.2 Goals and Objectives
At the end of the session, the student will be able to
1. Explain the cognitive process of attention
2. Explain the various theories that have been proposed to explain selective attention
3. Review some neuropsychological studies of attention

18.3 Activities and Assignments
This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXXX
2. Review Lecture Slides: Session 8 – Attention
3. Read ***
4. Visit the Chat Room and discuss the Forum question for Session 8
5. Complete the Individual Assignment for Session 8

19. SESSION 9 – PRACTICE EFFECTS ON ATTENTION

19.1 Overview
Practice leads to perfection and we gain a lot of savings when we are performing a task in which we have become so proficient in delivering. In this section, we look at the effects of practice and how it affects our attentional capacity.

19.2 Goals and Objectives
At the end of the session, the student will be able to
1. Explain the effects of practice on attentional processes
2. Explain the development of automatic processes
3. Explain controlled and automatic processes
4. Explain divided attention

19.3 Activities and Assignments
This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXXX
2. Review Lecture Slides: Session 9 – XXXXXXXXX
3. Read ****
4. Visit the Chat Room and discuss the Forum question for Session 9
5. Complete the Individual Assignment for Session 9
20. SESSION 10 – THINKING AND PROBLEM SOLVING

20.1 Overview

The topic is about discussing different kinds of thinking and problem solving which is concerned about the kind of mental work we do every day. What are the general problems we face? How do we manage to solve such complex tasks? What processes do we use? These are important issues that we will discuss in this section.

20.2 Goals and Objectives

At the end of the session, the student will be able to
1. Define the cognitive process of thinking
2. Describe problem solving as a cognitive process
3. Discuss the characteristics of problems and their classifications
4. List problems and their methods of solutions

20.3 Activities and Assignments

This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 10 – Thinking and problem solving
3. Read ****
4. Visit the Chat Room and discuss the Forum question for Session 10
5. Complete the Individual Assignment for Session 10

21. SESSION 11 – BLOCKS TO PROBLEM SOLVING OBSTACLES

21.1 Overview

Problem solving is like a maze in which there is a start state and a number of paths and several dead ends or cul-de-sacs. There are barriers or constraints that are sometimes very strong and may prevent, interfere or frustrate us from reaching our goal. We look at some of the salient factors that prevent or hinder us from solving various problems.

21.2 Goals and Objectives

At the end of the session, the student will
1. Be able to identify the various blocks or constraints to problem solving
2. Be able to discuss the ways in which these obstacles affect us from reaching our goals
3. Appreciate the use of analogies in problem solving
4. Discuss whether we transfer skills acquired earlier in similar problem solving situations

21.3 Activities and Assignments

This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 11 Blocks to problem solving obstacles
3. Read ****
4. Visit the Chat Room and discuss the Forum question for Session 11
22. SESSION 12 – HISTORY AND SUBJECT MATTER OF IMAGERY

22.1 Overview

This section helps you to understand the historical context in which imagery has been studied over the years. This background is important to enable you appreciate the renewed interest in the study of imagery as a cognitive process. We will also discuss the subject matter of imagery.

22.2 Goals and Objectives

At the end of the session, the student will be able to
1. Discuss the antecedents of modern studies of imagery
2. Discuss the subject matter of visual imagery
3. Discuss the mnemonic strategies available (both imagery and non-imagery mnemonics)
4. Contrast imagery and non-imagery mnemonic techniques

22.3 Activities and Assignments

This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 12 – History and subject matter of imagery
3. Read ****
4. Visit the Chat Room and discuss the Forum question for Session 12
5. Complete the Individual Assignment for Session 12

23. SESSION 13 – EMPIRICAL INVESTIGATION OF IMAGERY

23.1 Overview

In this section we discuss some of the empirical studies of imagery. Do images function like mental pictures and if so, do the kind of mental operations and transformations of images also function in ways similar to those of corresponding physical operations and transformations?

23.2 Goals and Objectives

At the end of the session, the student will be able to
1. Describe some of the experiments conducted in the area of mental imagery
2. Determine if the mental operations and transformations on visual imagery are similar to physical operations and transformations.
3. Discuss the fundamental nature and properties of visual images
4. Discuss some of the neuropsychological findings

23.3 Activities and Assignments

This week, complete the following tasks:
1. Log onto the UG Sakai LMS course site: http://sakai.ug.edu.gh/XXXXXXXXX
2. Review Lecture Slides: Session 13 – Empirical investigations of imagery
3. Read ****
4. Visit the Chat Room and discuss the Forum question for Session 13
5. Complete the Individual Assignment for Session 1