3.20 Physics

1. Aims

1.1 To provide knowledge and develop basic study skills of Physics.
1.2 To help students develop interest, motivation and a sense of achievement in their study of Physics.
1.3 To develop an appreciation of the nature and development in Physics, and to create an awareness of Physics in everyday life, such as the applications of Physics in the fields of engineering and technology.
1.4 To establish a conceptual framework for Physics and provide an understanding of its methodology.
1.5 To encourage a balance between an experimental and a theoretical approach to Physics.
1.6 To develop skills relevant to the applications of Physics, such as experimental design, experimental technique, problem solving, mathematical analysis, analytical and critical appraisal and communication.
1.7 To help students acquire a sense of moral and social values and readiness to becoming responsible citizens in a changing world.

2. Issues to be addressed

2.1 Strengths

2.1.1 Most students show interest in Physics because they appreciate the usefulness and effectiveness of this subject in explaining everyday phenomenon.
2.1.2 Experimental sessions are welcomed by most students.
2.1.3 Teachers in the panel always prepare lots of supplementary exercises and quizzes to drill the students. Certainly, this ensures that they understand the topics thoroughly.
2.1.4 Teaching materials and exercises are well prepared by teachers.
2.1.5 The panel keeps a stock of teaching materials including VCD, video tapes, reference books, OHP transparencies and past papers.
2.1.6 The laboratory technician is well-experienced and professionally qualified. She is very helpful in preparing experiments and making simple experimental kits.
2.1.7 Teachers in the panel are willing to develop themselves by attending courses and seminars.

2.2 Weaknesses

2.2.1 Students are mostly passive.
2.2.2 Many students are weak in English so that they have difficulties in...
learning.

2.2.3 Students have difficulties in applying the concepts in solving problems.

2.2.4 Students are weak in organizing their own plans of study and therefore effectiveness of learning is not remarkable.

3  Objectives

Students should be able to

3.1 acquire knowledge of the laws, principles and concepts in Physics;
3.2 understand the relevant applications of Physics in society and everyday life;
3.3 apply Physics knowledge in problem solving and experimental investigation using qualitative and numerical, theoretical and practical techniques;
3.4 understand the inter-relationship between the principles and laws;
3.5 perform common laboratory techniques with control and precision, observe and report accurately;
3.6 understand the contribution of Physics to society.

4. Implementation Plan

4.1 Panel meetings are held regularly to discuss subject matters and teachers are encouraged to participate in seminars and workshops.
4.2 Class visits will be organized between the panel members.
4.3 Teacher appraisal will be completed by the panel chairperson.
4.4 Teachers in the panel are encouraged to share the exercises, quiz materials and different strategies used in teaching.
4.5 Educational visits will be arranged.
4.6 Improvement in weakness (1)

4.6.1 Theoretical ideas will be reinforced through appropriate experiments demonstrated by teachers or performed by the students themselves.
4.6.2 In teaching new topics, teachers will give a brief introduction and daily life examples of the topics to draw the students’ attention and interest. Teachers will also highlight the points which the students should pay attention to.
4.6.3 IT will be used in teaching in order to arouse the interest of the students.

4.7 Improvement in weakness (2)

4.7.1 Teachers will help students to identify the answers from information provided. There are worked examples with explanation to help
students understand the topics.

4.7.2 CD ROM with experiment simulation and video tapes on experiments may be adopted by teachers to show some complicated experiments which may not be done in the lessons.

4.8 Improvement in weakness (3)

4.8.1 Homework assignments, quizzes and supplementary exercises will be given regularly to assess students' progress in the subject. These will also serve as feedback to teachers.

4.8.2 In order to enhance the interest in studying Physics, project work is given to the students.

4.9 Improvement in weakness (4)

4.9.1 Students are encouraged to form study group by themselves.
5. **Gantt Chart**

<table>
<thead>
<tr>
<th></th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Meeting</td>
<td>- to set up goals of the coming academic year and discuss means of assessment etc.</td>
<td>Introduction to Current Nobel Prize Winners in Physics - in order to arouse the students' interest in physical science.</td>
<td>Educational Visit - the target is probably the Hong Kong Royal Observatory or the laboratory / lecture sessions organized by local universities, the aim is to arouse students' interest in physical science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arrangement of Study Groups (F.4) - on voluntary basis, to strengthen students' learning and studying practice.</td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td>Class Visit F.5 and L.6 - assurance of standard of tuition and discussion on teaching methods.</td>
<td>Panel Meeting - to evaluate the pace of teaching schedule and the results of assessment in first term.</td>
<td>Joining External Competitions - Higher form students are encouraged to join external Science Competitions in order to arouse their interest in studying physics.</td>
</tr>
<tr>
<td>June</td>
<td>---</td>
<td>Panel Meeting - to evaluate achievement of goals set up in September. - to evaluate the effective of teaching throughout the whole year. - focus on the tentative goals to be implemented in the next academic year.</td>
<td></td>
</tr>
<tr>
<td>Jul</td>
<td></td>
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</tr>
</tbody>
</table>

6. **Budget**

<table>
<thead>
<tr>
<th>Items (for 4.6 and 4.7)</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library books</td>
<td>$ 1,500</td>
</tr>
<tr>
<td>AL Teacher's reference books</td>
<td>$ 500</td>
</tr>
<tr>
<td>HKCEE level Students' reference books</td>
<td>$ 500</td>
</tr>
<tr>
<td>Computer Software for teachers</td>
<td>$ 500</td>
</tr>
<tr>
<td>Computer Software for students</td>
<td>$ 500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 3,500</strong></td>
</tr>
</tbody>
</table>
7. Evaluation

7.1 [Ref: item 4.6]
The level of involvement of students in lessons, practical sessions are observed by teachers. The overall impression of subject teachers serves as an evaluator.

7.2 [Ref: item 4.7]
To evaluate the change of learning attitude / motivation of students in physics:
the difference between the year averages of students' score in physics in two academic year is computed, an increment of 3% of the average indicates the achievement of the goal.

7.3 [Ref: item 4.8]
The marks for project works, quizzes are recorded, a rough estimate of the average of those marks will be computed at the end of academic year. The reference level of 50% of full mark serves act as an indicator of achievement.

7.4 [Ref: item 4.9]
The level of involvement of students in practical sessions and study groups are observed by teachers. The overall impression of subject teachers serves as an evaluator.