



<b><u>FACULTY</u></b>	: Education
<b><u>DEPARTMENT</u></b>	: Science and Technology Education
<b><u>CAMPUS</u></b>	: APK
<b><u>MODULE</u></b>	: TEACHING METHODOLOGY AND PRACTICUM: FET ENGINEERING GRAPHICS AND DESIGN (MPFEDY1)
<b><u>SEMESTER</u></b>	: Second
<b><u>EXAM</u></b>	: November 2019

**ASSESSOR(S)** : DR CF VAN AS

**MODERATOR** : MR J COETZEE (UFS)

**DURATION** : 2 HOURS                      **MARKS** : 100

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NUMBER OF PAGES: 9 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
  2. Number your answers clearly.
  3. You may consult the NCS and CAPS.
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**QUESTION 1**

At an information session for Grade 9 learners and their parents regarding subject choices for the FET phase, you have an opportunity to market Engineering Graphics and Design (EGD). What will you tell the Grade 9 pupils and their parents with regard to the following?

1.1 The nature of the subject. (3)

1.2 How the learners can benefit from taking the subject. (3)

**[6]**

**QUESTION 2**

The official curriculum for EGD as contained in the CAPS document is the intended blueprint for teaching of the Department of Basic Education. A good teacher will realise that the CAPS can only be used as a guideline and will develop his/her own work schedule. Briefly describe all the aspects you will take into consideration when developing a work schedule for a grade for one year.

**[6]**

**QUESTION 3**

Practical assessment tasks (PAT) are designed to develop and demonstrate a learner's ability to integrate a variety of practical skills. The following practical project is prescribed by the department for Grade 12 EGD. Analyse the given information and answer the questions that follow.

**A mechanical design project****Scenario**

You are employed as a draughtsperson at a design consulting firm that is participating in a national competition run by the Department of Water and Sanitation. They are looking for design solutions to improve **WATER CONTROL DEVICES**. Examples of these devices include, but are not be restricted to, water meters, stop valves, timer taps, float control devices, adjustable showerheads, water sprayers and sprinklers, rain meters, irrigation control devices etc.

You are tasked with investigating and analysing the design features of an EXISTING water control device and are required to design an IMPROVEMENT to the device, which could be one or more of the following:

- Improved efficiency
- To strengthen its current design
- To simplify its application

- 3.1 Briefly describe by means of a step by step explanation how you as EGD teacher will facilitate the execution of the design process. (10)
- 3.2 What conceptual knowledge will the learner need to execute this task successfully? (5)
- 3.3 What practical (drawing) skills will be needed to develop the working drawings? (5)
- 3.4 When teaching the learners a new skill during a practical session the teacher will start the lesson with a more behavioral instructional approach and proceed towards a more constructivist instructional approach. Briefly motivate this way of teaching by referring to the following:
- 3.4.1 Focus;
  - 3.4.2 Educator control;
  - 3.4.3 Thinking; and
  - 3.4.4 Strategies. (8)

3.5 During the execution of the practical task, you will use different assessment types and techniques to assess the learners' progress regarding their practical skills and abilities? Briefly describe and motivate how you will use the following:

3.5.1 Informal assessment;

3.5.2 Formative assessment; and

3.5.3 Summative assessment. (9)

[37]

#### **QUESTION 4**

4.1 Page to Grade 10, Term 1, Topic: **General drawing principles relevant to all types of drawing** in the CAPS document. Analyse the content and answer the following questions:

4.1.1 According to the CAPS, how much time (hours) should be spent on this topic? (1)

4.1.2 If one (1) period is 40 minutes long, how will you divide the content into the available theory periods? (6)

4.2 Write your name and student number on the lesson plan template provided. Use this lesson plan template and design a 40 minute lesson on the following:

- Grade: **10**
- Term: **1**
- Topic: **General dimensioning requirements as contained in the SANS (SABS) 0111 Guidelines.**

(25)

[32]

**QUESTION 5**

Most of the textbooks that are available for EGD today deal only with drawing principles. Your role as an EGD teacher will be to prepare the learners for a possible career in the technological world. The design department of any company plays an important role: especially during the early design stages the influence on the product attributes is very high. The designer is responsible to determine working principles, to choose the material and to specify the geometric and behaviour parameter.

5.1 Apart from teaching only drawing principles, what do you think should be taught additionally to make the following areas in EGD meaningful for the learner?

5.1.1 Mechanical drawing; (2)

5.1.2 Civil drawing; and (2)

5.1.3 Electrical diagrams. (2)

5.2 Briefly explain the teaching approach and strategy you would use to achieve the above. (4)

**[10]**

**QUESTION 6**

You spent seven weeks at a school for the purpose of work integrated learning (WIL). Write a short reflection on the challenges and the good practices that you have experienced. Conclude your reflection by elaborating on how you think these experiences will prepare you for your career as an EGD teacher.

**[6]**

**QUESTION 7**

If you want to teach at a specific school and you do not have the opportunity to teach your area of specialisation, i.e. Mechanical drawing, Civil drawing or Electrical diagrams, what will you do to empower yourself to become a good teacher?

**[3]**

**TOTAL: 100**

6/...

<b>LESSON PLAN TEMPLATE</b>
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NAME: \_\_\_\_\_ STUDENT NUMBER: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

PHASE: \_\_\_\_\_

GRADE: \_\_\_\_\_

TITLE/TOPIC OF LESSON: \_\_\_\_\_

**1.1 SITUATION ANALYSIS** (Who? When? Where?)

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(3)

**1.2 SPECIFIC AIMS** (What for?)

Curriculum and Assessment Policy Statement (CAPS), p. \_\_\_\_\_

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(2)

**1.3. LESSON OBJECTIVE** (What for?)

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(2)

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## 2.1. **LEARNING CONTENT** (What?)

Procedural knowledge: (Thinking processes and skills)

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(2)

Conceptual knowledge (Factual knowledge: Definitions, concepts, rules, etc.)

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(2)

CURRICULUM AND ASSESSMENT POLICY STATEMENT (CAPS)
Focus/Content, concepts and skills, p. _____

(4)

## 2.2. **TEACHER ACTIVITIES** (How?)

### 2.2.1 Setting the context (Introduction)

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(3)

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2.2.2 Instruction

a) Instructional approach

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(2)

b) Instructional strategy(ies)

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(2)

c) Instructional skill(s)

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(3)

2.3. **LEARNER ACTIVITIES** (Types of tasks) (What for?)

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(2)

2.4. **RESOURCES**

2.4.1 Instructional media

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(2)



## 2.5. QUESTIONS (Questions to be asked: relate to Bloom's taxonomy)

Formulate four (4) questions, one (1) on the lower cognitive level (knowledge), two (2) on the middle cognitive level (comprehension and application) and one (1) on the higher cognitive level (analysis, evaluation and synthesis)

[illegible]

(16)

## 2.6 ASSESSMENT

### 2.6.1 Type (Person, time, manner)

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(3)

### 2.6.2 Technique

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(1)

### 2.6.3 Instrument

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(1)

$$[50 \div 2] = [25]$$