

Application of UKPSF Dimensions in Engineering Education

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Layout of Presentation

- **Introduction to UKPSF**
- **UKPSF Dimensions**
- **Planned Activities in my Professional Practices**
- **Conclusions**

Introduction to UKPSF

- Advance HE works with individuals and institutions in higher education (HE) to provide students with an excellent learning experience.
- This is why the UK Professional Standards Framework (PSF), a globally-recognized framework for benchmarking success within HE teaching and learning support.
- More than 125 Programs are accredited worldwide by PSF (2021).
- Over 150,000 staff in over 100 different countries have had their individual teaching practice recognized through our Fellowship scheme, underpinned by the PSF.

Introduction to UKPSF

The pillars of UKPSF dimensions are :

- Areas of activity undertaken by teachers and those who support learning.
- Core knowledge needed to carry out those activities at the appropriate level.
- Professional values that individuals performing these activities should exemplify.

UKPSF Dimensions

Area of Activity:

A1: Design and plan learning activities/program of study

A2: Teach and support learning

A3: Assess and give feedback to learners

A4: Develop effective learning environments and approaches to students support and guidance

A5: Engage in CPD in subject and their pedagogy, incorporating research, scholarship and evaluation of professional practices

Core Knowledge:

K1: The subject materials

K2: Appropriate method for teaching, learning and assessing in the subject area and at the level of the academic program

K3: How students learn both generally and within their subject area.

K4: The use and value of appropriate learning technologies

K5: Method for evaluating the effectiveness of teaching

K6: The implication of quality assurance and quality enhancement for academic and professional practice focus on teaching

UKPSF Dimensions

Professional Values:

- V1:** Respect individual learners and diverse learning commitments
- V2:** Promote participation in Higher education and quality of opportunity for learners
- V3:** Use Evidence Informed Approaches and the outcomes from research scholarship and CPD
- V4:** Acknowledge the wider context in which higher education operates, recognizing and implications for professional practice

Planned Activities in 2020-2021

A1: Design and plan Learning activities/program of study

| S.No | Activities | Target ed Ks | Target ed Vs | |
|------|--|--------------|--------------|-------------------------------------|
| 1 | Course designing MENG 471 (Failure Analysis) | K1 | V1 | Course Syllabus |
| 2 | CILOs designing for MENG 475 | K3 | V1 | CILOs |
| 3 | Workshops on Finite Element Techniques for MENG 475 and MENG 471 | K4 | V2 | Sample of workshops |

Planned Activities in 2020-2021

A2: Teach and Support Learning

| S.No | Activities | Target ed Ks | Target ed Vs | |
|------|-----------------------------------|--------------|--------------|------------------------------|
| 1 | Working in small groups | K3 | V1 | Small Groups |
| 2 | Graphical and visual tools | K2 | V2 | Samples |
| 3 | Demonstration through Digital Ink | K4 | V3 | Sample |

Planned Activities in 2020-2021

A3: Assess and Give feedback to learners

| S.No | Activities | Target ed Ks | Target ed Vs | |
|------|---------------------------|--------------|--------------|------------------------|
| 1 | Summative feedback | K2 | V1 | Sample |
| 2 | Research based assignment | K3 | V2 | Sample |
| 3 | Presentation | K6 | V1 | Sample |
| | | | | |

Planned Activities in 2020-2021

A4: Develop Effective Learning environments and approaches to students support and guidance

| S.No | Activities | Target ed Ks | Target ed Vs | |
|------|------------------------|--------------|--------------|-------------------------|
| 1 | One to one interaction | K3 | V1 | Samples |
| 2 | Recorded Lectures | K4 | V2 | Samples |
| 3 | Round Table Discussion | K2 | V3 | Samples |
| | | | | |

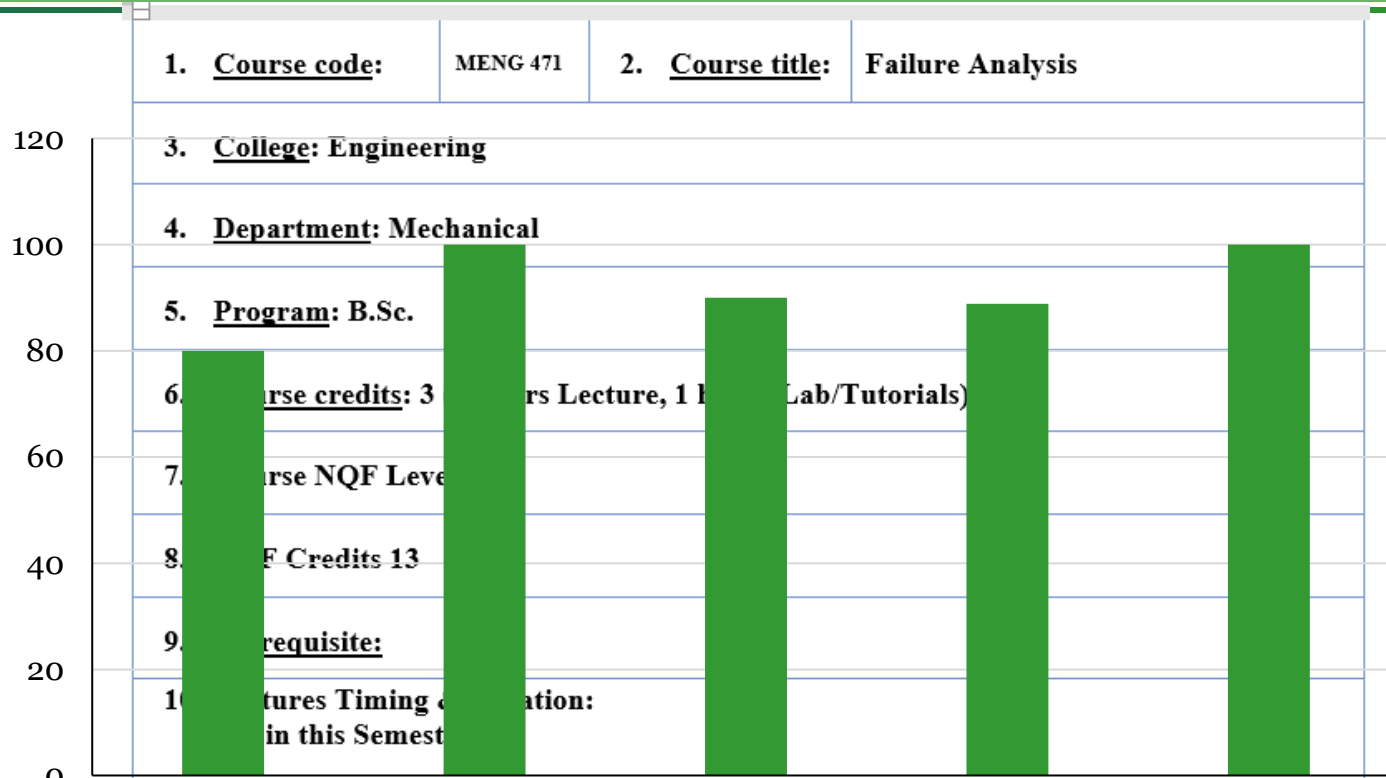
Planned Activities in 2020-2021

A5: Engage in CPD in subject and their pedagogy, incorporating research, scholarship and evaluation of professional practices

| S.No | Activities | Target ed Ks | Target ed Vs | Implementatio n Plan |
|------|---|--------------|--------------|------------------------|
| 1 | POT | K5 | V3 | Sample |
| 2 | E-Tivities workshop | K2 | V3 | Sample |
| 3 | Matlab Application in Senior design project | K1 | V3 | Sample |

Conclusions

- The application of UKPSF dimensions significantly improve my teaching pedagogy for enhancing student learning outcome.
- The reflective analysis enable you to identify the area of improvement in your pedagogy.
- The implementation of UKPSF dimension in some of the courses significantly improve the learning experience of students in taught courses.



11. Course web page: NA
 The course was organized in a manner that helped me understand the underlying concepts.

12. Course Instructor: Dr. Riaz Muhammad
 The course gave me the confidence to do more advanced work in the subject.

13. Office Hours and Location: 13 PM to 14 AM, Office 116 A
 The assessments covered so far, measured my knowledge of the course material.

14. Course coordinator: Dr. Riaz Muhammad
 I believe that what I'm being asked to learn in this course is important.

15. Academic year: 2020-2021
 I would highly recommend this course to other students.

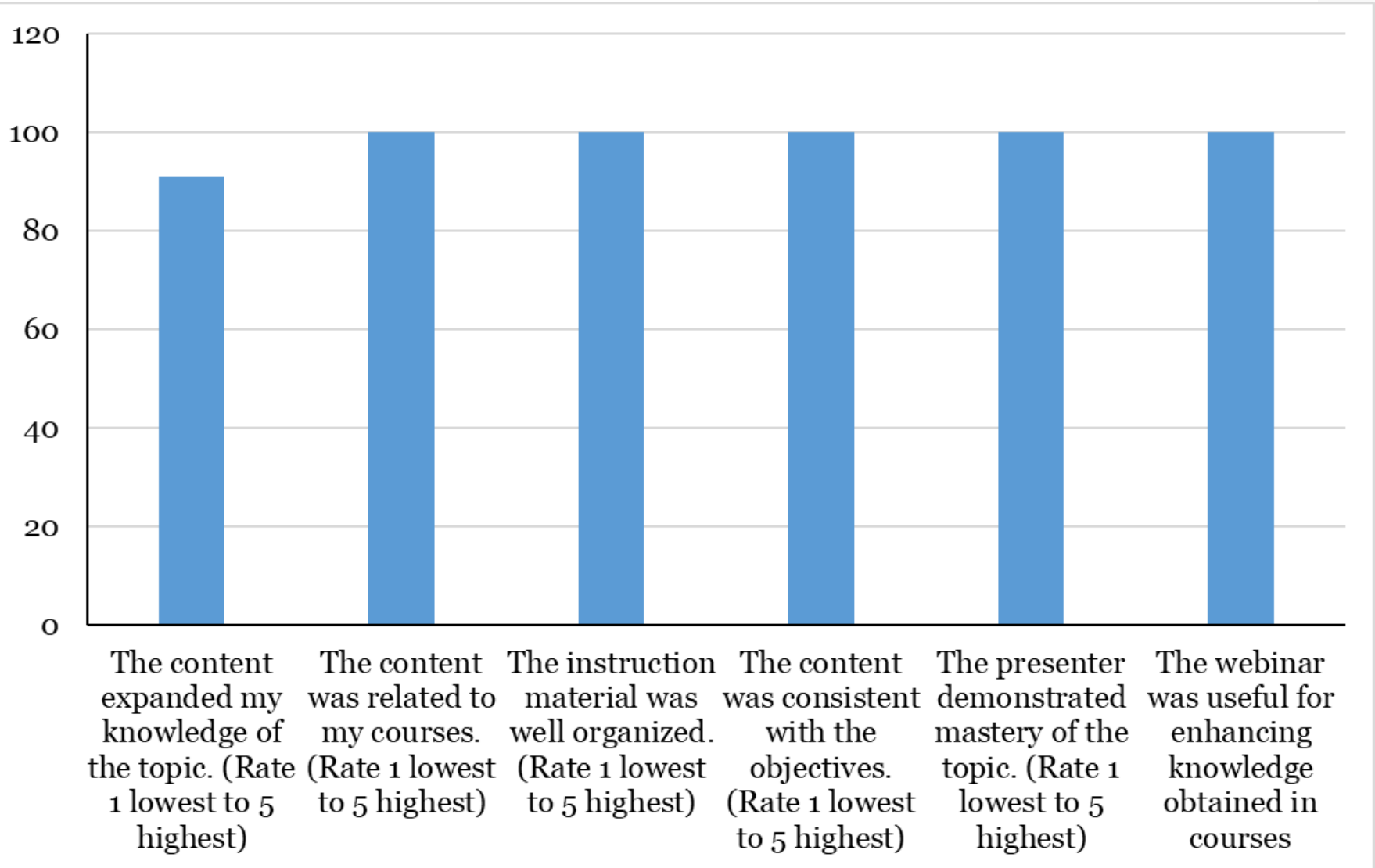
16. Semester: First Second Summer

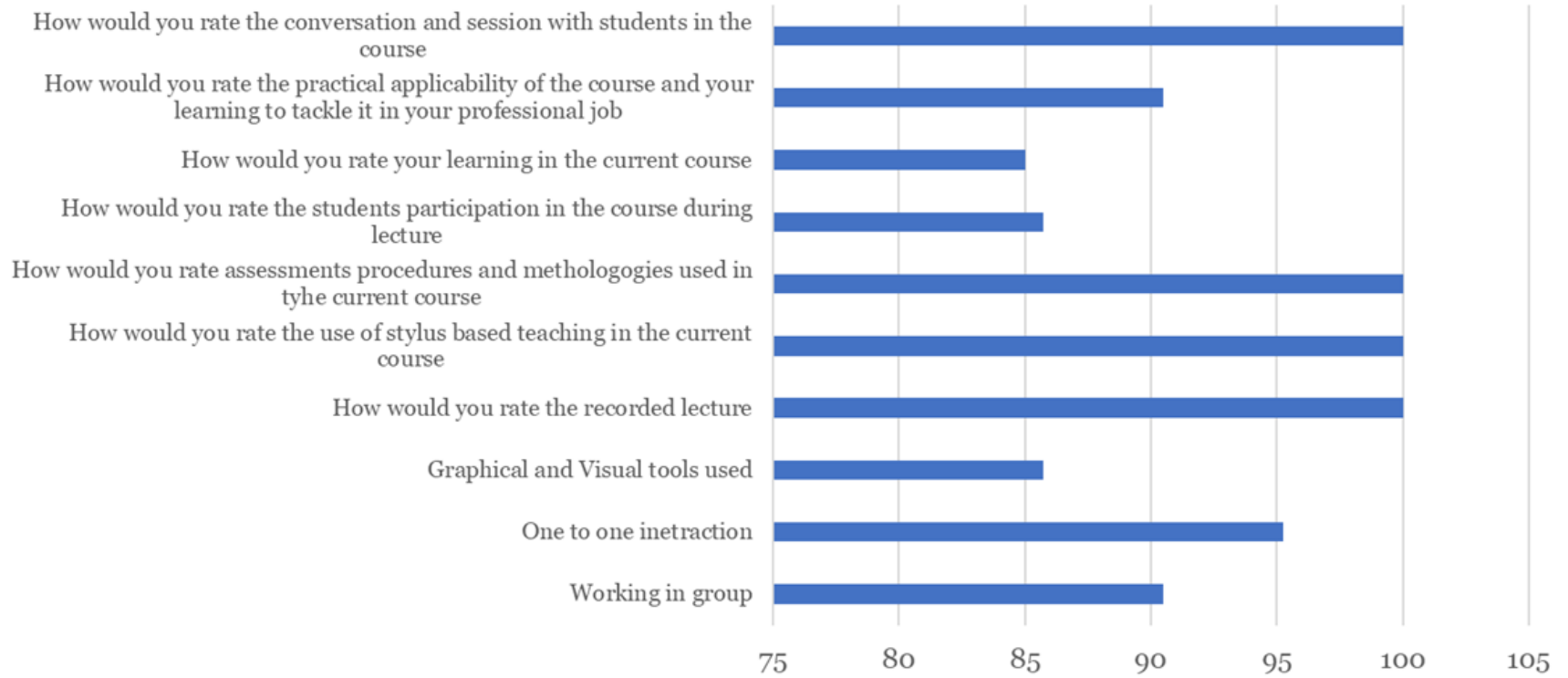
MEI

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View.

52 If we include part of FE simulation in this course, this course will be very use ful for students.

| A | B | C | D | E | F | G | H | I | J | K |
|--------|---|--|---|--------------------|-------------------------|----------------|---------------------------|---|---|---|
| 1. | How many students earned the following grades? | A | B | C | D | F | W/WF | W/WF should <u>not</u> be counted in the total number of students | | |
| | | 1 | 0 | 0 | 0 | 24 | | | | |
| 2. | Did you meet the expectation of the CILOs. Please include improvement action if "Not Met" | | | | | | | | | |
| | Course Learning Outcomes | Percentage of students on average who achieve CILOs | Achievement of CILOs based on criteria (used to decide on meeting the CILO or not) | Met/Not Met | Need Improvement | Reasons | Improvement Action | | | |
| CILOs1 | Calculate stresses in gear teeth and other mechanical components | 84% | 91% | Met | | | | | | |
| CILOs2 | Identify the parameters for the selection of standard machine elements, such as journal bearings, rolling contact bearings, chains, belts, clutches and brakes | 84% | 91% | Met | | | | | | |
| CILOs3 | Design the machine elements for desired outputs, including gears, flywheels, clutches, brakes, journal bearings, rolling contact bearings, power screws, chains and belts etc | 81% | 88% | Met | | | | | | |
| CILOs4 | 0 | | | | | | | | | |
| CILOs5 | 0 | | | | | | | | | |
| CILOs6 | 0 | | | | | | | | | |
| CILOs7 | 0 | | | | | | | | | |





DM

Dr.Riaz Muhammad 23/12/2020 18:11
 Dear Students, I need your support and feedback to fill the given form for MENG 375 Course.
<https://forms.office.com/Pages/ResponsePage.aspx?id=tTdhAhPj0UabLwJuy1DIQoa0zNBzV3tFjmaTiH17GQNUQTUWVU1T0FYnzMwWUtXV040MDFOTIBI0CQIQCN0PWcu>

Fill | MENG 375 Feeb Back
 forms.office.com

DM Dr.Riaz Muhammad 23/12/2020 18:34
 Thank you Fatema and Abdullah

MENG 375 Feeb Back

Hi Dr.Riaz, when you submit this form, the owner will be able to see your name and email address. [Disable Immersive Reader](#)

1. How would you rate your experiance in MENG 375 Course (Note: 1 Mean lowesr and 5 mean highest satisfaction levels) [🗨](#)

| | 1 | 2 | 3 | 4 | 5 |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Working in group | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| One to one inetraction | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Graphical and Visual tools used | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| How would you rate the | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Single shear bolted connection

To understand shear stress in a bolted connection, visualize the failure surface that would be created if the bolt was broken.

Double shear bolted connection

To understand shear stress in a bolted connection, visualize the failure surface that would be created if the bolt was broken.

Punching shear - slot

Try to visualize the failure surface that will be created when the punch is driven through the plate. Shear stress acts on this surface.

Stresses on an inclined plane

Since stress is defined as force per area, the magnitude of the normal and the shear stress on the inclined plane surface depends on the area exposed when we cut the free-body diagram.

The area of the bar on the inclined plane depends on the angle θ .
 $A_n = A / \cos \theta$

The cross-sectional area of the bar is A.

Generalized Hooke's Law - biaxial

If a normal stress σ_x is applied in the x direction, the element undergoes a tensile strain of:

$$\epsilon_x = \frac{\sigma_x}{E}$$

Generalized Hooke's Law - biaxial

If a normal stress σ_y is applied in the y direction, the element undergoes a tensile strain of:

$$\epsilon_y = \frac{\sigma_y}{E}$$

Generalized Hooke's Law - biaxial

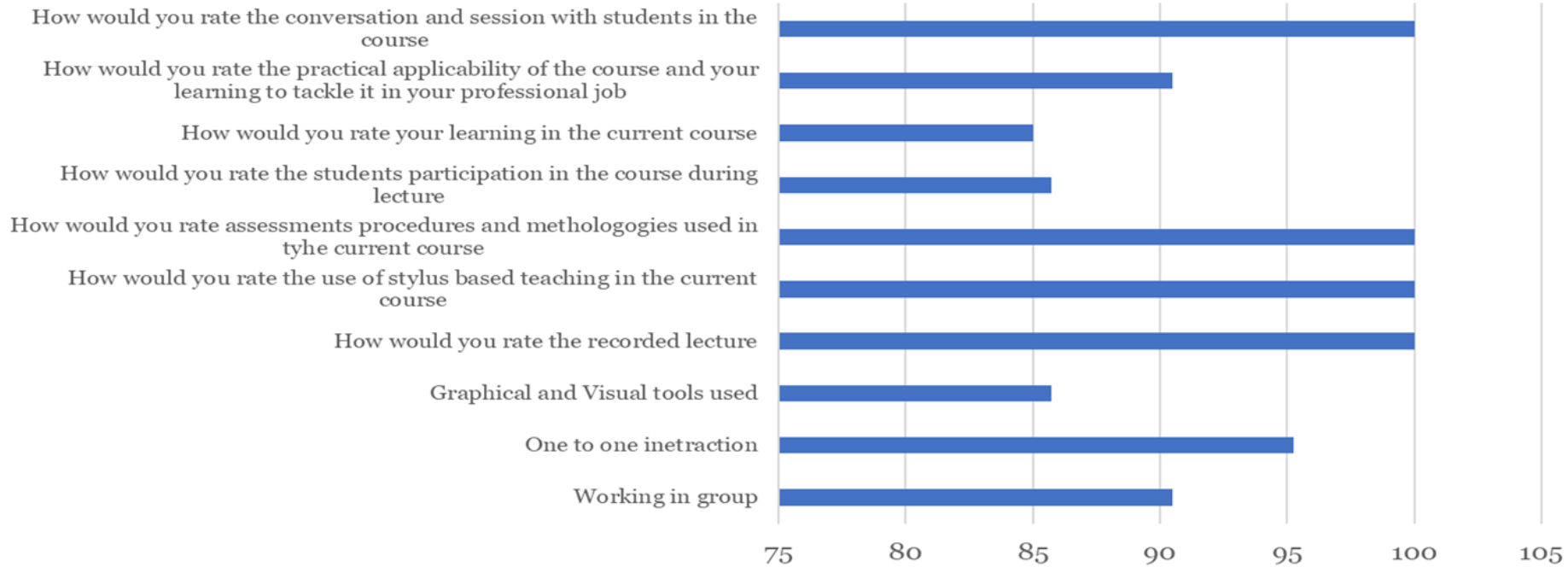
Superimposing the strains created by both σ_x and σ_y gives the following expressions for the strains in the x, y, and z directions:

Shear key and gear

A shaft is supported by bearings.

Shear key and lever

A slot is milled (cut) in the shaft



reply

DM

Dr.Riaz Muhammad 23/12/2020 18:11
 Dear Students, I need your support and feedback to fill the given form for MENG 375 Course.
<https://forms.office.com/Pages/ResponsePage.aspx?id=tTdhAhPj0UablWJuy1DIQoa0zNBzV3tFjmaTiH17GQNUQTJJWVU1T0FYnzMwWUtxV040MDFOTIBIOCGIQCNOPWcu>

Fill | MENG 375 Feeb Back

forms.office.com

DM Dr.Riaz Muhammad 23/12/2020 18:34
 Thank you Fatema and Abdullah

MENG 375 Feeb Back

Hi Dr.Riaz, when you submit this form, the owner will be able to see your name and email address. [Disable Immersive Reader](#)

1. How would you rate your experience in MENG 375 Course (Note: 1 Mean lowest and 5 mean highest satisfaction levels) [🔗](#)

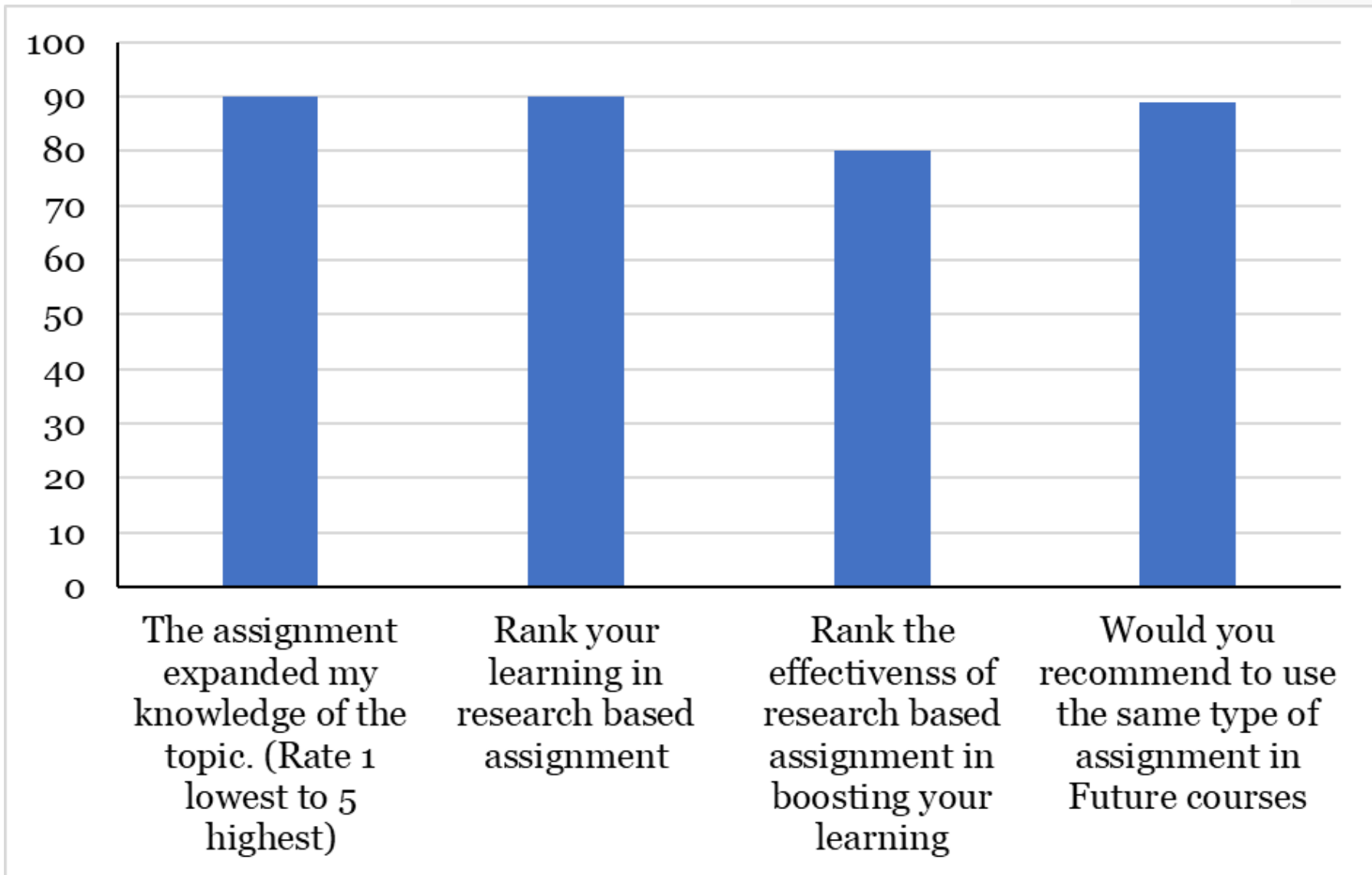
| | 1 | 2 | 3 | 4 | 5 |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Working in group | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| One to one interaction | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Graphical and Visual tools used | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| How would you rate the | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Obtained Marks

| | Total Marks | Mohsen Habib Ali Habib | Hassan Saleh Ahmed | Jawad Faisal 20177151 | Hussain Zuhair Rajab | Comments |
|------------------------|-------------|------------------------|--------------------|-----------------------|----------------------|---|
| Report Format | 1 | 1 | 1 | 1 | 1 | |
| Abstract | 1 | 1 | 1 | 1 | 1 | |
| Introduction | 2 | 2 | 2 | 2 | 2 | |
| CAD Model/Assembly | 6 | 5 | 5 | 5 | 5 | Casing, Bearing etc, but over all the work is |
| Inverter Analysis | 4 | 4 | 4 | 4 | 4 | |
| Calculation | 10 | 10 | 10 | 10 | 10 | |
| Results and Discussion | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | |
| Conclusion | 1 | 1 | 1 | 1 | 1 | |
| Reference | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | |
| PPT Slides | 3 | 3 | 3 | 3 | 3 | |
| Presentation | 7 | 6 | 5 | 6 | 5 | |
| | 40 | 38 | 37 | 38 | 37 | |

Dec 30, 2020 1:53:52 PM
 Dec 30, 2020 2:02:38 PM (Completed)
 38.00

- View Attempt
- Clear Attempt
- Ignore Attempt
- Edit Grade



AutoSave Off MENG 375 S2 - Protected View Search

File Home Insert Draw Page Layout Formulas Data Review View Help

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

B56 NA

| | A | B | C | D | E | F | G | H | I | J | K |
|----|--------------|--|---|---|--------------------|--------------------------|----------------|---------------------------|---|---|---|
| 13 | | | | | | | | | | | |
| 14 | 1. | How many students earned the following grades? | A | B | C | D | F | W/WF | W/WF should <u>not</u> be counted in the total number of students | | |
| 15 | | | 3 | 6 | 8 | 3 | 3 | | | | |
| 16 | 2. | Did you meet the expectation of the CIOs. Please include improvement action if "Not Met" | | | | | | | | | |
| 17 | | Course Learning Outcomes | Percentage of students on average who achieve CIOs | Achievement of CIOs based on criteria (used to decide on meeting the CIO or not) | Met/Not Met | Need Improve ment | Reasons | Improvement Action | | | |
| 18 | CIOs1 | Explain the application of design standards and the importance of dimensional parameters, material properties, materials selection in manufacturing aspects of mechanical design | 75% | 79% | Met | | | | | | |
| 19 | CIOs2 | Analyze different types of structural joints, power transmitting shafts, Keys, mechanical fasteners, Power screws and mechanical springs | 71% | 78% | Met | | | | | | |
| 20 | CIOs3 | Present the design aspects effectively through oral presentation and through the use of Computer Software | 93% | 92% | Met | | | | | | |
| 21 | CIOs4 | | | | | | | | | | |
| 22 | CIOs5 | | | | | | | | | | |
| 23 | CIOs6 | | | | | | | | | | |
| 24 | CIOs7 | | | | | | | | | | |

Marks CIOsQuesMap SOsQuesMap Summary CIOsReport SOsReport SOsReport_EngIT Pls Grades

Navigation icons: Home, Back, Forward, Refresh, Search, etc.

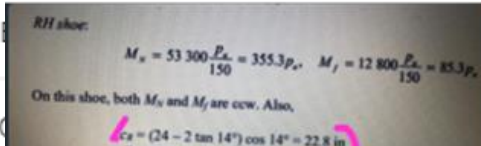
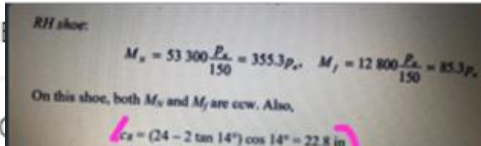
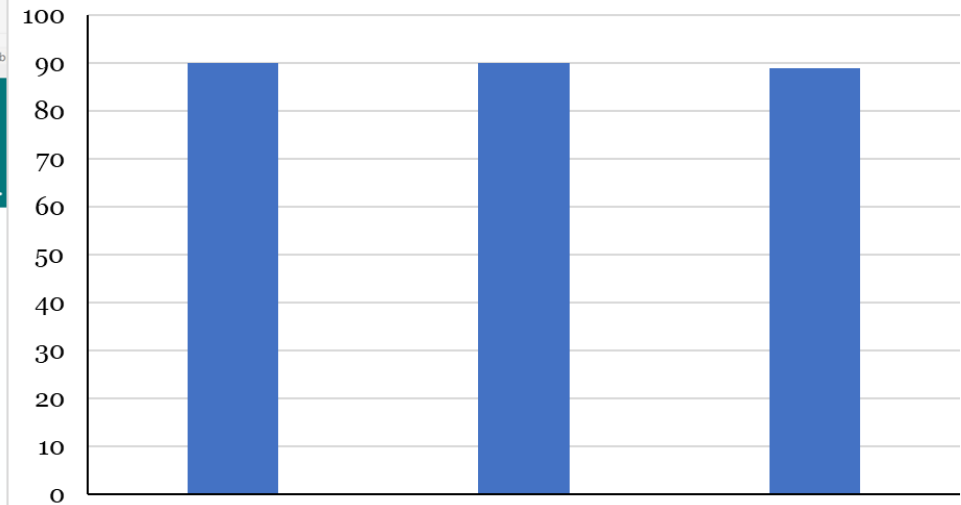



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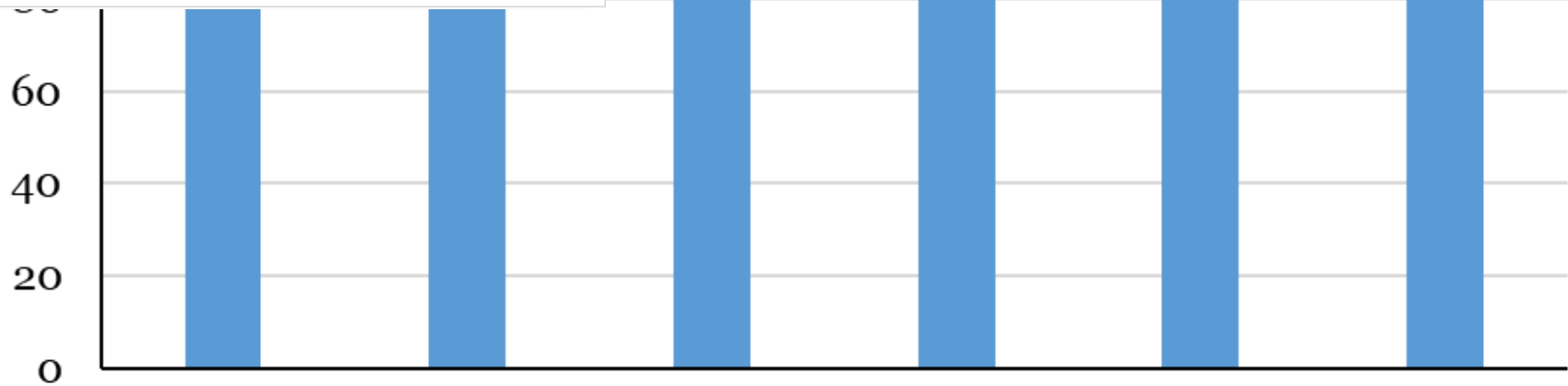
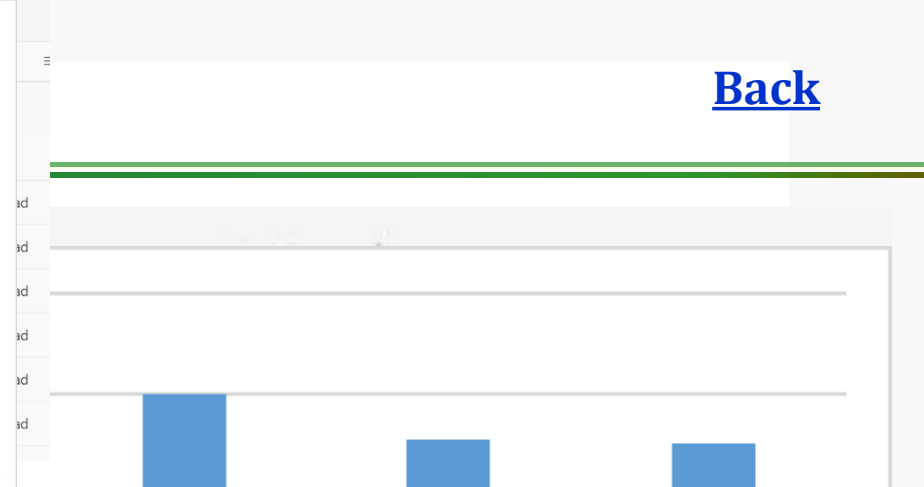
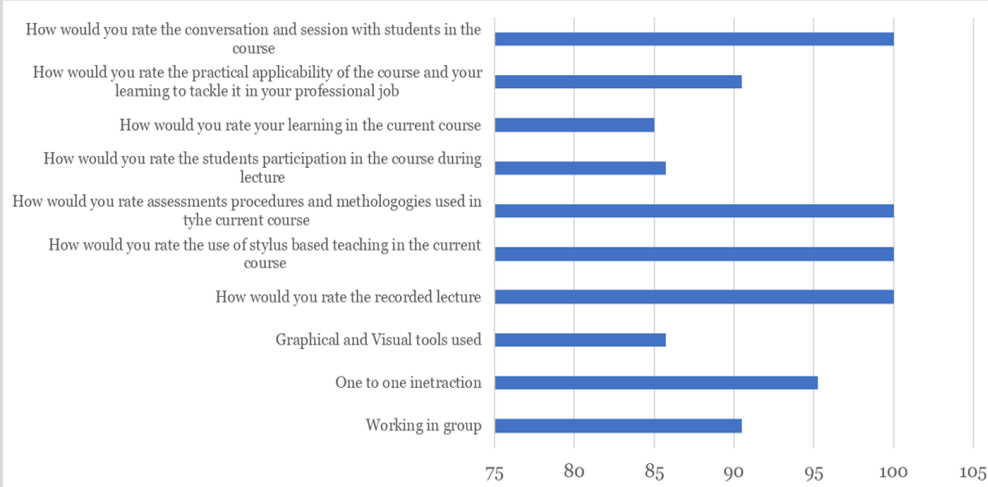
End

Navigation icons: Home, Back, Forward, Refresh, Search, etc.

0:11:10

History

| Name | Question | Type | Duration | Date | | | | | | | | |
|--|---|--|----------|-----------------|--|----|--|----|--|----|--|--|
| Dr. MOHAMMED |  | Reply | 8:42 pm | Tuesday 6:01 PM | | | | | | | | |
| NAIM NAIM |  | Reply | 8:42 pm | Monday 3:37 PM | | | | | | | | |
| General | <p>Feedback on One to One interaction in MENG 475</p> <p>Hi Dr.Riaz, when you submit this form, the owner will be able to see your name and email address.</p> <p>1. How did you find the one to one inetraction in MENG 475 in the current semester, Plaese rank it from 1 (strongly disagree) to 5 (strongly agree)</p> <p>How do you feel about the one to one interaction</p> <p>How effective was the one to one inetraction in the current course</p> <p>How helpful was the one to one inetraction your learning</p> |  <table border="1"> <caption>Feedback Scores</caption> <thead> <tr> <th>Question</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>How do you feel about the one to one interaction</td> <td>90</td> </tr> <tr> <td>How effective was the one to one inetraction in the current course</td> <td>90</td> </tr> <tr> <td>How helpful was the one to one inetraction your learning</td> <td>90</td> </tr> </tbody> </table> | Question | Score | How do you feel about the one to one interaction | 90 | How effective was the one to one inetraction in the current course | 90 | How helpful was the one to one inetraction your learning | 90 | | |
| Question | Score | | | | | | | | | | | |
| How do you feel about the one to one interaction | 90 | | | | | | | | | | | |
| How effective was the one to one inetraction in the current course | 90 | | | | | | | | | | | |
| How helpful was the one to one inetraction your learning | 90 | | | | | | | | | | | |
| Dr. ISLAM HA |  | Reply | 8:42 pm | 10/12 3:44 PM | | | | | | | | |
| AHMED MO |  | Reply | 8:42 pm | 10/4 12:16 PM | | | | | | | | |
| MOHAMED A |  | Reply | 8:42 pm | 9/27 2:15 PM | | | | | | | | |
| MOHAMED A | Ahmed I am.oit will give you answer in a while | Reply | 9:11 pm | 9/27 2:14 PM | | | | | | | | |
| MOHAMED A | Sorry for late reply as I was c | Reply | 2:10 am | 9/27 2:14 PM | | | | | | | | |



Rank the quality of the recorded lecture

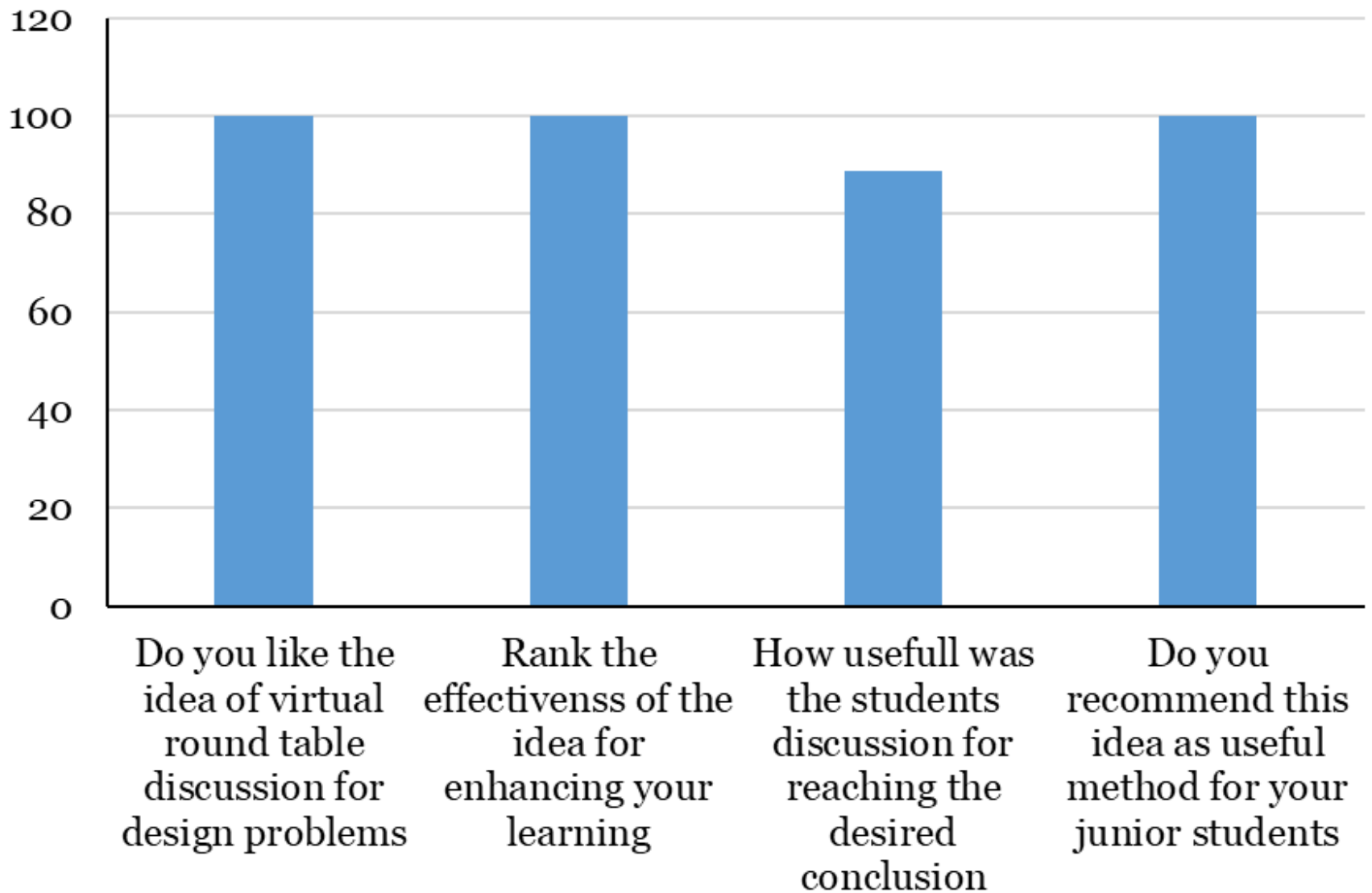
Rank the effectiveness of Recorded lecture in your learning

Are you using recorded lecture for make up due to a missed lecture

Are you using recorded lectures for preparing for the exam

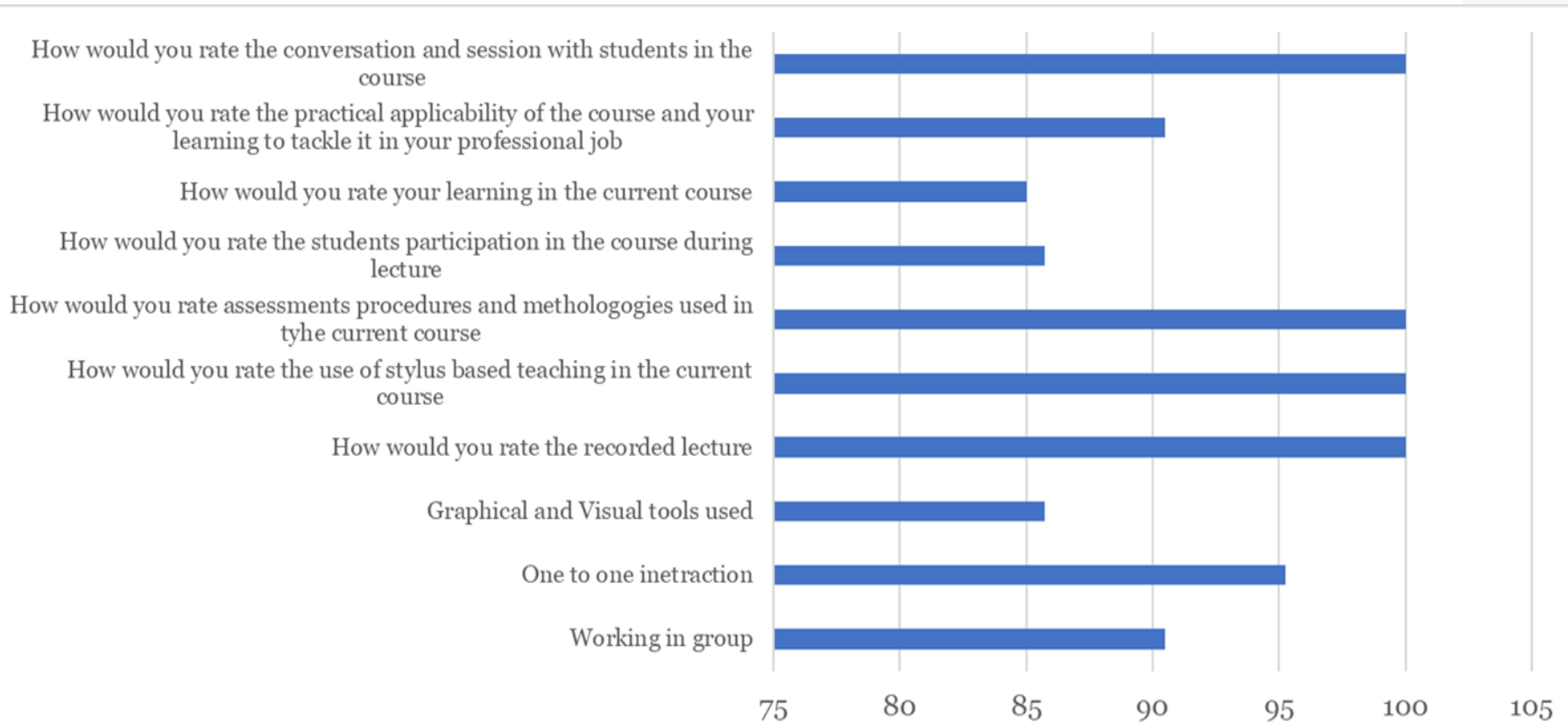
Have you found recorded lecture effective for improving test scores

Rank the recorded lecture for clarifying the material




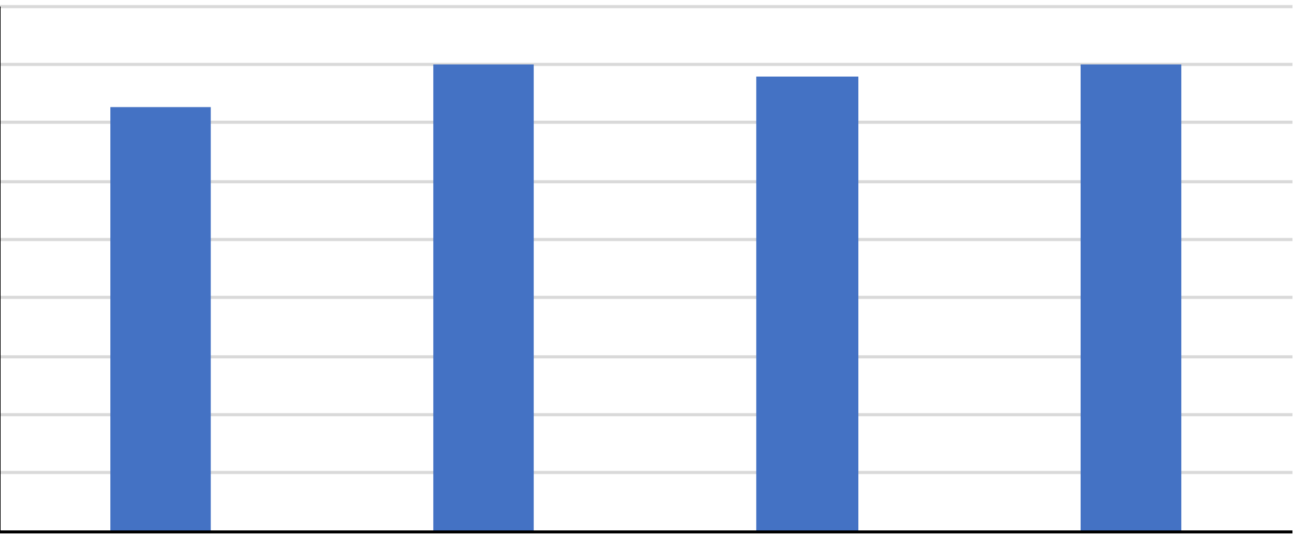
POT comments for improvement:

- Turn on your camera during a lecture
- Involved more students in discussion
- Increase the time for discussion



▼ Suggestions (4)

 **MOHAMMED F. J. ALAGHA**

| Name of e-tivity (choose an enticing one) | Knowledge Construction: How Does My Car's Transmission Work | | | | | | | | | | | | | |
|--|--|---|---|--|---|----|--|----|--|----|--|--|--|---|
| <p>Pu</p> <p>90</p> <p>80</p> <p>70</p> <p>60</p> <p>50</p> <p>40</p> <p>30</p> <p>20</p> <p>10</p> <p>0</p>  <table border="1"> <caption>Bar Chart Data</caption> <thead> <tr> <th>Category</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Is the E-tivity was usefull for building the required knowledge regarding the transmission system</td> <td>73</td> </tr> <tr> <td>Does the materials link shared in E-tivity form help you in the construction of knowledge</td> <td>80</td> </tr> <tr> <td>Are you meeting regularly as suggested in E-tivity form to discuss the project</td> <td>78</td> </tr> <tr> <td>How much usefull the E-tivity idea in completing your course project</td> <td>80</td> </tr> </tbody> </table> | Category | Score | Is the E-tivity was usefull for building the required knowledge regarding the transmission system | 73 | Does the materials link shared in E-tivity form help you in the construction of knowledge | 80 | Are you meeting regularly as suggested in E-tivity form to discuss the project | 78 | How much usefull the E-tivity idea in completing your course project | 80 | | | | <p>s to</p> <p>course</p> <p>te the</p> <p>ks</p> |
| Category | Score | | | | | | | | | | | | | |
| Is the E-tivity was usefull for building the required knowledge regarding the transmission system | 73 | | | | | | | | | | | | | |
| Does the materials link shared in E-tivity form help you in the construction of knowledge | 80 | | | | | | | | | | | | | |
| Are you meeting regularly as suggested in E-tivity form to discuss the project | 78 | | | | | | | | | | | | | |
| How much usefull the E-tivity idea in completing your course project | 80 | | | | | | | | | | | | | |
| <p>H</p> <p>pa</p> | | | | <p>l</p> <p>oe</p> | | | | | | | | | | |
| <p>E-</p> <p>ne</p> <p>I.e</p> <p>us</p> <p>at</p> <p>E-</p> <p>Es</p> | <p>Is the E-tivity was usefull for building the required knowledge regarding the transmission system</p> | <p>Does the materials link shared in E-tivity form help you in the construction of knowledge</p> | <p>Are you meeting regularly as suggested in E-tivity form to discuss the project</p> | <p>How much usefull the E-tivity idea in completing your course project</p> <p>e their</p> | | | | | | | | | | |
| <p>(Then double...)</p> | <p>materials.</p> | <p>https://www.youtube.com/watch?v=u_y1S8CoHmc&t=162s</p> <p>https://www.youtube.com/watch?v=Ugao6jTyM7k&t=2s</p> | | | | | | | | | | | | |
| <p>Spark</p> | | | | | | | | | | | | | | |
| <p>Individual</p> | <p>You will be given dedicated tasks to complete the project in</p> | | | | | | | | | | | | | |



This is to certify that Riaz Muhammad has attended the following MathWorks Webinar

Event: Design Industrial Robot Applications from Perception to Motion

Date: 31 March 2021

Webinar Run-Time: 1 Hour

The MathWorks Team

MathWorks Webinars

